DEVELOPMENT OF BASIC MOVEMENT MODEL BASED ON INTERACTIVE MULTIMEDIA FOR ELEMENTARY STUDENTS

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Abstract

This study aims to develop basic movement model based on interactive multimedia for elementary school students. This research and development presented in the form of interactive multimedia. The research method used is research and development using 10 steps from Borg and Gall While the subject of this research is the first grade students of elementary school. This study begins with the needs analysis, planning, product development, try out, revision, and final product. The result of this research showed that this product is appropriate for students in grade 1. It was confirmed by the test results of small group and large group that elucidate that the entire of models can be carried well. Consequently, it is showed that this model is essentially and effectively used by the first grader of elementary school students in increasing their ability especially in basic motor skills.Gain score obtained average score 0,59 which means that the comparison between pre-test score and post-test score differences is medium.

Keywords: Development, Basic Movement, Interactive Multimedia, Elementary School

Education quality is a mandatory requirement to achieve a developed country life. Nowadays, in the 21st century, education is a mandatory requirement for all people, not limited to the upper, middle and lower classes. Education is very important and must be implemented early. Through education, people try to increase the value and dignity of their life. Law on National Education System (SISDIKNAS) No. 20 of 2003 explained about education, which is described as follows:

> Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively developing their potential to have the spiritual power of religion, self-control, personality, intelligence, noble character, and skills needed them, society, nation and state.

The education quality is also produced by qualified teachers, in this case a teacher must understand about the curriculum's materials. Physical education is an

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integral part of education. Physical education is part of the educational process as a whole, it is expected to create a human with physical and spiritual health that can ultimately contribute to good and beneficial ideas for the region in particular and the nation in general. The quality of learning process should be implemented in schools since grade school. Definition of physical education and sport to the still disputed either by experts in sports and by physical education teachers themselves. Physical education is still considered as a unimportant subject, even in the Law of the national education system, subjects of physical education ranks bottom of the other exact sciences subjects, and even its position has been marginalized, ranging from cutting lesson hours to reduce the number of facilities and infrastructure.

Physical education and health sciences is a subject of much-loved by the students, as hold on the field so that students can play and exercise, but if the teaching of physical education is not taught by the good teachers then the students will feel tired and bored so that the physical education material unfulfilled. Directed learning experiences to foster the physical growth and mental development of a better, and creating a healthy and fit lifestyle throughout life.

Physical education is one of the subjects included in the scope of formal education elementary school (SD) Junior High School (SMP) Senior High School (SMA). In accordance with the characteristics of elementary students, most of them tend to like playing. For that reason, teachers should be able to develop effective learning, as well as to understand and pay attention to the characteristics and needs of students. On the age of elementary school, all human development aspects, cognitive, psychomotor and affective, changes. The most noticeable change is the growth and development of the physical and psychological. Physical education teachers should be able to create an effective learning and fun. So that teachers should be able to make variations and modifications in teaching in the field. In addition to be able to develop the implementation of the teaching and learning process teachers must first understand and master the basic motor skills.

Basic movement subject in the field of physical education and sport studies, and is a basic element contained in athletics. Basic movement consists of locomotor movements, non-locomotor and manipulative.One of the obstacles is less smooth teaching physical education in schools, is the lack of adequate facilities owned by the schools. In addition, dependence on the physical education teachers as well as the standard facilities of learning approaches in presenting the basic techniques are also standard in accordance with a set curriculum. Both of them causedless varied of learning patterns and tend to be boring student learners.

Teachers can actually do more and be more flexible in use, exploit, develop or even modify the facilities which is going to be used. In the circumstances of today's schools, where the space for the students to physical activity is decreasing, especially for sports branch activities with conventional approaches, presumably giving a basic general movement should be done.

