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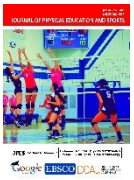

Development of Tools for Forwarding Somersault Skills

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Abstract

The study that has been carried out aims to develop specific learning aids for floor gymnastic forward somersault skills. Other objectives of this study are to be used as a material for study in class discussions, seminars and other discussion forums specifically for studying the problems of learning and training methods for floor gymnastics. The fundamental thing that underlies this research is to enrich science through research in the field of teaching especially floor gymnastics teaching for forwarding somersault skills. This is a practical way to improve student learning outcomes through developing media or forward somersault learning tools. In this study, the aspects taken are learning media, namely the development of a tool or a tool that is useful for facilitating the learning process on floor gymnastics courses. The method in this study uses research and development (R & D) developed by Sukmadinata. This research is expected to produce early products that will be tested for effectiveness in the following year as well as the emergence of appropriate efforts in providing floor gymnastics teaching with the use of tools specifically for forward somersault skills.

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INTRODUCTION

A teacher or lecturer is required to be creative and innovative in using various strategies, methods, and even media or tools in his teaching and learning process. This is so that the learning objectives can be achieved which includes three aspects, namely the cognitive, affective and psychomotor domains, especially in gymnastics learning goals. This is in line with the opinion of Pranata, Soegiyanto, and Rumini (2015) "Physical and health education teachers must always make changes or improvements in carrying out the learning process. These changes or improvements are efforts made to improve learning outcomes that lead to the development of all student potential both cognitive, affective and psychomotor".

The learning process is a business process that is effective in achieving a learning goal. Regarding this learning, Galih Wisnu Murdhani, Sugiharto, and Soekardi (2014) revealed "Learning is one form of interaction that occurs between teachers and students. Educative value interaction is because the learning activities carried out are directed towards achieving certain goals that have been formulated before learning is carried out".

Astuty mentions understanding of learning, Rahayu, and Sugiharto (2012) "The way teachers provide opportunities for students to think so they can know and understand what they are learning."

Achievement of gymnastic learning goals must be based on the quality of the process in the learning itself. According to Resanto, Soegiyanto, and Rahayu, S. (2012) "The quality of learning can be achieved, of course, it must begin with efforts to improve the learning process." One of the efforts to improve the learning process in gymnastics is to develop a learning aid.

According to Werner (2012), gymnastics can be interpreted "as a form of body exercise on the floor or on a tool designed to increase endurance, strength, flexibility, agility, coordination and body control." While the understanding of gymnastics according to Permatasari, Priyono, and Rustiadi (2012) "gymnastics is physical exercise/sport whose movements are chosen and arranged systematically based on certain principles according to specific needs and goals."

According to Prasetya (2016) "Gymnastics consists of 3 types, namely: basic gymnastics, agility exercises and rhythmic exercises". Gymnastics in this study is gymnastics in the scope of education, as stated by Mahendra (2001) "Educational gymnastics is a term applied to gymnastic learning activities whose main goal is directed towards achieving educational goals."

The objectives of gymnastic learning are as follows: (Mahendra, 2007).

1. Improve flexibility, strength, endurance, skills, and efficiency of movement. (Psychomotor domain)
2. Maintain and improve good attitude and movement. (Psychomotor domain)
3. Increase the ability to learn motor skills. (Psychomotor domain)
4. Increase the ability to judge how the motion should be. (Affective domain)
5. Develop psychiatric/mental-spiritual traits (confident, sociable, full of initiative, courage). (Affective domain)
6. Increase knowledge and understanding of factors related to the development and condition of the respiratory, circulatory, and planning bodies. (Cognitive domain)
7. Increasing knowledge and understanding of the importance of fitness. (Cognitive domain)

Besides the learning objectives to be achieved, even a lecturer must be creative and innovative thinking about how learning can be effective and efficient both from a plan in accordance with the opinions of Martin Sudarmono, Rahayu, T., and Rahayu, S. (2013) "Planning is an integral part of effective teaching", developing the content of the lesson, how to motivate, organize tools and the ability to evaluate any deficiencies or errors that occur in the learning process so that the learning outcomes will be achieved well.

Floor gymnastics learning, in which there are many obstacles that are often encountered such as student difficulties in understanding and

learning basic techniques on floor gymnastics numbers, even for basic techniques to complex techniques, lack of courage of students in carrying out motion tasks is very much related to safety factors and giving assistance, as well as the lack of facilities or tools that can assist in carrying out motion both in terms of safety as well as comfort when performing motion tasks. Not every child learns the same way, so a lecturer will not be the same in giving treatment to a group of children or one of the children. Because every child has a different psychological background, different motor skills, some children are initiative, helpful, brave, confident, but otherwise selfish, pessimistic, fearful, lazy, lacking confidence in taking part in floor gymnastics.

