Development of the Shallow Water Method to Stimulate Basic Swimming Movements for Children aged 5-6 Years

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Abstract

The objectives of this research are (1) to develop a swimming learning method for early childhood (2) to determine the validity of the method in stimulating basic swimming movements, and (3) to determine the results of the effectiveness of using the method for children. The research of the shallow water method development refers to the Borg n Gall model which is synthesized into six steps according to the research objectives. The data technique used is the result of expert validation and effectiveness testing through experiments with paired t-test statistical data analysis. The results of the development of the shallow water method meet the valid criteria with the results of the expert test of swimming material reaching a validity level of 94%, the result of the expert test of swimming learning 76%, and the practitioner test of 98 %. The field trial of the application of the shallow water method, the results of the pre-test, children got a score of 13.36 and the post-test results got a score of 17. Based on the analysis, the resulting t count is 5.823 and t table is 2.160, meaning that t count > t table. So it can be concluded that there is a significant difference in children's basic swimming skills before and after using the shallow water method. The advice given in the development of the shallow water method is that in using the method when swimming activities/learning should look at the condition of the child and recognize the characteristics of the child because the child's achievement in mastering the level of one child is different from another.

I. Introduction

One of the sports activities that can be introduced by children is swimming. Swimming is a physical activity carried out in the water by coordinating the body to move places. Swimming has many benefits for children, such as maintaining and improving fitness in the body, building endurance and muscle strength. (Putra & Andala, 2020:283). Swimming is also used to teach basic movements in the water that can hone children's skills in safety and life defense (Nur et al, 2019:52). For the level of early childhood, the movements that will be taught by children are basic movements that can make a child's body float on water. Water is also used as one way of attracting tourists to the nation (Woldemaryam, 2020). Water is the source of life for humans, as well as all living things in the world (Lubis, 2021). Water as a vital natural resource and controls the needs of all living things needs to be managed properly (Hanif, 2021).

The basic motion of swimming is how to do breathing techniques in water, perform movements that can stimulate floating skills, and glide the body to move places (Solstad & Lemyre, 2014:1-9) . Then another opinion according to Puspitorini, et al, (2017:334) is a basic water activity that needs to be taught and mastered by children. The basic movements in swimming consist of how to enter the body into the water, control the buoyancy of the body in the water, move places by moving the legs, balance the body in water, move the arms, and control breathing. The basic movements of swimming need to be taught in detail and sequentially so that children can master the skills in performing basic swimming movements.

Based on the results of field observations, there were several problems that were found including: (1) the child had not performed breath control movements with proper movements, (2) the child had difficulty positioning his body while floating in the water, and (3) the child had not performed freestyle leg movements. appropriately. From the results of interviews with teachers and swimming coaches, this is caused because children often feel that the bottom of the swimming pool is too deep, causing fear and worry about their bodies sinking.

Based on the results of the observations and interviews above, it can be concluded that in introducing the basic movements of swimming to children, one can use one of the swimming learning methods, namely the Shallow water method . Shallow water method is a method of learning to swim in shallow pools with a depth of approximately 60-80 cm, so that it can provide calm and make it easier for children to control their body balance when in the water. According to Subagyo and Sismadiyanto , (2009:41-54) methods commonly used to improve swimming skills include (1) multi-stroke method, (2) shallow water method, (3) flipper-float method, (4) swimming board method, (5) rope method . Then another opinion according to the International Learning Resource Swimming Program (2012:13) says the shallow water method is a method that uses a shallow swimming pool to learn to swim so that the child's feet can touch the bottom of the pool. According to Costa et al, (2012:211) the depth of the swimming pool can affect a child's development in depth do swimming. Shallow swimming pool is very suitable for children because it can foster a sense of courage.

Based on the statement above, it can be concluded that the shallow water method has a major contribution to children when starting to learn basic swimming movements and techniques. Therefore, researchers are interested in conducting research with the title "Development of the Shallow Water Method to Stimulate Basic Motion".

Swimming for Children Age 5-6 Years" which aims to to develop swimming learning methods for children 5-6 years old to be more fun and to hone basic swimming skills in children.