Based on the results of a needs analysis was conducted by researcher through a needs analysis questionnaire at SD Negeri 2 Gamping in Tulungagung district is known as the most students like physical education and health sciences subjects, 10 of 20 students (50%) liked the basic movement subject. While students prefer computer based media that comes with pictures and videos. Based on the result of observations to teachers and students, the basic movement subject has the most lessons hours, so in terms of the quantity of time, it is considered to be long enough for the learning process. But the amount of time are not offset by the amount of media as well as variations of models of good teaching, this has resulted in learners experiencing boredom and difficulties in the implementation of practical activities, therefore we need a media / various learning models to assist students in improving basic movement.

Facilities and infrastructure that exist in SD Negeri 2 Gaminghas met that has an LCD projector as one of learning facility, but does not have a special teaching materials with computer-based learning to support basic movement. SD Negeri 2 Gampingneeds to carry out physical education related learning basic movement material by using computer-based instructional media or print media / book that aims to help teachers and students in presenting and understanding the material. Instructional media contains an explanation of the basic movement, pictures, and videos regardingthe basic movement subject.

In this paper, researcher eventually will take the title of the Development of Basic Movement Model Based onInteractive Multimedia for Elementary Students, so that will create the appropriate learning models especially for elementary students. In using these models, the teacher can harmonize with the conditions and situations faced by students.

Physical Education

There is no a complete education without the presence of physical education, and there is no physical education quality without the presence of qualified teachers. Teacher quality is believed to be an important factor in teaching physical education at school (Komnas Penjas, 2009: 53). Physical education and sport is one of the subjects taught in formal education from primary to secondary education.

Pangrazi & Beighle (2001: 2) states: : *physical education means many things to many people. physical education proffesional often describe it as essss subject matter dedicated to learning in the psycomotor domain and committed to developing lifetime physical activity patterns*. So here is the notion of physical education for the total growth and development of all children. Then Pangrazi (2001: 2) reinforce again with his opinion: *phisical education is defined as education through movement. it is an instructional program that adress all learning domains: Psycomotor, cognitive, and afective.*

Physical education is a tool for building the students so that they can be educated physically and spiritually. Operation of physical education in schools are expected to develop learners toward a more optimal. Physical education as an effective educational tool, both at school and outside of school, to enable learners and active citizens, to develop personal potential, to foster the welfare of families, communities and nations, healthy and prosperous plenary. Physical education is a vehicle capable of educating humans to approach the perfection of life that naturally can make a real contribution to our daily lives. Implementation of physical education organized, planned, directed and guided, achievable set of objectives that include the formation and guidance for the growth and development of the physical and spiritual. The benefits of physical education to children of school age, can increase alertness learners to prepare for tasks and activities in their work and can helpful to fulfill their leisure time.

In brief, it can be concluded that physical education is an educational process that utilizes physical activity that is planned systematically, aiming to develop the health aspect, the aspect of physical fitness, motor skills, which would be a good practice if it is supported by the knowledge of how to do this, the skills of critical thinking, stability emotional, moral action and reasoning.

Characteristics of Primary School Children

According Gallahue (2006: 177) and the physical characteristics of later childhood motor development stage aged 6-10 years are as follows:

1). Boys and girls range from about 44 to 60 inches (111.8-152.4 cm) in height and 44 to 90 pounds (20.00-40.8kg) in weight. 2) Growth is slow. 3) The body begins to lengthen. 4) The cephalocaudal (head to toe) and proximodistal (center to periphery)principles of development. 5) Girls are generally about a year a head of boys in psikological development, and separate interests begin to emerge toward the end of this period. 6) Hand preference is firmly established with about 85 persent preffering the right hand and about 15 percent preferring the left. 7) Reaction time is slow. 8) Both boys and girls are full of energy but often prosses low endurance levels and tire easily. 9) the visual perceptual mechanisms are fully established by the end of this period.

