The impact of freestyle swimming based on project based learning

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Abstract

Aim to test the impact of project-based learning freestyle swimming on improving students' freestyle swimming ability. This research used the Pre-Experimental designs method with One-Group Pretest-Posttest design. The sampling technique used random sampling on the population of students who were taking swimming courses so that 16 samples were selected. The research location was one of the universities in Makassar City. Data analysis techniques for hypothesis testing used N-Gain Score (%). Result: The average N Gain Score (%) was 56% in the moderate or quite effective category. This shows that freestyle swimming based on project based learning has proven to be effective significantly in improving students' freestyle swimming abilities.

Keywords: freestyle, improvement, project based learning, swimming

Authors' Contribution: A – Conceptualization; B – Methodology; C – Software; D – Validation; E - Formal analysis; F – Investigation; G – Resources; H - Data Curation; I - Writing - Original Draft; J - Writing - Review & Editing; K – Visualization; L – Supervision; M - Project administration; N - Funding acquisition

INTRODUCTION

Presently, learning models that are considered new and renewable must denote a student-centered learning approach. Learning using teacher centered learning makes students less active and is considered inadequate for the current era of knowledge (Amir, 2016). Nevertheless, conditions in the field show that the concept of teacher centered learning is still dominantly used, including in universities. One solution to address this case is through Project Based Learning (PjBL). PjBL is a learning approach that is built to provide challenges to students related to daily life to be solved in groups (Goodman & Stivers, 2010). PjBL is a learning approach or learning model that engage students having an independent, creative and innovative learning spirit and applying it in a real product (Mutawally, 2021). PjBL comprises to determine learning materials by selecting real problems, compiling a list of students' wishes so that the learning process is enjoyable, designing problem presentations to be able to guide students, designing problem presentations to be able to guide students, determining time allocation and learning schedules, organizing groups learning, designing learning resources, designing the learning environment, and designing the format for assessing learning processes and outcomes (Murniarti, 2017).

However, the implementation of student centered learning is still less optimal if it only involves students up to the learning stage and the assessment process still depends on the

teachers. For this reason, authors propose implementation of peer assessment activities in their learning as a novelty. Peer assessment gives responsibility to each student to analyze, monitor and evaluate both the learning process and results of their peers (Adawiyah, 2023; Zhang & Hwang, 2023). The learning that will implement PjBL with peer assessment is the Swimming Course on Freestyle Swimming material. The choice of swimming takes into account the urgency that occurs in the field, generally private and state universities have limited swimming pools, so that the individual learning process does not go well. Through PjBL, students can explore learning independently amidst existing limitations. For this reason, the hypothesis states "There is a significant influence on students' freestyle swimming ability through freestyle swimming learning based on project based learning".

METHOD

This research used the Pre-Experimental Designs method with One-group Pretest-posttest design. The research location was one of the universities in Makassar City. The sampling technique used random sampling in which the population of students were taking swimming courses so that 16 samples were selected. The test instruments were assessment criteria used in universities conducting research namely Body Position, Leg Movements, Arm Movements, Breathing, and Movement Coordination. The data analysis technique for hypothesis testing used N-Gain Score (%). Before testing the hypothesis, a normality and homogeneity test was firstly analyzed to obtain validity data. Normalized gain or N-Gain Score can be calculated and is guided by the following formula:

$$N - Gain = \frac{Posttest\ score - Pretest\ score}{Ideal\ score - Pretest\ Score}$$

The categorization of the N-Gain Score can be determined based on the N-Gain score or in the form of % (percent). The categories for obtaining N-Gain Score in the form of % (percent) can refer to the following table:

Tabel 1. Significancy Category of N-*Gain Score* (%)

Gain Score	Interpretasi
< 40%	No effective
40% - 55%	less effective
56% - 75%	enough effective
76 >	effective

Source: (Sundayana, 2018)

RESULT

The normality test used in this research was the Shapiro Wilk test. The result of the normality test on experimental class can be seen on table 2.

Tabel 2 Analysis of Normality-Test Freestyle Swimming Ability

Class	*Statistic*	df	Significant
Experimental Class	0,158	16	0,084

Based on table 2, it can be seen that the experimental class was categorized as significance of 0.084 in which the data was > 0.05 so that the data was in the normal category, so it can be continued with the homogeneity test as a requirement for hypothesis testing. This test is a requirement for parametric tests. Following was the result of the Homogeneity Test.