II. Research Methods

Study conducted to child 5-6 years old with use method study development (Research and Development) (RnD) from Borg n Gall which consists of of 10 steps. Consider from destination research and coverage subject research, procedure study this will uses 6 steps consisting of from do analysis needs, identify aspects , developing initial models, conducting expert tests, conducting trials start and do a trial field (trial end) with use study experiment (Pramono,2019:28-29).

III. Discussion

Study this use procedure performed with more simple apply step the following, includes:

3.1 Analysis Needs (Needs Assessment)

Analysis stage need is stages for gather all information related with the activity process learning and activities swimming children at school and on the spot course swimming. In collection this information, will seen how is the activity process? Learning swimming moment introduce movement in swimming at school, destination learning, and indicators prepared by the teacher regarding movement swimming in learning swimming, as well a number of problems that occur in the field.

Data collection is carried out with do interviews with some of the school's swimming teachers and coach's on-site swimming courses and clubs swimming. In addition to interviews, researchers also conducted observation moment ongoing learning process swimming. From result interview and learning process swimming that has been done, there a number of problems found _ during the learning process swimming for introduce motion swimming: (1) the child has not performed breath control movements with the right movements, (2) the child has difficulty in positioning his body in a balanced manner while floating in the water, and (3) the child has not performed the freestyle leg movement with the right movement.

Knowing the problems above, the researchers conducted an analysis to develop the existing swimming learning methods. The development of this method will be matched with the characteristics and principles of learning from early childhood. The development of the method will be packaged in the form of fun activities so that children can enjoy swimming activities while mastering swimming skills.

3.2 Shallow Water Method Development Stage

The development of the shallow water method was carried out in several stages. Starting with making observations with the swimming pool in the swimming pool. Observation in the swimming pool aims to determine the depth of the pool that is suitable and suitable for use in supporting swimming learning in early childhood.

The implementation of the shallow water method development in this study will be divided into several levels (stages). The stages compiled refer to swimming learning indicators according to Subagyo, 2017:67, namely Water Introduction, Breathing (Breath Control), Bouyancy (Floating), and Foot Movement. The following are the levels (stages) that will be packaged in the development of the shallow water method in this study:

Introduction to Water: At this stage, children will be introduced to the nature and temperature of swimming pool water.

Breathing: At this stage, you will be taught how to control your breath in water.

Bouyancy: At this stage, we will teach how to move the body to float on the surface of the water and make the body move from place to place.

Foot movement: At this stage, we will teach you how to move the right foot so that it can make the body move from place to place.

The shallow water method developed consists of a series of activities arranged at a level in which there are stimulation items. Stimulation items are made as attractive as possible to make it more fun for children and can achieve the desired goals. The level designed in the development of this method is divided into 4 types, including: (1) level 1 introduction of water, which is the stage of introducing the nature and adapting the child's body temperature to the water temperature in the swimming pool, (2) level 2 breathing

(controlling the breath), namely the stage of stimulating children about how the movements are carried out to control breath in the water, (3) level 3 bouyancy (doing gliding movements to balance the body on the water surface), which is the stage of stimulating children about how movements can make the body float on the surface water and make the body move places, and (4) level 4 foot movement, which is the stage of stimulating children about how to move their feet properly so that they can make the body move places.

3.3 Product Development Validation (Expert Trial)

The validity test will be used to determine whether the design of the shallow water method that has been developed is suitable to be used to stimulate basic swimming movements in children aged 5-6 years. From the results of the validity test, revisions will be made in accordance with the criticisms and suggestions from the experts to be the material for improvement and refinement of the shallow water method development product. The validity and revision of the shallow water method are in the form of quantitative and qualitative data. The data will obtain two assessment data, namely validation data and field trial data. Quantitative data was obtained from a Likert scale assessment questionnaire and qualitative data was obtained from the suggestions of the validators.

The following is a presentation of questionnaire assessment analysis data from the validity test by swimming material experts, swimming learning experts, and swimming teachers.

