COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 17, Number 3, 2025 ‖ P.3260-3268

The Effect of The Problem-Based Learning (PBL) Method On Interest And Learning Outcomes Of Basic Ball Techniques With Facility Deficiency At Wiraguna Limbangan Junior High School

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ABSTRACT

This study investigated the impact of Problem-Based Learning (PBL) on students' interest and learning outcomes in basic ball techniques at SMP Wiraguna Limbangan, despite facility deficiencies. Using a quasi-experimental design with static group comparisons, the study involved 30 students in grades VIII and IX selected through purposive sampling. Data were collected using an interest questionnaire and a learning outcome test, analyzed through descriptive statistics, normality test (Shapiro-Wilk), homogeneity test (Levene), and t-test. The results showed an average increase in interest scores of 3.16% (from 91.7 to 94.6), with significant increases in indicators such as interest in the material (4.48%) and active engagement (4.46%). Learning outcomes also improved significantly (Sig. = 0.000), demonstrating the effectiveness of PBL in encouraging critical thinking, collaboration, and creativity despite limited facilities.

ARTICLE HISTORY
Received: 2025/10/24
Accepted: 2025/10/29
Published: 2025/10/31

KEYWORDS
PBL Method;
Interest;
Learning Outcomes;
Basic Big Ball Techniques;
Facility Deficiency.

AUTHORS' CONTRIBUTION
A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Rizkan, Rizkan; Arifin, Z.; Sonjaya, Azhar Ramadhana; Kosasih, Alam Hadi. (2025). The Effect Of The Problem-Based Learning (PBL) Method On Interest And Learning Outcomes Of Basic Ball Techniques With Facility Deficiency At Wiraguna Limbangan Junior High School. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 17 (3), p.3260-3268

INTRODUCTION

Physical education is a learning process designed to enhance physical development, motor skills, cognitive abilities, and social values through physical activity. Rusli Lutan highlighted that physical education is often viewed as a supplementary lesson or entertainment, yet it plays a strategic role in character development, such as teamwork, sportsmanship, and discipline. If this is overlooked, the opportunity to educate students through sports is lost, diminishing the holistic benefits it could provide.(Hamzah et al., 2024)

Physical education encompasses a teaching process designed to develop motor skills, improve physical health, and foster moral values such as sportsmanship,

teamwork, and discipline through participation in sports. Experts agree that physical education is a process that focuses not only on physical development but also encompasses mental, social, and emotional aspects. Through sports activities, students can learn important values such as teamwork, sportsmanship, discipline, and responsibility, which support the holistic development of individuals.(Amirudin, 2019)

Physical Education is an important subject aimed at improving students' physical fitness, motor skills, and character. However, in practice, the lack of adequate facilities in many schools is an obstacle to achieving these goals. Inadequate facilities, such as inadequate fields, damaged or limited sports equipment, and cramped training spaces, can affect students' interest in participating in Physical Education lessons. One of the most likely challenges teachers face today is shifting from the previous learning structure. Inclusive education for all students together in regular classrooms has changed the perception of segregated settings regarding what human rights (the right to education) mean in general educational practice.(Bedha Tamela et al., 2020)

Facilities are learning equipment that must be available both at school and at home to support the needs of students. Students can learn well and enjoyably if a school can provide all their needs. The teaching and learning process in schools will run smoothly and effectively if supported by adequate facilities, both in quantity, condition, and completeness. Learning facilities are very important in the learning process to support teaching activities. Teaching and learning activities require facilities to ensure the smooth and orderly running of these activities. Facilities in teaching and learning activities include classrooms, libraries, laboratories, stationery, notebooks, reading books, media for delivering material, and so on.

Sports facilities are the means and infrastructure designed to support the implementation of sports activities, whether for educational, recreational, competitive, or fitness purposes. Sports facilities include all physical elements needed to support sports activities optimally, including places, equipment, and environments that meet safety and comfort standards. Nugroho (2002). Sports facilities are all the means and infrastructure provided to support sports activities, whether in the form of fields, sports equipment, or other supporting buildings. These facilities must meet quality and safety standards to support the successful implementation of sports.

Besides learning facilities, academic achievement is also influenced by discipline and interest in learning. However, in reality, many students currently experience a decline in interest in sports due to incomplete or damaged sports facilities. Minimal and inadequate sports facilities are often a major barrier for students to develop their interest in learning physical education. When the field is damaged, sports equipment is unavailable, and training spaces are inadequate, students lose their enthusiasm for participation. This not only dampens their enthusiasm for learning but also limits their potential to learn through physical activities that should be enjoyable and beneficial. Therefore, the availability of adequate sports facilities is key to increasing students' interest in learning and supporting their holistic development. (Hung, 2023)

The results of initial observations show that at Wiraguna Limbangan Junior High

School, there are limited facilities and infrastructure for learning basic big ball techniques. Non-standard fields, an inadequate number of balls or the absence of other supporting facilities are often obstacles. This condition can directly affect students' interest and motivation to learn, as well as reduce the effectiveness of achieving learning outcomes. Conventional learning models (demonstrators and drills) are less effective because they are unable to accommodate real conditions in the field.

