



The Effectiveness Of The Project-Based Hybrid Learning Model On The Practical Learning Outcomes Of Physical Education Students Of Health And Recreation FIKK UNM

Hasmyati¹, Nur Indah Atifah Anwar², Alimin Hamzah³

^{1,2,3}Faculty of Sports and Health Sciences, Makassar State University, Indonesia

Email: hasmyati@unm.ac.id

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ABSTRACT

This study aims to determine the effectiveness of the Project-Based Hybrid Learning learning model on the practical learning outcomes of students of the Physical Education, Health, and Recreation Study Program, Faculty of Sports and Health Sciences, State University of Makassar (PJKR FIKK UNM). This study uses a quantitative approach with a quasi-experimental method and a pretest-posttest nonequivalent control group design. The study involves an experimental group that applies the Project-Based Hybrid Learning model and a control group that uses a conventional learning model. Data collection was carried out through observation and questionnaires before and after treatment. Data was analyzed using statistical tests to compare learning outcomes before and after treatment as well as differences in outcomes between the two groups. The results showed that the average pre-test score of the experimental group was 70.2, while the control group was 69.8, with a significance value ($p = 0.462$). After treatment, the average post-test score of the experimental group increased to 85.4, while the control group reached 75.1. The increase in score in the experimental group was 15.2 points, higher than that of the control group of 5.3 points. The results of hypothesis testing in the experimental group showed a value of ($t = 6.543$) with ($p < 0.001$). These findings show that the Project-Based Hybrid Learning model has the potential to be an effective learning alternative to improve the practical learning outcomes of PJKR FIKK UNM students compared to the conventional learning model.

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Corresponding Author:

Hasmyati

Faculty of Sports and Health Sciences, Makassar State University, Indonesia

Email: hasmyati@unm.ac.id

1. INTRODUCTION

The development of information and communication technology has brought changes in various fields, including education. The use of technology in education is not only related to the delivery of materials, but also includes the design, development, utilization, management, and assessment of learning. Education in the 21st century requires the integration of knowledge, skills, attitudes, and mastery of information and communication technology. In the context of higher education, the achievement of student learning outcomes in the cognitive, affective, and skill realms is an important part of the development of quality human resources (Mustafa & Dwiyo, 2020; Salmia & Yusri, 2021; Pratiwi & Hayati, 2021).

One of the problems found in higher education is related to learning outcomes in practical courses. Based on initial observations in this study, students still face obstacles in developing practical knowledge and skills optimally. Students have limitations in understanding the material during online learning and lack opportunities to practice outside of lectures. This condition is a concern because student learning outcomes are also related to the suitability of learning models and the use of learning media. Darni et al. (2018) explain that there is a relationship between learning outcomes problems and students' opportunities to develop



knowledge and practice. In addition, the *teacher-centered* learning process limits students' opportunities to actively participate. In fact, learning in higher education needs to provide space for lecturers and students to build a *student-centered learning* environment (Fadhilatunisa et al., 2020).

These problems show the need to implement a learning model that is in accordance with the characteristics of practical courses. One of the models that can be applied is *Project-Based Hybrid Learning* (PBHL), which is project-based learning combined with face-to-face and online learning. This model provides opportunities for students to work on projects, develop skills independently, and utilize technology in the learning process. Through project-based learning, students are involved in activities that encourage problem solving, knowledge development, and product creation based on learning experiences. Fauzia and Kelana (2020) explained that *Project-Based Learning* provides opportunities for students to build knowledge independently through meaningful activities that produce real products. Meanwhile, *hybrid* learning combines face-to-face learning with technology-based learning so that the learning process can take place more flexibly (Hameed et al., 2020; Wardani et al., 2018).