At the age of 6-10 year transition phase, the child can individually begin to combine and apply the basic movements associated with the display in physical activity. Movements that do contain the same elements, such as the basic movement, but in practice is more accurate and controllable. During this period the child is actively involved in the search and combining a wide variety of motion patterns and skills. In general, their ability will be increase quickly. While Piaget explained that the children had a unique attitude that is egocentric. As long as the

children have egocentric, they tend to play by themselves alongside their friends (Crain, 2007: 192).

Motor development

In the later period of childhood, age 6-10 years, children still have not been good at motor skills and their reaction time is slow. Meanwhile in Prepubesence period, 10-12 years old, children begin to show their motor abilities resembles the ability of adults. They began to show complex movements, intricate and fast, which is needed to produce good quality work or perform certain movements.

Motor is divided into two gross motor and fine motor skills. What is meant by gross motor skills is the body's ability to perform activities mostly using the whole body and require a large force because it is done by the big muscles that cover the basic movement locomotor, non locomotor, and manipulative.

Locomotor movement is a movement that includes the projection of the body against external space by changing the vertical and horizontal locations or can also be called the movement which led to the person move them to walk, run, jumps, crawl, slide, climb. Non-locomotor movement is the activity that moves a limb on its axis and this movement does not lead to the person move them bending movement, rotate, tilt, stretch, relying, interesting. Motor manipulative movement is specific to the skills that require eye coordination with other members of the body to interrogate a place or object to move where the person perform the effort transferring power objects / anything that moved.

Gallahue and Ozmun (2006: 48) divide motor development into four phases, namely (1) the phase reflex, (2) the preliminary basis movement phase, (3) the fundamental basis movement phase, and (4) phase of specific movements (specialist).

Elementary students aged 7-12 years categorized into the motor development of special movement (specialist) phase, where this phase is very dependent on the previous phases, especially the development of basic movement skills fundamental maturity. During this phase of the specialist, the movement becomes a tool applied to a variety of complex movement activities for daily living, recreation and sports activities. It is the skill base period of stability, locomotor, and manipulative increasingly refined, combined and developed to be used in situations that are increasingly demanding.

Basic Movement Skills

Movement skills for elementary students is a basic movement skills. Pangrazi (2001: 4) states that "basic skills are useful skills that children need as the provision of live and behave". The skills group also called functional skills, it means that this skillis laying the foundations for children's activities on the environment and form the basis of the competent movement.

The process of forming the movement does not happen automatically, but an accumulation of learning and practice, that is the way to understand the movement and perform repetitive movements over and over accompanied by consciousness movements are performed. According Widiastuti (2014: 37) motor skills is the ability to perform efficiently the movement and the realization of the quality of coordination and control over the body parts involved in the movement.

Basic movement or in the terminology of the motor development in terms of fundamental movement involves the basic elements of a certain movement of one movement only. Examples of basic movements that need to be developed in childhood are running, jumping, sliding laterally, while the movement manipulative may include throwing, catching, kicking, and pushing, all of them are part of next movements of the basic movements that are more complex,

Elementary school-age children should get a movement learning and improvement, if necessary, from their parents including physical education teachers in schools where such children receive physical education lessons. With a serious and continuous, movements quality and awareness are expected to maintain their physical fitness continue to do so, so their performance or work productivity will increase. According Tangkudung (2012: 67) state that good conditions will affect the psychological aspects that include increased employee motivation, morale, confidence, accuracy, and so forth. In psychologist, the physical state was very influential in our work environment, especially in socializing environment.

Gallauhe classify children into several categories, namely early childhood and later childhood. At the time of primary school age are in later childhood, in which Gallahue classifies later childhood to the age of 6-10 years. In terms of growth and development in children there is the term locomotor movement and manipulative. Gallauhe (2006: 197) describes the "lokomotion is a fundamental aspect of learning to move effectively and efficiently within one's environment". So locomotor is a fundamental aspect of learning to move effectively and efficiently in one's surroundings.