3.4 Swimming Material Expert Validation Results
a. Quantitative Data

Based on calculations made by experts in swimming material, the total reached 94%. If it is matched with the validity criteria, the achievement score is included in the very valid criteria.

b. Qualitative Data

Qualitative data from expert validation of swimming materials regarding the development of the shallow water method include: (1) the sequence of stages is very good and the stimulation item combines games so that it is very interesting for children to start in the learning process of swimming, (2) on each item (level 1) should be more consistent in the sequence of activity descriptions. (3) In order to be more understandable for the learning process, it is better to describe the exposure when packaging method development with books complete with pictures (illustrations). Which aims to make it easier for readers or consumers to learn and apply it.

c. Swimming Learning Expert Validation Results
1. Quantitative Data

Based on calculations made by swimming learning experts, the total reached 76%. If it is matched with the validity criteria, the achievement score is included in the valid criteria.

2. Qualitative Data

Based on the advice of swimming learning experts, the draft of the shallow water method development requires several revisions from the method development and from the preparation of the book packaging on the shallow water method development. Method development, at activity level 1 introduction of water, is more consistent in the sequence of activities. At level 1 the introduction of water should add activities to adapt body temperature to water.

Next is the preparation of book packaging on the development of the shallow water method , it is hoped that some sentence structures are changed to make it easier to understand and provide an overview of foreign terms contained in the draft to make it easier to understand.

d. Swimming Teacher Validation Results

1. Quantitative Data

Based on the calculations made by the swimming teacher regarding the overall achievement of 98%. If it is matched with the validity criteria, the achievement score is included in the very valid criteria.

2. Qualitative Data

Qualitative data from the validation of swimming teachers (practitioners) regarding the product include: (1) Overall it is good, activities with this method are very easy for teachers and children, (2) Maybe you can add stimulation items without buoys at level 4 (if possible).

3. Field Trial Results

Field trials were carried out twice, namely with initial trials and final trials. The effectiveness of the product development in this study was measured using the pre-test stage and the post-test stage through the t-test statistical test which was implemented in 14 children aged 5-6 years. The shallow water method of treatment was carried out for 5 weeks with 10 meetings.

The following is a description of the results of the pre test and post test from the results of trials conducted on children aged 5-6 years.

Table 1. Pre-Test Field Trial Assessment Results

No	Name	1	2	3	4	Amount
1.	Ben	5	5	5	5	20
2.	Lairence	5	5	4	4	18
3.	Vanya	5	5	5	4	19
4.	Evan	5	5	4	4	18
5.	Adiba	5	4	2	2	13
6.	Hanun	4	1	1	1	7
7.	Fina	5	5	3	2	15
8.	Zea	4	2	1	1	8
9.	Irfan	5	4	4	3	16
10.	Aisha	4	3	2	1	10
11.	Arsya	4	4	3	2	13
12.	When	5	4	2	1	12
13.	Dimas	3	1	1	1	6
14.	Tone	5	4	2	1	12
	Amount					**187**
	Average					**13.36**

Table 2. Results of the Post-test Field Trial Assessment

No	Name	1	2	3	4	Amount
1.	Ben	5	5	5	5	20
2.	Lairence	5	5	5	4	19
3.	Vanya	5	5	5	5	20
4.	Evan	5	5	5	4	19
5.	Adiba	5	5	5	4	19

No.	Name						
6.	Hanun	5	3	2	2	12	
7.	Fina	5	5	5	5	20	
8.	Zea	5	3	2	2	12	
9.	Irfan	5	5	4	3	17	
10.	Aisha	5	4	4	4	17	
11.	Arsya	5	5	5	4	19	
12.	When	5	5	4	3	17	
13.	Dimas	5	2	2	1	10	
14.	Tone	5	5	4	3	17	
	Amount					**238**	
	Average					**17**	

Based on the data in tables 1 and 2 show that the average score of the pre test is 13.36 and the average score of the post test is 17. This proves that the average score of the post test is better than the average score of the pre test.

Pre-test and post-test value data will be analyzed by using the Paired Sample T-Test statistical test with a significance level of (0.05) 5%. The analysis technique is used to determine whether there is an influence on the subject of field trials in the study.