Tabel 3 Analysis of Homogeneity-Test Freestyle Swimming Ability

Levene Statistic	Sig.
1,502	0,083

Based on table 3, it can be described that the significance level of the homogeneity test was 0.083. The results of this analysis meant that the data had similar or homogeneous variability, so that the data can be tested for hypotheses. Learning outcome data is obtained through the N-Gain test to determine the level of learning effectiveness. The following were the results of data analysis in a limited test.

Tabel 4. The Result of Freestyle Swimming Ability

No	Name	*Pretest*	*Postest*	*Postest-Pretest*	Ideal Score - *Pretest*	N-*Gain Score*	N-*Gain Score* (%)
1	AMT	55,00	80,00	25,00	45,00	0,56	56%
2	AR	51,00	80,00	29,00	49,00	0,59	59%
3	AL	55,00	76,00	21,00	45,00	0,47	47%
4	GP	57,00	87,00	30,00	43,00	0,70	70%
5	RA	57,00	87,00	30,00	43,00	0,70	70%
6	MTA	59,00	80,00	21,00	41,00	0,51	51%
7	MAA	55,00	81,00	26,00	45,00	0,58	58%

No	Name	*Pretest*	*Postest*	*Postest-Pretest*	**Ideal Score - Pretest**	**N-*Gain Score***	**N-*Gain Score* (%)**
8	KT	54,00	77,00	23,00	46,00	0,50	50%
9	SA	57,00	80,00	23,00	43,00	0,53	53%
10	SUA	56,00	80,00	24,00	44,00	0,55	55%
11	BK	52,00	77,00	25,00	48,00	0,52	52%
12	MUA	57,00	80,00	23,00	43,00	0,53	53%
13	SUL	51,00	76,00	25,00	49,00	0,51	51%
14	APD	51,00	76,00	25,00	49,00	0,51	51%
15	MMA	52,00	80,00	28,00	48,00	0,58	58%
16	MAN	54,00	80,00	26,00	46,00	0,57	57%
Mean Score		**54,56**	**79,81**	**25,25**	**45,44**	**0,56**	**56%**

Based on table 1, the mean score obtained for the N Gain Score (%) was 56% in which it was in moderate or quite effective category. This shows that freestyle swimming learning based on project based learning has proven to be significantly effective in improving students' freestyle swimming abilities

DISCUSSION

The result of research shows that freestyle swimming learning based on project based learning has proven to be significantly effective in improving students' freestyle swimming ability. The result of research are in line with previous research which also used PjBL in the physical education and sports learning process; Improving students' reading and numeracy skills through learning about physical education and health based on PjBL (Hakim et al., 2023). Development of PjBL-based learning tools for football material (Ramadhan et al., 2020; Hadiana et al., 2022). Recognizing the application of the PjBL method in Physical Education in implementing the Social Distancing Pandemic Covid-19 (Hidayat, 2021). Implementation of the PjBL model in learning volleyball underpass (Raaiyatini & Arifin, 2023). Optimizing gymnastics learning through PjBL during limited face-to-face meetings (Prasetyo & Basuki, 2022). Increasing reading interest and research proposal writing skills for PjBL-based Physical Education Study Program students (Sutisyana et al., 2022). Increasing the creativity of physical education students in developing PjBL-based Sepak Takraw learning materials (Nopiyanto et al., 2021). Improving the ability to organize sports competitions in the wrestling course for physical education students in the 5th semester of 2021 using the PjBL model (Bafadal & Haetami, 2021). Producing traditional sports learning modules based on PjBL (Ali et al., 2020).

The novelty that we found was that the use of peer assessment can run well and there are no obstacles or internal conflicts that occur during learning, both within groups and between groups. The authors predict that the level of student maturity helps this process to be positive. Obviously, this research still needs a lot of improvements and significant input, especially regarding several existing shortcomings. The small number of samples used could be a distress for further research by using a larger sample. We also really recommend and are interested in the use of peer assessment, considering that this research uses a sample of students who can be classified as adults. For this reason, it is important for further research to use a much younger samples, and see whether peer assessment is able to continue running optimally or not. The results of this research can also be used as a reference for teachers or lecturers, especially for universities that use of PjBL-based learning with peer assessment and especially for physical education and sports learning. As people know that learning activities are implemented based on movement demonstrations for students and teaching staff as learning center.

CONCLUSIONS

Freestyle swimming based on project based learning has proven to be significantly effective on improving students' freestyle swimming ability. The use of peer assessment can run well and there are no obstacles or internal conflicts that occur during learning, both within groups and between groups. The authors predict that the level of student maturity helps this process to be positive.

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