THE BALANCE OF LEARNING MODEL DEVELOPMENT AT ELEMENTARY SCHOOL AGE

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Abstract

This research aims to produce a balance learning model for elementary school age. This study used Research & Development (R&D) method. Instrument used in this research is balance a Modified Test of Dynamic Balance applied to collect data in children of elementary school age. Those step are: (1) need analysis, (2) expert justment; (3) limited trial (small group trial); and (4) main trial (field testing). Effectiveness of implementation of balance learning model in children of elementary school age using sample of 70 students by "t-test" techniqe. Pre test and post test were obtained the average result of pre test *of 39,85 and average* post test *68,42. The total of* pre test *and* post test *was 28,57 with deviation standard of 8,89 and* t *value pf 26,88 so the data is declared significant. It means balance model in children at elementary school age is effective to improve elementary school balance. Based on results of research it is concluded that the balance model in children at elementary school age being developed has a significant effectiveness.*

Keywords: Learning, Elementary School Children and Balance.

Fundamental skill is an initial skill in conducting locomotor, non locomotor and manipulative fundamental skills. According to Widiastuti (2011:144) *balance* is an ability to maintain body position correctly at time standing (static balance) or at time conducting dynamic balance. Balance consists of two groups, namely static balance and dynamic balance. Static balance is one's ability to maintain position at a place. While dynamic balance is one's ability to maintain balance during conducting various moves such as walking, jumping, running, and so forth. Balance is a part of physical fitness and taught at schools. Basically the learning in elementary school students must refer to active, creative, innovave, safe, comfortable and enjoyable learning activiies. The descriptionabout the author took an initiative to develop a balance learning model for elementary school students.

Learning has a meaning as a process of behavioral change due to interaction between individuals with their environment. The behavior includes aspects of knowledge, skill, and attitude (Husdarta & Saputra, 2013:2). Behavior can be divided into two groups, observable ones and unobservable one. The observable ones are called behavior performance, while unobservable ones are called behavioral tendency.

While teaching is someting very complex. A teacher plays role does merely to present info to the students only but the teachers also must seek in order the students are willing to learn (Husdarta & Saputra, 2013:4). Since teaching as an intentional effort, then

the teachers must prepare materials to present. According to Philip Vickerman (2007:97) *"Teaching is a reflective process, and requires you to be a dynamic practitioner who is ready to constantly ask critical questions of what, why, where, how, and when teaching, learning and assessment should take place".* Philip Vickerman suggest that teaching is an activity requiring all of us to become practitioners easy to adapt and constantly raise critical questions regarding what, why, where, how and when being learning, and conducting assessments.

Learning and teaching activities means learning. Joel A. Michael and Harold I. Modell (2003:15) suggests that: "Meaningful learning is universally taken to be the goal of all education. This refers to the state in which the new material being learned is related to, or incorporated into, existing mental representations (models) of already learned material. When meaningful learning has occurred, when the learner's mental representations of knowledge are richly interconnected, both retention and retrieval of knowledge are facilitated".

Law No. 20 of 2003 regarding the National Educational System states that learning is interaction process of the students with the teacher and source of learning in a learning environment. Therefore learning activity can be meant as interaction occurred between teacher with student, lecturer with students or teachers with learners. In learning activity at school the teachers as an educator or teacher tasked to provide materials to the students, while the learners play a role as receiver of materials of a teacher.

Learning model can be meant as a plan or pattern used in compiling a curriculum, arranging learning materials and providing instruction to teachers in learning process. Eilias M. Award in Bruce Joyce, et al (2000:3) suggests that " *A models is a representation of real of planned system*Meaning of the statement is model as a representation of a planned system reality.

Model of physical balance learning being developed refers to four specific characteristics and characteristics of model described above. Model of balance learning being developed includes static and dynamic balance learning. Static balance is conducted by standing up at right leg and left leg by using rubber ball media, while deployment of dynamic balance learning is carried out by moving from position A to position B, from A point to B point at the implementation will be assisted with equipments consisting of rubber ball, cone, wood bloc, wood board, lines and small circle.

