



THE IMPLEMENTATION OF PROBLEM BASED LEARNING METHOD TO IMPROVE LEARNING OUTCOMES IN BUTTERFLY SWIMMING

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Abstract. This study aims to determine whether the project-based learning method was effective in improving butterfly swimming learning outcomes. The specific target was to determine whether the project-based learning method was effective in improving butterfly swimming learning outcomes. This study was conducted at the Gelanggang Remaja West Jakarta swimming pool. The method used was the one pretest and post-test group design experimental method. The population of this study was FIK UNJ students who took swimming II, totalling 30 people. The sampling technique was total sampling so that the sample of this study was all students who took swimming course totalling 30 people. The research instrument used was to use a process assessment by looking at the series of basic butterfly stroke technique movements. The analysis technique used the t-test to test the hypothesis. The results showed that the $t\text{-value} = 11.93 > t\text{ table} = 2.51$. This shows that the hypothesis stating that the problem-based learning method is effective in improving butterfly swimming learning outcomes is accepted. Therefore, it is expected that lecturers can apply the problem-based learning method when teaching students to learn to swim.

Keywords: Butterfly stroke, Learning Methods, Learning Outcomes, Problem Based Learning, Swimming,

1. INTRODUCTION

Education was a complex activity that includes various interrelated components to achieve predetermined educational goals [1]. Education was not just teaching or a process of transferring knowledge, values and personality formation [2]. This quality improvement must be carried out at all levels of education, including at universities which will produce a generation that will compete in improving the quality of professional human resources [3]. One of the

universities that supports quality improvement, especially in the field of sports, was the Faculty of Sports Science, Universitas Negeri Jakarta. This faculty has 5 study programs, one of which was Sports Education which has the competence of student output as a Physical Education teacher. In the curriculum of the Sports Education Study Program, swimming was one of the five large groups of practical courses that are part of the learning process. Swimming become one of the curriculum in sport education study program because, swimming was one of materials in physical education in school, namely aquatic [4].

There were four strokes of swimming, namely: backstroke, butterflystroke, breaststroke, and freestyle [5]. One of the swimming strokes that had the highest level of difficulty was the butterfly stroke. Because the butterfly stroke resembles the crawl stroke movement in terms of the arms and legs working perfectly. However, there was a characteristic in the butterfly stroke, namely the arm movements that move together, as well as the leg movements [6]. In the correct butterfly swimming technique, the swimmer remains in a prone position, as flat as possible, and performs movements with the arms simultaneously [7], [8], and this movement is the movement that contributes the most to the driving force [9]. Thus, analyzing and correcting these movements should be prioritized in the Training or learning process. The hand movements should be symmetrical, thus avoiding rotation on the anterior-posterior axis of the body, preventing body misalignment and consequently losing the ideal position for swimming [10].

Therefore, in the learning process, educators are expected to be able to apply appropriate learning methods to facilitate the learning process so that optimal results can be achieved. Without the right learning method, the learning process will not be directed so that the learning objectives that have been set are difficult to achieve optimally, in other words, learning cannot take place effectively and efficiently [11]. One of the learning models that can be applied is the Problem Based Learning (PBL) method. This method provides students with the opportunity to be active in the learning process. The problem based learning method can help lecturers in managing the student-centered learning process [12], [13]. The problem based learning method is a learning method that makes real problems the content for students to learn to think critically and have problem-solving skills to gain knowledge [14], [15].

Based on the researcher's observations during teaching swimming courses, especially butterfly stroke, there are several problems encountered, including: leg movements, hand movements and coordination between leg movements, hand movements and breathing. Thus, it is expected that the application of this problem-based learning method can be the right learning method to help solve problems in butterfly swimming. Because the problem-based learning method has basic characteristics, namely students are required to be active in formulating problems and finding solutions in solving them so that students have their own learning experience [16], [17]. Where the role of the teacher in the learning process provides opportunities and encourages students to be active in solving problems. In the problem based learning method, students in their groups will find out and develop thinking skills through direct learning [18], [19].

Therefore, lecturers must be able to implement learning strategies by providing problem-based learning methods. It is expected that by using problem-based learning methods, it can provide opportunities and encourage students to be active in solving problems and thinking to solve problems through direct learning. Based on these problems, the researcher is interested in conducting research on whether the problem-based learning method is effective in improving butterfly swimming learning outcomes. The title of this research is: Application of Problem-Based Learning Methods to Improve Butterfly Swimming Learning Outcomes

2. METHOD

The purpose of this study was to find answers to research problems, namely whether problem-based learning is effective in improving butterfly swimming learning outcomes. The research method used in this study is an experimental method using a one group pre-posttest design. The population used was 30 students of the Faculty of Sports Science who took swimming II courses. The sample used was 30 people using total sampling. The research instrument used a 50-meter butterfly swimming process assessment sheet by paying attention to the basic butterfly swimming techniques, namely body position, leg movement, hand movement, breathing and coordination of leg-hand-breath movements. The data collection technique was carried out after the sample was given treatment using problem-based learning for 14 meetings according to the lecture schedule. To get answers to the

research problem hypothesis, the statistical analysis used was the t-test with the help of the latest SPSS software.

3. RESULTS AND DISCUSSION

3.1 Result

The following was a description of the research data which provides an overview of the distribution of the research data obtained.