The application of PBHL in practical courses has relevance to the needs of students to develop knowledge and skills through activities that can be carried out inside and outside lectures. Lecturers can provide projects in the form of making learning videos or other practical assignments, while the use of online learning allows the process of working on and monitoring learning activities to be carried out more flexibly. Research by Nopiyanto et al. (2021) discusses the application of *project-based blended learning* in increasing student creativity through the creation of sepak takraw learning videos. Suwiwa's research (2021) also examines the effectiveness of project-based learning in *blended learning* settings to improve students' knowledge and skills in pencak silat. These two studies are the basis for considering applying a project-based learning model combined with hybrid learning in practical courses in the field of physical education.

Based on this description, this study focuses on the effectiveness of the *Project-Based Hybrid Learning model* on the practical learning outcomes of students of the Physical Education, Health, and Recreation Study Program, Faculty of Sports and Health Sciences, State University of Makassar (PJKR FIKK UNM). The research was conducted to find out whether the application of the model can provide better learning outcomes compared to conventional learning models. The test was carried out through a comparison of learning outcomes before and after treatment in the experimental group and the control group. The results of the study are expected to be considered for lecturers in choosing the appropriate learning strategy for practical courses and provide information about the application of *Project-Based Hybrid Learning* in physical education learning.

2. RESEARCH METHODS

This study used a quasi-experimental method with a *pretest-posttest nonequivalent control group design*. This design involved two groups, namely the experimental group that was given treatment in the form of a *Project-Based Hybrid Learning* learning model and a control group that used a conventional learning model. Both groups underwent a *pre-test* measurement before treatment and a *post-test* measurement after treatment. The comparison of the measurement results was used to determine changes in students' practical learning outcomes and compare learning outcomes between the experimental group and the control group.

The research was carried out on students of the Physical Education, Health, and Recreation Study Program, Faculty of Sports and Health Sciences, State University of Makassar (PJKR FIKK UNM). The research lasted for five months, namely January to May 2024. The research population was stated to be 40 students in one class, while the number of participants recruited in the participant section was 50 students who took practical courses and were willing to take part in a series of research. Participation was carried out on the basis of the willingness of students after obtaining information and explanations about the research. Participants were also given the right to withdraw their participation in the research.

Data collection was carried out using questionnaires that were filled out before and after treatment. Before data collection, participants were asked to fill out a questionnaire containing information about the identity and characteristics of participants in accordance with the research criteria. Participants who met the



criteria were then asked to give consent after obtaining an explanation of the research (*informed consent*). The data from the measurement results before and after the treatment was then used to assess changes in student practice learning outcomes in the experimental group and the control group.

Data analysis was carried out using the *Statistical Package for the Social Sciences* (SPSS) program with a significance level of 5% ($\alpha = 0.05$). The test began with the Shapiro–Wilk normality test to determine the distribution of the data, followed by the Levene homogeneity test to determine the similarity of variance between groups. Hypothesis testing was carried out using a *paired-samples t-test* to test the difference in measurement results before and after treatment in the same group if the parametric assumptions were met. If the data did not meet the normal distribution assumptions, the Wilcoxon test was a nonparametric alternative. Furthermore, the *one-way analysis of variance* (ANOVA) test was used to compare the average group on data that met parametric assumptions and the Kruskal–Wallis test as a nonparametric alternative. The results of the analysis were used to assess the effectiveness of the *Project-Based Hybrid Learning* model on students' practical learning outcomes compared to conventional learning models

3. RESEARCH RESULTS

Description of Research Data

This study aims to determine the effectiveness of the Project-Based Hybrid Learning learning model on the practical learning outcomes of students of the Physical Education, Health, and Recreation Study Program, Faculty of Sports and Health Sciences, State University of Makassar (PJKR FIKK UNM). There were 50 participants who were divided into two groups, namely the experimental group that obtained learning using the Project-Based Hybrid Learning model and the control group that participated in conventional learning. Each group consisted of 25 students. The data on learning outcomes was collected through pre- and post-treatment measurements (pre-test and post-test).