The approach that must be taken by a teacher or lecturer to overcome the various obstacles mentioned above, namely giving a positive influence, giving a belief in every movement taken, accompanied by the use of useful tools as a form of help or assistance so that children feel safe and comfortable in doing forward somersault skills, so that motion coordination is carried out while maintaining quality. Considerations in making a tool must also be based on the flexibility of coordinating motion. The opinion of Nurtajudin, Rahayu, and Sulaiman (2015) supports this with good coordination children can integrate various movements into a single pattern of movement effectively."

There are two ways to provide help in gymnastic learning, namely with aids and help from lecturers or colleagues. A tool commonly used in gymnastic learning is by using a belt with a length of 2.5-3 meters, tied to the waist that performs the task of motion by being helped by two friends holding the end of the belt. However, in this case, the course of the movement and the helper's space are limited due to the limited range of the belt length. This becomes the rationale and becomes the motive for making a breakthrough, one of which is by making and developing effective and efficient assistive devices by the needs and characteristics of the material being taught in order to achieve the expected goals and learning outcomes. In line with this notion, Titting, Hidayah, and Pramono (2017) say "a more effective and efficient media is needed for floor gymnastics learning." Media that is more effective and efficient will produce an effective learning process. Regarding the learning process, Susanto (2012) revealed: "A learning process is a form of effort made to improve the quality of learning in order to achieve the expected goals." While effective learning Sukiyandari, and Soegiyanto (2014) reveals that: "Effective learning is by using methods and learning media that are appropriate and by the subject being conveyed by a teacher to students."

Media selection which helps students in the learning process is essential; it is in line with the opinion of Adri, Soegiyanto, Soekardi (2015), namely "Reasons for choosing the media as a solution to problem-solving because the media will provide enormous assistance to the achievement of learning goals and learning media. From sender to recipient so that it can stimulate students' thoughts, feelings, attention, and motivation in following the learning process". With the help of tools that further stimulate the interest of students to take part in gymnastics learning, especially doing forward somersault. Interest in moving is significant to achieve a goal. As expressed by Kusnodo, Sugiharto, and Soegiyanto (2012) "Interest in influencing the achievement of the desired thing." With the interest of students who are aroused to do forward somersault movements, the learning outcomes will also increase.

Development of a good tool according to Avip (2013) is "A good measure of development is: (1) increase students' interest in learning material, (2) can be a solution to overcome difficulties in the learning process, reduce students' boredom in learning, (3) there is an increase in the intensity of physical activity of students in participating in learning ".

Based on the problems stated above, the researchers tried to develop a tool for the forward somersault skills of physical education students of Universitas Siliwangi.

METHODS

According to Gay (1990), development research is an attempt to develop an effective product for school use, and not to test the theory. Whereas according to Borg, and Gall (1983), research and development is a process used to develop and validate educational products. This research follows a cycle step consisting of a study of product research findings to be developed, developing a product based on these findings, conducting a field trial by the background where the product will be used, and revising the results obtained from a field trial. Development research is also defined as a systematic study of designing, developing, and evaluating learning programs, processes and results that must meet the criteria of consistency and effectiveness internally.

Sugiyono (2011) says that research and development methods are research methods used to produce certain products, and test the effectiveness of these products. The main objective of research and development is not to study or formulate theories but to produce an effective product. This product is reviewed through field research in the form of testing the use of products to achieve the belief that the product can be useful.

The research that will be carried out refers to the research and development (R & D) method of Borg, and Gall (2003).