The learning design is designed in order that children may conduct balance learning with play atmosphere. Play atmosphere at children conducted in physical education process will be very important in growth period of the children. Particularly conducted by pleasure and grow activities conducted spontaneously. A child may conduct the physical activitiy vigorously but naturally dan may enjoy the play enjoyablly (Jerry R, Thomas and Katherin T. Thomas 2008:5). Then all must be developed of 75 variants of balance learning models both static and dynamic for elementary school age.

1. Balance

Balance is inseparable part in fundamental skill ability and a component in physical fitness. The balance is required in order that the move techniques can be conducted well. Balance maintains body pose and position at static balance or while conducting moves (dynamic balance). In more simple term can be described that the

balance is body ability in stable and controlled state (Toho Cholik, 2011:20). According to Duane Knudson (2007:183) the balance is one's ability to control body position in various moves. According to Karron Karter (2007:2) the balance is combination of stable muscle moves to maintain body positions.

Balance is the body ability to maintain pose stability by motor activities that is inseparable of environmental factors and regulation system playing role in balance establishment. The body's aims to maintain balance are: supporting body against gravity and other external factors, to maintain body main center to be in line and balanced with base of support, and stabilizing body parts when other body parts are moving (Muhammad Irfan, 2012:42). The balance can be improved by training the body parts having important role in the balance such as legs and belly and adjusting the body position to need of moves (Duane Knudson, 2007:184) . Balance can also be defined as someone's ability to control nervous organs to maintain body position in static condition (of broad base of support to narrow base of support) and dynamic condition (balance in various moves such as throwing and catching ball). Balance such as muscle strength if we do not training them then the ability will loss (Karron Karter, 2007:17).

Balance can be defined as a motor abiltity to maintain body stability in a wide variety of moves, both in dynamic state and static state. A Static balance and a dynamic balance are components of physical fitness conducted by children and adults. Every one needs highly balance who can maintain stability of body position in static condition and in dynamic condition. The balance is very important in running daily activities.

Components of balance have an important role in one's balance quality beneficial for daily living and to what extent the benefits" (1) preventing injuries, (2) improving move dexterity, (3) move effciency and effectiveness, (4) facilitating to train move techniques."

One's balance may not escape of aspecst that can determine one's balance among them, "(1) body weight, (2) base of support width, (3) high and low center of gravity of the body, stable distable base of support, (4) force exerted on body, (5) coordination of nervous system and senses".

Development of balance learning model refers to principle of balance development among others, "(1) moves by complicating the above determining factors, (2) complicating base of support, (3) high base, small base, closing eyes, and making rotations".

Balance is a complex interaction of sensory system integration (vestibular, visual and somatosensorik including *proprioceptor)* and musculosceletal (muscle, joints, and other soft tissue) modified in brain (motor control, sensory, *basal ganglia, cerebellum,* association area) as a response to changes of internal and external conditions. Also influenced by other factors such as age, motivation, cognition, environment, lethary, influence of drugs and previous experiences.

Influence of previous experices such as having experienced injuries, drugs having side effects harming sensory system and musculosecetal may affect the human balance level, therefore the balanec that represents a fundamental skill must be trained and eveloped to suppor daily activities and sports activities. sehari hari maupun aktivitas olahraga.

a) Sensory Information System

Sensory information system includes visual, vestibules, and somatosensory. Visual Eye is an amazing organ having function as a camera and consists of eye lens, pupil, cornea and sclera (C. Ross and Craig, 2007:250). Vision plays an important role in sensory system. Cratty & Martin in Muhammad Irfan suggest the balance will continuously develop according to age, the eyes will help in order to maintain focus on main point to maintain balance, and as a monitor of body, while conducting statistic and dynamic moves. Vision also a main source of information on environment and where we are, vision plays an important role to identify and modify move distance according to environment where we are. Vision is obtained when the eyes receive lights coming from object received by cornea and reflected to eye lens (Muhammad Irfan, 2012:44). By visual information, then the body may adjust or react toward change of area in activity environment so they provide synergic muscle work to maintain body balance.

Vision is a very important part as a control towad balance which may modify distance toward object and provide signs on head's position and moves as a response on object and environment so the balance is maintaned.