Pre-test and Post-test Measurement Results

The results of the initial measurements showed that the average pre-test score of the experimental group was 70.2, while the control group obtained an average score of 69.8. The average difference between the two groups before treatment was 0.4 points. The results of the t-test showed a significance value of $p = 0.462$, so there was no significant difference between the two groups in the initial measurement.

After the treatment was given, the average post-test score of the experimental group increased to 85.4, while the control group reached 75.1. The average difference in post-test scores of the two groups was 10.3 points. The results of the t-test showed that the difference in learning outcomes after treatment was statistically significant with a p value of < 0.05 .

Table 1. Average Pre-test and Post-test Scores of the Experimental and Control Groups

Groups	Pre-test	Post-test	Improvement
Experiential (PBHL)	70,2	85,4	15,2
Control (conventional)	69,8	75,1	5,3

Normality and Homogeneity Test Results

Based on the results of the study, normality testing using Shapiro–Wilk showed that the data had a significance value greater than 0.05 ($p > 0.05$). These results were stated to meet the assumption of normality. Furthermore, homogeneity testing using the Levene test also showed a significance value greater than 0.05 ($p > 0.05$), so that the variance of the data was declared homogeneous.

Table 2. Summary of Statistical Assumption Test Results

Testing	Method	Results
Normality	Shapiro–Wilk	$p > 0.05$; data is declared normal
Homogenites	Living	$p > 0.05$; variance is expressed homogeneous

Hypothesis Testing Results

Hypothesis testing in the study was carried out to determine the difference in learning outcomes before and after the application of the Project-Based Hybrid Learning model. The results of the paired t-test showed



a statistical value of $t = 6.543$ with a significance value of $p < 0.001$. These results showed a significant difference between the results of the pre- and post-treatment measurements in the experimental group.

In addition, there was a significant difference in post-test results between the experimental group and the control group, with a significance value of $p < 0.05$. However, the statistical value of the test and the value of more detailed significance for the comparison between groups were not included in the section.

Table 3. Summary of Hypothesis Testing Results

Analysis	Statistics	Remarks
Paired t-test experimental group	$t = 6.543$; $p < 0.001$	Significant differences before and after treatment
Post-test comparison between groups	$p < 0.05$	The difference is stated to be significant; detailed statistics are not included

Results of Score Improvement Analysis (Gain Score)

The analysis of the score increase was carried out by calculating the difference between the average post-test and pre-test in each group. The experimental group increased from 70.2 to 85.4, resulting in an increase of 15.2 points. Meanwhile, the control group increased from 69.8 to 75.1, with an increase of 5.3 points.

Based on these calculations, the average increase in the score of the experimental group was greater than that of the control group, with a difference of 9.9 points. This result illustrates the difference in the change in learning outcome scores between students who participated in Project-Based Hybrid Learning and students who participated in conventional learning.

4. RESEARCH DISCUSSION

The results showed that the *Project-Based Hybrid Learning* (PBHL) model provided higher practical learning outcomes compared to the conventional learning model in students of the Physical Education, Health, and Recreation Study Program, FIKK UNM. This can be seen from the average *post-test* score of the experimental group of 85.4, while the control group obtained an average of 75.1. Before the treatment, the two groups had a relatively close average score, namely 70.2 in the experimental group and 69.8 in the control group, with a significance value of 0.462. After treatment, the experimental group showed a greater improvement in learning outcomes. This difference illustrates that the application of PBHL is related to the achievement of better practical learning outcomes in the context of this study.

The increase in learning outcomes was also seen from the *gain score analysis*. The experimental group experienced an increase of 15.2 points, while the control group increased by 5.3 points. The difference in improvement between the two groups reached 9.9 points. These results show that the change in scores in students who participated in PBHL learning was greater than in students who participated in conventional learning. In this study, this difference is the main finding in assessing the effectiveness of the applied learning model. The results of the *paired t-test* test in the experimental group also showed a value of ($t = 6.543$) with ($p < 0.001$), which indicates a significant difference between the results of the measurement before and after treatment.