While the manipulative movement, according to the explanation gallauhe (2006: 218), is "gross motors manipulation involves an individual's relationship to objects and is characterized by giving force to objects and receiving force from them" it means that the manipulation of gross motor skills involve the individual's relationship with the object and characterized by providing power to object and received strength from them. So, manipulative movement is a movement to manipulate objects without change places.

There are several kinds of basic movements, namely: running, climbing, jumping, kicking, throwing, catching, bouncing balls, hitting, swimming. Henceforth I will discuss the running, jumping, jumping and throwing, catching, kicking movement that will be the focus of my discussion.

Instructional Media

According Sadiman et. Al (2007: 6) the word media comes from the Latin is the plural of the word medium. Literally media has the meaning intermediary or introduction. Learning media includes two important elements, namely the elements of equipment or hardware. Software is information or materials itself which will be delivered to students, while the hardware is a facility or equipment used to present the message / instructional materials.

Meanwhile, according to Dwiyogo (2008: 1) "is the instructional media materials / tools, techniques and methods used in teaching and learning activities with the intention that the interaction process of communication between teachers and students can take place accurately and efficiently". Then according Miarso (2007: 458) describes the learning media is anything that is used to deliver the message, and can stimulate the thoughts, feelings, and volition of the study so as to encourage learning intentional.

Based on the explanation above it can be concluded that the learning media is everything used in the learning activities that can stimulate the mind, feelings, interests and concerns of students so that the interaction process communication education between teacher (or media makers) and students can take place in appropriate and empowering. According to Munir (2008: 138) the advantages from the use of instructional media, namely:

1) to provide a deeper understanding of the learning material that is being discussed. 2) can explain the learning material or abstract objects into concrete. 3) helping teachers present learning materials to more easily and quickly so. 4) to attract and arouse the attention, interest, motivation, activity and creativity of students. 5) attractingthe participate of students in the learning process and provide a deep impression to the students. 6) forming attitudes of students, improve the skills (psychomotor).

From the description above of the advantages of the use of learning media concluded that instructional media can assist teachers in presenting the material and can help attract students to the learning material, and be able to motivate the students to follow the learning process so as to provide a deeper understanding of the material that is conveyed.

RESEARCH METHODOLOGY

In the research and development of basic movement models based interactive multimedia for elementary students is a process that aims to develop a model using the method of research and development (Research and Development).

The stepsare taken from the book "Educational Research" by Borg and Gall (1983: 775) consists of ten steps, among others:

(1) Research and information collecting-Includes a review of the literature, class room observations, and preparation of a report of the state of the art (2) Planning (3) Develop a preliminary form of product-Includes preparation of instructional materials, handbooks, and evaluation devices (4) Preliminary field testing (5) Main product-revision Revision of product (6) Main-conducted field testing in 5 to 15 schools with 30 to 100 subjects. (8) Operational field testing (9) Final revision (10) Dissemination and implementation-Report on product at professional meetings and in journals.

Broadly, measures of research and development for the purpose of this research was conducted in three stages: the first is the pre-stage research by conducting preliminary research and design, the second is the development that consists of the manufacture of the product (Sadiman, 2010: 39) and validation third is the implementation of such testing and implementation models.

RESEARCH RESULT

Research development of basic movement-based learning model of interactive multimedia is done in an elementary school with the research subjects were first grade elementary school. Products are developed form of interactive multimedia VCD, manuals and textbooks multimedia use basic movement models. Here are presented the results at every stage of research to produce these products.

Needs Analysis Results

Analysis of product development needs learning model basic movement for elementary school-based Multimedia Interactive conducted with questionnaires and simple interviews to 40 students who are following learning basic movement lesson of Physical Education and Health Sciences, observing the implementation of learning basic movements as well as the review of the literature relevant to the model developed. Needed analysis with questionnaires and interviews are used to recognize the need for development with the response's feel by the student, the learning conditions of the basic movement that has been done, as well as the readiness of teachers in terms of ownership and use of various sources of learning basic movement.