• Vestibular System

Vestibular component also plays an important role in balance ability, head control, and eyeball moves. Sensory receptor of vestibular is in ear. Receptor in vestibular includes canalis semisircularis, utrikulus, as well as *saculus.* This receptor of this sensory system is called *labyrinthine system.* Labyrinthine system detecs head position and accelleration of angle change through *vestibulo-oc-cular reflex,* they control eye moves, particularly when seeing movable objects. They forward message through eight *cranialis* nerves to *nucleus vestibular* located in brain stem. Several *stimulus* do not go to *nucleus vestibular* but to *serebellum, retikular* formation, talamus and *serebri cortex.*

b) Response of Synergic *Postural* Muscles

Response of synergical postural musclus leads to time and distance of muscle group activities required to maintain balance and pose control. Some muscle groups both on upper extremity and lower extremity function to maintain pose while standing upright and modify body balance in various moves. Balance in body in wide variety of positions only will be possible if response of postural muscles work synergically as a reaction in changes of position, base of support, gravity, and alignmen tof body.

Synegerical muscles mean there are right responses (speed and strength) of a muscle toward other muscles in conducting certain move function. It is necessary to undertand that the main issue in control motor system. It is not merely on agonic muscle system actvities or frequently called primeover, however engage components of antagonic muscles and pose stabilizator working synergically and centered (Muhammad Irfan, 2012:46).

c) Muscle Strength

Muscle is the only part of body which is able to result in strength for a work

(Rogger barllet, 2002: 152). Widiastuti (2011:15) suggest that physiologically the muscle strength is the ability of muscle or a group of muscle to conduct one contraction optimally against resistance or load. Muscle strength generally is required in conducting activities. All moves produced are results of muscle tension increase as a motor response.

Muscle strength may be described as ability of muscle to withstand load both in form of external force and internal force. Muscle strength is highly related to neuromuscular system namely to what extent the ability of nervous system to activate muscles to constract. So more muscular fibers activated, then more strength produced by the muscles (Muhammad Irfan, 2012:47). Jeffrey M. Willardson (2014:19) suggest that: *"Muscle strength* is typically defined as maximum force output by a muscle or group of muscles; in this context, *core strength* is defined as spinal muscular control to maintain functional stability". Stenght of muscles of legs, knees and hips must be strong to maintain body balance in the event of external force. The muscle strength is directly related to ability of muscles to resist gravity force and other external forces continously effect body position.

2. Physical Education

Physical education basically is educational process taking advantage of physical activities to result in holistic changes in individual quality, either in physical, metal and emotional term. Physical education stresses on educational aspect physical in nature emphasizing on comprehensive physical education (health, physical fitness, skill of critical thinking), emotional stability, social skills, reasoning and moral acts).

Physical education is a media to encourage development of motor skill, physical skill, knowledge, reasoning, value comprehension (mental attitude-emotional-spiritual-social), familiarization of healthy live pattern coming down to stimulate balance growth and development (Husdarta & Saputra, 2013:22).

Baley in Muarifin (2009:21) suggest that physical education is part of education in general, and having object like other education. Bucher suggests, physical education is an integral part of all educational process, having aim to develop communities physically, mentally, emotionally and socially through physical activities they choice to realize the purposes. Physical education is a structured educational program and physical activities being very important in their material presentation (H.K. Manners and M.E. Carroll, 20004:23).

Samsudin (2013:146) suggests physical education designed to improve physical fitness, developing motor skills, healthy and active life behaviors, sportive attitude, and emotional intelligence. Learning environment set up comprehensively in order to improve growth and development of all areas, physical, psychomotora, cognitive, and affective of the students.

Capel, et al. (2006:9) suggest that :"Physical education It is important to recognize that there are two types of aims: first, those which are unique to physical education, intrinsic to the subject and see physical education as an end in itself; and, second, those which the subject shares with other aspects of the curriculum, are extrinsic to physical education and use the subject as a means to broader educational goals".

Hooper, et al (2007:7) says that "Physical education in the primary school is made up of six areas of activity: games, gymnastic activities, dance, swimming, outdoor and

adventurous activities and athletic activities". So learning of physical education at elementary school has 6 areas the firs is game, exercise, dance, outdoor and adventure activities and athletic activities.