The results of the research are in line with Hmelo-Silver's (2004) discussion of problem-based learning that encourages students to develop critical thinking and problem-solving skills through the application of knowledge. Students' involvement in project-based activities provides an opportunity to use the knowledge that has been learned in completing assignments. This approach is relevant to practical courses that require students to understand the material as well as apply it in real activities. With a project as part of the learning process, students have the opportunity to be actively involved in learning activities and develop skills in accordance with the lecture material.

The advantage of PBHL in this study is also related to the combination of face-to-face and online learning. The combination provides flexibility for students to access materials and carry out learning activities. Garrison and Kanuka (2004) explained that *blended learning* has the potential to change the learning experience in higher education through a combination of face-to-face learning and technology-based learning. In the context of this study, learning flexibility is one of the characteristics that supports the



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application of PBHL in practical courses. Students not only participate in learning activities while in class, but also have the opportunity to continue learning activities through the project activities provided.

The improvement in learning outcomes in the experimental group can also be attributed to the characteristics of project-based learning that places students as active actors in the learning process. Barrows (1986) and Savery (2006), as well as the results of the study, discuss a learning approach that emphasizes the involvement of students in the process of problem solving and knowledge application. In the implementation of practical learning, active involvement provides space for students to learn the material through activities that require the application of skills. The difference in score improvement between the experimental group and the control group shows that the learning model applied to the experimental group results in greater score changes during the research period.

In addition to active involvement, flexibility and learning independence are aspects discussed in the implementation of PBHL. Allen et al. (2007) explain the development of *blended* learning in education, while Zimmerman (2002) discusses the importance of the ability to manage the learning process independently. In the PBHL model, students are given the responsibility to complete projects and organize their learning activities according to the assigned tasks. This characteristic is relevant to practical learning because mastery of skills requires the opportunity to learn and apply the material. However, this study has not presented a separate measurement of learning motivation or independence. Therefore, these two aspects can be understood as characteristics of the learning model, not as variables that have been proven to increase directly based on the results of this study's measurements.

The findings of the study are also relevant to the discussion of Thomas (2000) on project-based learning and Dewey (1938) on the importance of experience in education. Learning that provides opportunities for students to be involved in practical activities allows lecture material to be learned through direct experience. In the context of PJKR FIKK UNM, the PBHL model is used to support learning that combines material mastery and practical skill development. The results of the study that show a greater increase in scores in the experimental group give an idea that this approach can be an alternative in the implementation of practical courses. However, these results are still limited to the context of the participants and the implementation of the research, so its application to other fields or groups of students requires further testing.

Overall, the results of the study show that the group that participated in *Project-Based Hybrid Learning* obtained a greater increase in practical learning outcomes than the group that participated in conventional learning. These findings support the use of PBHL as an alternative learning model in practical courses in higher education, especially in the PJKR FIKK UNM study program. The application of this model can be considered in the development of learning that combines face-to-face activities, technology utilization, and project completion. Further research is still needed to test its application to different courses, student characteristics, and learning periods.

CONCLUSION

Based on the results of the study, the *Project-Based Hybrid Learning* (PBHL) model showed better results compared to the conventional learning model in improving the practical learning outcomes of students of the Physical Education, Health, and Recreation Study Program, FIKK UNM. The average *post-test* score of the experimental group reached 85.4, while the control group obtained 75.1. The increase in score in the experimental group was 15.2 points, higher than the control group which increased by 5.3 points. The results of statistical testing also showed a significant difference between the results of measurements before and after the application of PBHL in the experimental group. These findings show that PBHL can be an alternative learning model to support the improvement of students' practical learning outcomes through a combination of face-to-face learning, online learning, and project-based activities. However, the application of this model to different courses and student characteristics still requires further research to determine the consistency of its effectiveness.



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