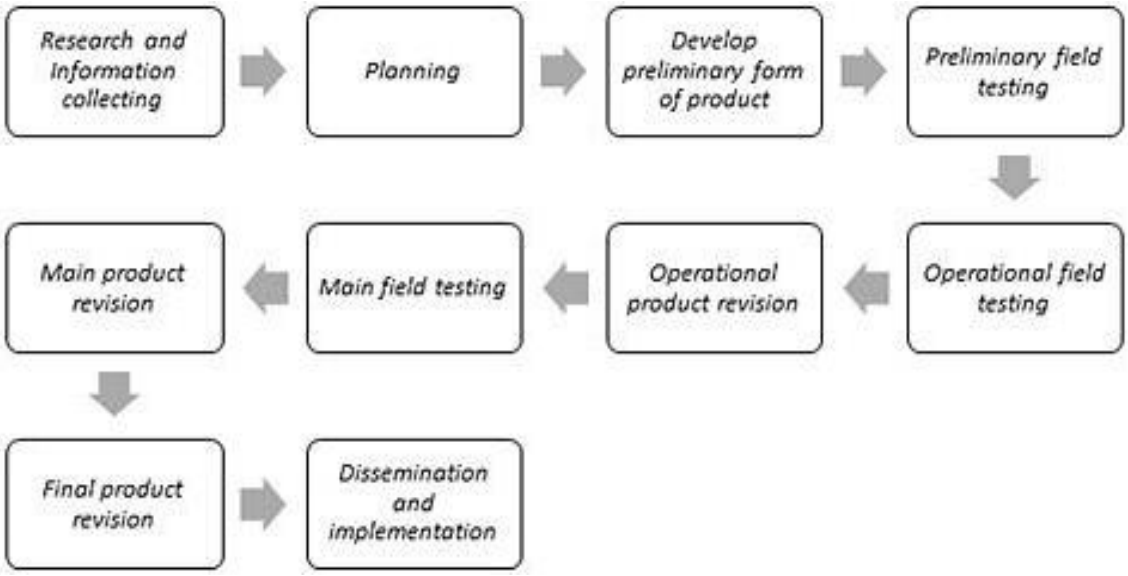

Figure 1. Research Steps

The steps start from:

1. Research and information collection
   In this research and data collection, needs analysis, literature studies, and small-scale research was conducted.
2. Planning
   At the planning stage, identification of the capabilities needed for the conduct of research is carried out, making a formulation of the objectives to be achieved, making a design or research steps, and planning the possibility of testing in a limited scope.
3. Develop a preliminary form of product
   This product development includes the preparation of teaching materials, learning processes, and evaluation instruments.
4. Preliminary field testing
   Preliminary field testing or limited trials were conducted in 1-3 schools using 6-12 subjects. During the trial observations, interviews, and distribution of questionnaires were conducted. The aim is to get a qualitative evaluation of the product being developed.
5. Main product revision
   The main product revision is based on the findings of the initial field trial.

6. Main field testing
   This trial is conducted in 5-15 schools with 30-100 subjects. Quantitative data about the appearance of the teacher, before and after using the model is collected. Data obtained, then evaluated and if possible compared with the control group.
7. Operational product revision
   Improved operational products are based on findings when carrying out the main field trials.
8. Operational field testing
   This trial was conducted in 10-30 schools involving 40-200 subjects. Testing is done through questionnaires, interviews, observations, etc.
9. Final product revision
   Improvements are made based on the findings of the operational field trials.
10. Dissemination and implementation
    Make reports on products at professional meetings and publish them to journals, in collaboration with publishers, monitor distribution to carry out quality control.

The procedure of development research according to Borg, and Gall (1983), can be done more simply involving 5 main steps: (1) analyze the product to be developed, (2) develop the preliminary product, (3) expert validation and revision, (4) small-scale field trials and product revisions, (5) large-scale field trials and final products.

About the effectiveness and efficiency of research, researchers used the steps of research and development that have been developed by Sukmadinata (2005). Outline, the steps of research and development consist of three stages, namely:

1. Preliminary study

This study includes: (a) library studies, (b) field survey, and (c) preparation of the initial product or draft model. Draft models that have been made are then reviewed in a meeting attended by experts; then the draft is refined based on input from experts.

2. Model development

At this stage two steps are carried out: (a) limited trials, (b) extensive trials, (c) test models.

This test is carried out the same as extensive trials. Outreach results refer to dissemination and implementation.

Table 1. Forms of Modification of the Research and Development Model

No	Borg, and Gall (1983)	Sukmadinata (205)
1	Research and information collecting	Preliminary studies Library study Field survey, and initial
2	Planning	product preparation
3	Develop a preliminary form of product	expert validation
4	Preliminary field testing	Model development trials:
5	Main product revision	(a) limited trials and
6	Main field testing	(b) extensive trials
7	Operational product revision	
8	Operational field testing	Test the final product and
9	Final product revision	socialize the results
10	Dissemination and implementation	

The steps of the research conducted by the researchers above are in line with Setiawan, Soekardi, and Rumini (2015) in his research entitled "Development of Learning Media for Multimedia-Based Rhythmic Activities in Physical Education, Sports, and Health in Vocational High School (SMK) Ogan Komering Ulu District (OKU), Sumatra Selatan Province" namely (1) analyze the product; (2) initial product; (3) expert validation; (4) trials; (5) product revision; (6) the final result; and (7) test the effectiveness of the product. What distinguishes it is only in point 7 because researchers plan to test effectiveness in the following year.