BSNP (Education National Standard Body, 2006:649) notes the scope of subjects such as physical education, sports, and health for Elementary School/MI level are as follows: (1) Games and sport include: traditional sports, game, move exploration, locomotors, non locomotors, and manipulative skills, athletic, baseball, rounders, soccer ball, basket ball, volley ball, tennis, court tennis, badminton, and martial arts, as well as other activities; (2) Activities of development include: mechanic of body pose, component of physical fitness, shape and pose of body and other activities, (3) (3) Exercise activities include: simple dexterity, dexterity with not equipment, dexterity with equipment, and floor gymnastics, as well as other activities; (4) Rhythmic activities include: free move, morning exercise, physical fitness exercise (SKJ), and aerobic exercise, as well other activities; (5) Water activities include: play in water, water safety, safety moving in water, and swimming as well as other activities; (6) Activities outside class include: picnic, orientation, environment familiarization, camping, adventuring, and mountain climbing; (7) Arts include: cultivation of healthy life culture in daily life, particularly related to body care, to be fit, maintaining healthy environment, selecting healthy foods and drinks, preventing and nursing injuries, arranging right rest time and playing active role in First Aid and School Healthy Efforts (UKS), health aspect is a separate aspect, and implicitly categorized in all aspects.

Evridiki, et al (2010:6) suggest that: " There is also evidence that physical activity has positive effects on children's bone health (i.e., stiffness of bones), cardiovascular disease risk factors (i.e., better levels of health-enhancing blood cholesterol, such as high-density lipoprotein [HDL], and lower total cholesterol), psychosocial health, cognitive functioning, and motor skills".

Some defitions of physical education can be concluded that the physical education is a learning process through physical activities designed to increase physical fitness, developing motor skills, improving physical abilities, knowledge, reasoning, comprehension of value (attitude-mental-emotional-spiritual-social) and healthy and active, as well as positive life behaviors. Though physical education offers the children to have fun, its not correct to say the physical education is taught merely in order that the children have joy and fund. If such as if the physical education is only a variation with not weight, and has not educational purpose.

METHOD

In broad term the result of reseach in development is to produce new product which later on will be used in learning activities to facilitate the teachers in presenting learning materials and facilitating teachers to achieve expected learning results. Further phase are phases conducted in the development of model. This research and development of model use phases of modeal development developed by Borg & Gall (1983:775) 1) Research and information collecting, 2) Planning, 3) Develop 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, and 10) Dissemination and implementation.

RESULTS AND DISCUSSION

The result of data collected by the author through interviews and questionnaires to 20 students afterward processed and described. Formulation of reserach was subjected to students conducted on Wednesday, 19 November 2014, where the analysis of need in form of questionnaires at State Elementary School Banyutengah District of Panceng Regency of Gresik East Java Province. The analysis of needs kebutuhan tersebut it was recognized that: (1) the students are happy to learn physical education (2) the students have not obtained balance learning models; (3) the students are happy with balance materials; (4) students are bored with balance learning variation presented; and (5) the students agreed if the balance learning models were developed at elementary school age.

After conducting phase of data collection and balance model draft of elementary school age, further phase is to conduct expert tests where the purpose to achieve namely obtaining feasibility and vaidity of model made with direct assessment of the experts.

Based on expert tests concluded that variation of balance model at elementary school feasible and can be used at 7 variations of learning models at elementary school age by using tools such as balls, cone, hoop, wood block, rocking wood board, ball basket.

Next step after the models were subjected to revision of phase I of experts then continued with limited small test by using reserach subject of 12 student coming from state elementary school Banyutengah District of Panceng Regency of Gresik East Java Province.

Based on evaluation, concluded that: (1) In general all variations can be applied, however they must be be adjusted of easy level to difficult one in order that they children's ability may be improved; and (2) At conducting dynamic balance modeals the children tend to run as fast as possible to complete their task, then the teacher must provide directive in order the children conduct their taks correctly and the purpose of the learning may be achieved.

Further phase after the models were subjected to revision phase II of experts then continued by trying the projects to a large group by using reserach subjecsts of 70 students coming from 3 Elementary Schools,

State Elementary School Banyutengah, State Elementary School Campurejo, State Elementary School, District of Panceng Regency of Gresik East Java Province.