Table 1. Description of Research Result Data

| | | Statistics | |
|----------------|---------|------------|-----------------|
| | | Pretest | Posttest |
| N | Valid | 15 | 15 |
| | Missing | 0 | 0 |
| Mean | | 51.67 | 79.60 |
| Median | | 55.00 | 85.00 |
| Mode | | 55 | 85 ^a |
| Std. Deviation | | 10.293 | 19.093 |
| Variance | | 105.952 | 364.543 |
| Range | | 30 | 76 |
| Minimum | | 35 | 14 |
| Maximum | | 65 | 90 |

a. Multiple modes exist. The smallest value is shown

The following was a distribution of data and a bar chart from the pretest and posttest results of the research.:

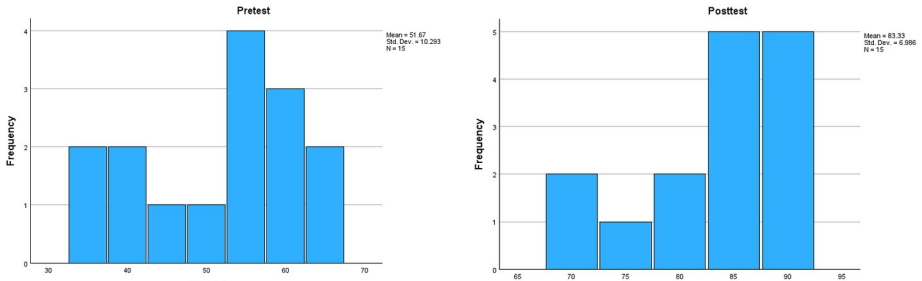
Table 2. Pretest Frequency Distribution

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | 35 | 2 | 13.3 | 13.3 |
| | 40 | 2 | 13.3 | 26.7 |
| | 45 | 1 | 6.7 | 33.3 |
| | 50 | 1 | 6.7 | 40.0 |
| | 55 | 4 | 26.7 | 66.7 |
| | 60 | 3 | 20.0 | 86.7 |
| | 65 | 2 | 13.3 | 100.0 |
| | Total | 15 | 100.0 | 100.0 |

Table 3. Posttest Frequency Distribution

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | 70 | 2 | 13.3 | 13.3 |
| | 75 | 1 | 6.7 | 20.0 |
| | 80 | 2 | 13.3 | 33.3 |
| | 85 | 5 | 33.3 | 66.7 |
| | 90 | 5 | 33.3 | 100.0 |

| | | | |
|-------|----|-------|-------|
| Total | 15 | 100.0 | 100.0 |
|-------|----|-------|-------|



Picture 1. Pretest and posttest Bar Chart

To answer the research problem, it was necessary to conduct a hypothesis test using the t-test. Where the t-test calculation uses the latest SPSS software with a significant level of 95%. Based on the calculation, it was obtained that $t_{count} = 6,895 > t_{table} = 1,701$. These results indicate that the Problem-Based Learning (PBL) learning model is effective in improving butterfly swimming learning outcomes. The following are the results of the t-test calculation:

Table 4. T-test Calculation

| | | Paired Differences | | | | t | df | Significance | |
|------|--------------------|--------------------|-----------------|---|---------|-------|----|--------------|-------------|
| | | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | One-Sided p | Two-Sided p |
| Pair | Pretest – Posttest | Mean | | Lower | Upper | | | | |
| 1 | Pretest – Posttest | 27.933 | 4.051 | -36.623 | -19.244 | - | 14 | <,001 | <,001 |
| | | | | | | 6.895 | | | |

3.2 Discussion

The results of the study showed that the t count value = 6.895 > t table = 1.701, meaning that the PBL learning method is effective in improving butterfly swimming learning outcomes. This shows that the PBL learning method can be applied to the learning process in Physical Education, especially swimming. PBL is a learning method that is full of innovation so that it encourages students to become active learners

[20] and students are also encouraged to take the initiative in building their own knowledge [21].

As educators, of course, we hope that our students are able to achieve optimal learning outcomes. Student learning outcomes are complex entities that are obtained through the learning process. To achieve optimal learning outcomes, it is necessary to find concepts that can stimulate students' critical, systematic, logical and creative thinking skills [22], One of them can use the PBL learning model [23], [24]. The PBL Learning Model is not designed to help educators provide as much information as possible to students, but the PBL model was developed to help students develop thinking skills, problem solving and intellectual skills through their involvement in real experiences or simulations so that students become autonomous and independent learners [25], [26].

The PBL learning model can improve students' abilities and in solving real problems that exist, helping students develop knowledge and facilitating the mastery of concepts to solve problems in the real world. The results of this study were in accordance with research conducted by Sugihartono [27] with research results showing that the PBL model in learning poco-poco rhythmic gymnastics is able to provide strong stimulation for independent learning and solving problems in groups effectively so that mastery of poco-poco sports movement skills can achieve completion of up to 87%.

Apart from that, there is also research conducted by Dupri et al [28], The results of the study showed that the PBL learning model was able to improve students' cooperation skills and also improve learning outcomes significantly. Therefore, by applying the PBL model to swimming lectures, it is hoped that the learning process can run by making students think critically and develop their abilities in solving problems that occur in the learning process so as to achieve optimal butterfly swimming learning outcomes. Thus, it is hoped that educators can further develop the PBL method in the Physical Education learning process so that students can further develop their thinking skills and solve problems independently.

4. CONCLUSION

The results of the research and discussion above can be concluded that the problem-based learning method is effective in improving the learning outcomes of butterfly swimming in students of the Faculty of

Sport Sciences, Jakarta State University. Thus, it is expected that teachers and lecturers can apply the problem-based learning method to the swimming learning process because this method is a learning method that uses real problems that are not structured and open as a context for students to develop problem-solving and critical thinking skills and at the same time build new knowledge. The suggestion for further research that can be done is to conduct research for team branches or conduct research by comparing the problem-based learning method with other learning methods.

ACKNOWLEDGEMENTS

The researcher would like to thank the students of the Faculty of Sport Science, Jakarta State University who have been willing to be research samples. The researcher would also like to thank the Faculty of Sport Science, Jakarta State University who has funded this research.

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