Step 1: Make H₀ and Hₐ in Sentence Form

H_a : There is a significant difference in basic movement ability swimming between before and after using the shallow water method .

H_0 : There is no significant difference in basic swimming ability between before and after using the shallow water method .

Step 2: Create H₀ and Hₐ in statistical form.

H_a :

H_0 : =

Step 3 : Determine the normality of the data distribution

Table 3. Results of Normality of Data Distribution

No	Name	Pre-test (x)	Posttest (y)	d	d2
1	Ben	20	20	0	0
2	Lairence	18	19	1	1
3	Vanya	19	20	1	1
4	Evan	18	19	1	1
5	Adiba	13	19	6	36
6	Hanun	7	12	5	25
7	Fina	15	20	5	25
8	Zea	8	12	4	16
9	Irfan	16	17	1	1
10	Aisha	10	17	7	49
11	Arsya	13	19	6	36
12	When	12	17	5	25
13	Dimas	6	10	4	16
14	Tone	12	17	5	25
			Amount	51	257

Obtained:
$$t= \frac{\sum D}{\sqrt{\frac{n(\sum xD^2)-(\sum D)^2}{n-1}}}$$
$$t= \frac{51}{\sqrt{\frac{14(257)-(51)^2}{14-1}}}$$
$$t=5{,}823$$
The result of t arithmetic = 5.823

Step 4 : Test Criteria
a. If < 0.05 and t count > t table then H_0 is rejected it means there is significant difference _ from method shallow water to ability motion base swimming.

a. If < 0.05 and t count < t table then H_0 is accepted it means no there is significant difference _ from method shallow water to ability motion base swimming.

b. The level of significance in the study this using 5% (0.05). Amount subject research on research this a total of 14 people, so the t table found in Pada table distribution of t that level significance of 0.05 (5%) with degrees coefficient (dk = 13) shows value 2.160.

Step 5 : Final Conclusion
H_a : There is a significant difference in basic swimming ability between before and after using the shallow water method . (ACCEPTED).
H_0 : There is no significant difference in basic swimming ability between before and after using the shallow water method . (REJECTED).

Based on the calculation results of the t test, it shows that there is a difference in basic swimming ability between before and after using the shallow water method. The average post test score is 17 and the pre test is 13.36 shows that the average score of the post test is better than the pre test. So it can be concluded that the shallow water method is effectively used to improve mobility basic swimming in children aged 5-6 years.

IV. Conclusion

4.1 Conclusion

Based on the development process and trial process for the shallow water method to stimulate basic swimming movements, it can be described as follows:

The shallow water method developed consists of a series of activities arranged at a level in which there are stimulation items. The levels designed in the development of this method are divided into 4 types, including: (1) level 1 introduction of water, (2) level 2 breathing (controlling the breath), (3) level 3 bouyancy (doing gliding movements to balance the body on the water surface). , and (4) level 4 footwork.

The results of the shallow water method design, then pass validation by experts and assessment responses from teachers to determine the validity of the products that have been developed. The results from the swimming expert were obtained by 94% including in the very valid category, then the results from the swimming learning expert obtained 76% including the valid category, and the assessment of responses from the swimming teacher obtained 98% including the very valid category.

The effectiveness of using the shallow water method to stimulate basic swimming movements can be seen from the difference in the average results of the pre-test and post-test scores. The pre-test gain was 13.36 and the post-test was 17. Then it was calculated by using the t-test statistic test and obtained the t-count > t table or 5.823 >2.160, which means H_a is accepted and H_0 is rejected. So it can be concluded that the shallow water method is effectively used to improve basic swimming skills in children aged 5-6 years.

4.2 Suggestion

The shallow water method is expected to be a reference for teachers and trainers in introducing and stimulating swimming movements to children. There are several suggestions related to the development of shallow water methods to stimulate basic swimming movements as follows:

The shallow water method in stimulating basic movements certainly has advantages and disadvantages. Therefore, in using the method during swimming activities/learning, one should look at the condition of the child and recognize the characteristics of the child. Although the activities with this method have been divided based on levels, the achievement of children in mastering one level with other children is different.

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