Based on the analysis of data needs basic movement learning model development is the verdict that 100% of students stated up to the task of learning from the teacher. 57.5% participants feel less happy when the following study, it is also supported by the finding that there are 30% of students feel bored when learning takes place. But things are an added value in terms of students the desire of students as much as 100% says they want to do on learning more exciting and 92.5% would like to do a re-learning.

Design and Product Development

The design and product development for the elementary learning basic movement-based interactive multimedia is based on the findings of a needs analysis, observation, interviews and review of the literature relevant to the developed model.The design of products suited to the Competency Standards and Basic Competence used by schools that are suited to the basic theory study of movement and motor development of children. Variations in movement learning model developed by collecting a variety of literature that is interpreted through the logic of researcher. After all materials collected and made drafting storyboards, video and image capture, collate all the ingredients into interactive multimedia, and ends with the limited testing at developers and peers.

The result of the development of learning models for elementary schoolbasic movement-based interactive multimedia is a product in the form of soft file format *.exe* packaged in the form of VCDs. Components learning models for elementary schoolbasic movement-based interactive multimedia includes, text, video, audio, animation and images.

Interactive Multimedia Products

Here are the results of the development of interactive multimedia product after all material processed in one application:

Picture 1. Main Menu Display

On the main menu display, provided five menus include profiles, locomotor, non-locomotor, manipulative, and instructions. In the profile menu will be served on the identity of the developer, the menu locomotor presented various learning models movements non-locomotor, on the menu non-locomotor will be

served a variety of learning models Geran non-locomotor so did the menu manipulative, while the menu instructions presented operating instructions as well as eBook models of practice overall.

Picture 2. Locomotor Basic movement Menu Display

On the menu basic locomotor movements there are 17 models available, to see and study the related models users click on each image or text models.

Picture 3. Non-locomotor Basic movement Display Menu

On the basis of the non-locomotormovement menu there are 8 models available, to see and study the related models users click on each image or text models.

Picture 4. Manipulative Basic movementDisplay Menu

On the basis of the manipulative movement menu there are 22 models available, to see and study the related models users click on each image or text models.

The view above is one example of the learning model non-locomotor on non-locomotor basic movement menus. On the display there are several media components that text, animation, video, and audio. The result of the development of a prototype product of the above, then do limited testing with colleagues to find out if all functions are running properly, whether the design is attractive, as well as how ease of use. Having considered that the product has been smoothly operated, the next step is to test the feasibility of the product both theoretically and practically. Therefore it is in the test the feasibility of this model, the researcher is assisted by two experts motor development, two media experts and two experts teaching physical education, sports and health.

Feasibility Model

The feasibility of the model is done by testing experts to provide assessment and feedback that meet the criteria of decent theoretically and empirically on the products developed. Based on the data and the responses collected from Motor Learning experts, expert teaching physical education and instructional technology experts, there are some parts of the product that needs to be revised. This is done to optimize the benefits of development for teachers and students.

Once declared eligible by experts, researchers further improvement products in accordance with the advice and input of experts. The revised product is then tested on a small group of 10 students and assisted by three observers currently practiced teaching models for responses related to adherence to the model. Results of the test are that the overall smaller models can be implemented

properly, which means the model is appropriate to proceed to the next stage of a great test.

Furthermore, in this great test assisted by an observer to directly observe models developed when practiced, a large group trial is also taking the response data from 40 students associated with the model performed by the students. In the trial as a whole large group can be carried out with good models which means that the model is appropriate to proceed to the next stage.

Effectiveness Model

The following will be presented regarding the processing of data from the pretest and posttest students. In the pre-test ratings can be seen in the table below.