The location of the study was conducted at Mandala Building Universitas Siliwangi on students of Physical Education, Health and Recreation.

To find out the level of instrument validity, the effectiveness of the product was tested by using observation, interview, documentation,

and discussion techniques through a trial subject consisting of:

a. Expert/gymnastics expert in the city of Tasikmalaya

Gymnastics expert as one of the parties acting as a validator is the Honorary Council of Persani Pengkot, Tasikmalaya City a is an expert in the field of product content and an expert in the field of product design.

b. Lecturer

The lecturer acts as a validator, namely the lecturer of the Learning Media and Evaluation of Sports Learning at Physical Education Department, Universitas Siliwangi to validate the effectiveness products and instruments of forwarding somersault skills.

The instrument of data collection in this study uses a questionnaire filled in by the validator to validate the product made.

Whether or not a tool or learning media can be seen from the questionnaire data used in the form of a Likert scale. According to Sugiyono (2012) that the Likert Scale is a measurement method used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena.

Data analysis which is used by researchers with the following steps: (1) Collect all observational data in the form of field notes, interview notes, and notes on the results of discussions, (2) Do the first analysis to sort data into categories; the first category is related to product improvement, the second category concerns the product effectiveness and achievement of product objectives, (3) Do a second analysis in each category; The first is related to the analysis carried out to find supporting data for product improvement, the second category of analysis is done to map the effectiveness of the product and the achievement of product objectives, (4) Perform the synthesis process, namely processing the entire data to formulate the final product achievement, and (5) Making conclusions.

RESULTS AND DISCUSSION

The results achieved in this study are the creation of assistive devices made from a range of outdoor tools such as carabiners, webbing, pulleys, steel wire, and hardness that are useful for facilitating the learning process in gymnastics courses.

This created tool is the result of the preparation of the initial product which is then tested on a limited scale. Limited trials were conducted on 12 subjects namely Physical Education students at Universitas Siliwangi assuming the subject came from different schools. In a limited trial, researchers used a webbing device that was placed on the waist of the research subject. After conducting a limited trial, there are entries from media experts and gymnastics experts in webbing installation, namely the efficiency of installation time which affects the duration of learning or training. Feedback it is to find a tool that makes it easier to install security on the waist that previously used webbing. Then the research team discussed to revise the initial product. So that it is determined in the product revision to replace webbing to hardness assuming that hardness is more practical than using webbing, because it does not have to compile windings at the waist.

After revising the product based on the results of a limited trial, the researcher conducted a full trial with improved tools based on input from media experts and gymnastics experts. Extensive trials were conducted on subjects as many as 30 physical education students with different classes from small-scale trial classes. In extensive trials, there is ease and efficiency in the installation of security at the waist that originates using webbing to hardness.

Products that have been made and tested in extensive trials are consulted again later on media experts and gymnastics experts to prepare the final product so that the final product of this gymnastic forward somersault tool is to use steel wire, pulley, Kernmantle rope, and hardness.

CONCLUSION

After doing various kinds of processes in this study, it can be concluded that making a tool in the learning or training process must be tested first to create effective and efficient tools both in use and according to the material requirements taught. In the process of making forward somersault gymnastics aids, the researcher designed the design of a tool that is often used in outbound namely steel wire, hardness, Kernmantle rope, and pulley. The subject who will perform forward somersault is fitted with a hardness tool on his waist, then connected to two Kernmantle ropes through a carabiner that has been connected to a steel wire using a pulley. The subject did the forward somersault accompanied by two people holding the Kernmantle rope with the aim of holding the body weight of the subject while making a landing. When doing forward somersault, the subject landed on the mattress provided. Sports teachers and competitive gymnastics practitioners can do the use of this forward somersault tool. With this tool, the subjects who did forward somersault will be given a sense of security and avoid injury due to technical errors or doubts. The suggestions from the results of this study are that the tools produced from this study can be used by lecturers, sports teachers and competitive gymnastics practitioners in improving the quality of learning and training, especially on forward somersault. Further research is needed regarding the effect of using forward somersault tools, to strengthen the quality of products that have been produced through research conducted by researchers.

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