The development of balance learning models produced 75 variations of balance model including:

(1) . Static balance learning model by standing up by one leg, one leg is bent 90° and being relax, it may conducted with one leg straight forward or lega bent backward. The balance model can be conducted by standing on one leg using right leg and left leg. Variation by hand may be strecthed straight straight to right, left sides of the body, by moving them like bird wings to fly. The arms are moved forward and backward, straight upward and downward. Arms are moved interchangelyy straight upward beside the body, bent to sides behind the head, straight forward and backward interchangely. Move hitting froward intercangably. Arms in front of chest and moved opened and closed. The arms in front of chect are bent and moved like duck wings. One of elbows is bent and other elbow is stright and moved interchangebly. Both arms straight upward and swung foward and backward. Arms are straigh beside head and

one arm is straight to head side. Arms are straight beside head and one arm straight to side of body. Hand is straight downward beside the body and moved like lifting a barbel Arms are bent beside the body and straighten upward, arms are straight beside the body and shoulders are moved rotating forward and backward, and moving hand crossing in front of chest.

Figure 1. Learning model of static balance standing up by one leg

(2) Static balance model standing up by one leg holding a ball, one leg is bent 90^{o} and being relax, it may also by leg straight forward or leg bent backward. The balance model can be conducted by standing up by one leg using right leg and left leg it may be conducted individually and in group. Variations of move by arms stretched toward right and left sides of the body by holding a ball. Both arms holding a ball and the hold is put on shoulders. Both arms hold the

ball and the move is strated from right to lef, left to right, up to down, down up, front to back, over heads, over right left sides of body and over legs. The arms hold the ball and the ball is thrown upward then catch again. The ball is dribbled touching the ground and variation can be made in pairs by throwing, catching the ball either of front, up and down.

Figure 3. Statistic balance model standing up by one leg holding a ball

(3) Dynamic balance learning model. The learning model may be conducte by walking straight, zig-zag, forwad and backward and rotating. Walking may be conducted by walking straight, zig-zag, forward and backward and rotating. Walking may be conducted on stright line, above wood block, rocking wood board and passing through cone. The learning also may be carried out by using ball, a hoop and non dangerous tools. With variation the hand is strecthed to right, left sides, straight forward, upward downward and backward. The learning model may also conducted by walking by tiptoe using leg end and back of leg. The dyanmic balance learning may also be conducted using one of legs then move by passing through obstacles in form of cone and cardboard.

Figure 3. Dynamic balance learning model

The following is comparison of results of balance level of children before the treatment and after treatment.

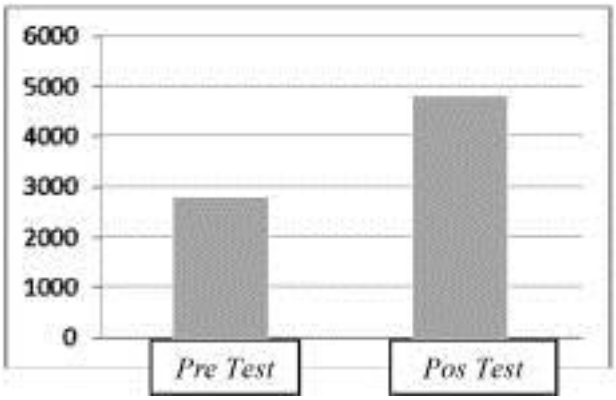

Figure 4. Stem Diagram (Large Group Trial)

Effectiveness in implementation of balance learnign model at Elementary Schoool age using analysis technique using SPSS 22 by "t- test" technique of pre test and post test it is obained average result of pre test *pre test* 39,85 and average *post test* 68,42 so the total pf

pre test and *post test* was 28,57 with deviation standrd of 8,89 and t value of 26,88 so the data is signiciant. Resuts of small group test and large group trials can be concluded that the balance model of Elementary Schools can be used in balance learning at Elementary School age and is feasible and effective to improve children balance.

CONCLUSION

Based on the data obtained results it is concluded that: (1) balance model at Elementary School being developed can be applied into physical education learning and can improve balance; and (2) balance model of Elementary school being developed; data on effectiveness and development result of balance model at Elementary School age were obtained.

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