Table 1. Results of the Basic Student Pretest motor skill SDN 4 Campurdarat Tulungagung

No	1	2	3	4	The average total of rough score
Test	Long jump without prefix	Balance	Throwing target	Kicking and stop the ball	
Respondents	Rough score	Rough score	Rough score	Rough score	
40 Students	119,425	16,525	33,9	14,7	184,55

The results of the pretest assessment basic motor skills students gain an average score of 184.55 rough score of the highest score of 324, which means an average score of rough majority of students get low.

While to know the progress of the results of the learning process for the basic movement Elementary School, researchers conducted posttest basic motor skills ofstudents using interactive multimedia. Here are the results of the posttest:

Table 2. Results posttest Basic movement Ability Students SDN 4 Campurdarat Tulungagung

| No	1	2	3	4	Total Rough Score
Test	Long jump without prefix	Balance	Throwing target	Kicking and stop the ball	
Score	Rough score	Rough score	Rough score	Rough score	
Respondents	158,675	29,95	58,925	17,875	265,425

The results of the posttest assessment basic motor skills students gain an average score of 265.425 rough score of the highest score of 324, which means an average score of rough majority of students get high scores.

The next step to obtaining the data pretest and posttest basic motor skills of students, researchers conducted further analysis of differences in pretest and posttest score by finding the difference between the pretest to posttest. As for how to find the difference is performed using the formula *Gain score*. Thus, the contribution will result in the process affects the score of the ability of the posttest. Here are presented the data processing gain score:

Table 3. Results of pretest and posttest scores Gain Ability Students Basic movement SDN 4 Campurdarat Tulungagung

Total number of students	Pretest	Posttest	Gain	Category
Average	184,55	265,43		
The average Gain score			0,59	Medium

Based on the above table showed that the scores earned an average gain of 0.59 which means the ratio between the score of pretest and posttest experience a difference in the medium category. Next is a picture of a bar chart for the score of pretest and posttest.
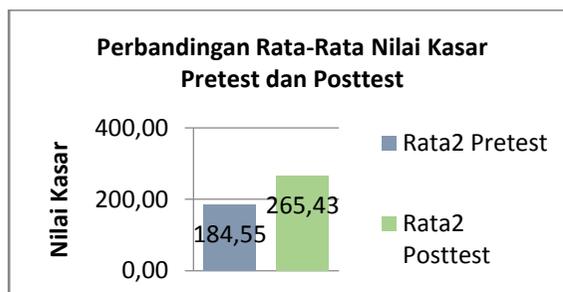
Picture Bar Chart 1. average score pretest and posttest Students

DISCUSSION

This study succeeded in developing models in two form main products. The first is the product variation learning model in the form of textbooks, the second is an interactive multimedia product that is packaged in the form of VCDs. Experts have given criteria are eligible for all products to be tested with some revisions. At the time of product testing, these models deliver effective results with a positive contribution in improving basic motor skills of students as evidenced by the acquisition of gain scores in the category.

This is consistent with research from Rusfriyanti (2013: 166) with the title of the development of basic jump movement learning model for elementary school second grade students. In the study mentioned that learning basic movement skip

using simple tools are needed physical education teacher. Through the development of this model, can help the physical education teachers in teaching students multilateral motions by combining various kinds of tools that can be modified.

Meanwhile Winarto (2015: 167) to conduct research relevant to the above research titled rigid model development for basic movement walking, running and jumping. The study has concluded that the development model of rigid methods can improve basic motor skills and rigid method development model can improve basic motor skills. In addition, the results of the study of motor skills learning programs for physical education is also described that the achievement of learning goals of physical education is influenced by several factors, including the ability of teachers to develop learning programs, learning models and adequate infrastructure.

CONCLUSION

Based on data which is obtained from the results of field testing and discussion of theresults of this study concluded that:

1. With the development of the basic movement model of interactive multimedia based on this elementary students, teachers and students can design and implement an effective, efficient and attractive learning basic movement.

2. With the development of the basic movement model of interactive multimedia based on elementary students was able to increase the basic motor skills of elementary students.

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