Model (Problem-Based Learning), PBL offers real-world problems as a learning resource to develop critical thinking and problem-solving skills. (Pramasanti & Kundera, 2025)PBL also encourages students to collaborate in groups. This is crucial because, in real-world situations, many problems cannot be solved by one individual alone. Through group discussions, students can share knowledge, experiences, and different perspectives.(Kusasiha et al., 2024).To implement a problem-based learning system, there are several steps or syntax that must be implemented. The problem-based learning (PBL) system involves five main interconnected steps: first, the teacher orients students to a real and complex problem to spark their interest and curiosity; second, students are organized into groups to discuss and analyze the problem, identifying what they know and what needs to be learned further; third, students conduct independent and group investigations to gather relevant information through research, experiments, or interviews; fourth, students develop and present solutions based on the information they have gathered, usually in the form of a report or presentation; and fifth, both students and teachers analyze and evaluate the problem-solving process and the results achieved, which is important for reflection and continuous learning. (Hmelo-Silver, 2004)These steps must be implemented sequentially to achieve the desired learning objectives.

The problem-based learning system has several advantages that are well-suited for learning. First, problem-based learning improves students' critical and analytical thinking skills because they must solve complex and open-ended problems. Second, problem-based learning encourages collaborative learning, improving communication and teamwork skills because students work in groups to solve problems. Third, problem-based learning increases student motivation and engagement because they learn through real-life problems. Fourth, problem-based learning helps students develop independent learning and research skills because they must search for and analyze information independently. Fifth, problem-based learning provides a deep and meaningful learning experience because students not only memorize information but also understand the underlying concepts and apply them in real-world contexts (Hmelo-Silver, C.E., & Barrows, 2020). In addition to its advantages, the PBL learning system also has disadvantages. According to (Yulianti, E, & Gunawan, 2019), the disadvantages of the PBL learning system are as follows: 1. If students experience failure or lack confidence 2. PBL requires sufficient time for preparation. 3. Lack of understanding. Meanwhile, according to Warsono and Hariyanto(Nur et al., 2016), the disadvantages of PBL include: not many educators can guide students to problem solving, it often requires high costs and a long time, and student activities carried out outside the classroom are difficult for educators to monitor.

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Furthermore, a problem-based learning system, which focuses on worldly issues, can be used as an initial step for students to acquire existing knowledge and concepts. This statement aligns with Seibert's (2021) view that problem-based learning (PBL) is a learning system characterized by real-world problems, aimed at providing learning related to thinking and problem-solving skills. Therefore, junior high school students' learning interests are an important aspect that must be studied to understand the effectiveness of the basic education process. Through a problem-based learning system, teachers can encourage students to actively engage in the learning process by solving problems relevant to everyday life. Research into student learning interests using a problem-based learning system can provide insight into how student involvement in problem-solving activities can increase their motivation, creativity, and critical thinking skills. Therefore, understanding the impact of this model on junior high school students' learning interests can help teachers design more effective and engaging learning strategies and create a more dynamic and participatory learning environment.

Problem-Based Learning (PBL) is a learning model in which students face real problems about actual problems, so that students can build their own insights and have their own meaning, which can be used as a basis for conducting analysis and investigation exercises and then developing higher skills, discovering for themselves and making students independent. (Roni Hamdani et al., 2022)The PBL learning model is a learning model that uses real problems that are unstructured and open as a context for students to develop problem-solving and critical thinking skills while simultaneously building new knowledge. (Riskayani, 2022)Thus, limited facilities actually become a trigger for student creativity and innovation.

Based on the background of the problem, this study aims to examine in depth the influence of the application of the PBL (Problem-Based Learning) model on interest and learning outcomes of basic big ball techniques, especially in school environments that have limited facilities, such as at Wiraguna Limbangan Middle School.

METHODS

This study used a quantitative approach with a quasi-experimental design. The goal was to determine the effect of the Problem-Based Learning (PBL) method on students' interest and learning outcomes in the basic technique of large balls under conditions of limited facilities. This study used the static group comparison design. In this design, the researcher used a group of research subjects from a specific population, then grouped them into two groups or classes: the experimental class and the control class. The experimental class was given treatment using the PBL model, while the control class was given learning as usual, namely the conventional learning model.(Zikri, 2020).

The population used in this study is all students in grades VIII and IX of Wiraguna Limbangan Junior High School. In this study, the sampling technique used is purposive sampling, which is a method of determining samples based on certain criteria (Sugiyono, 2018). The sample that meets the criteria that have been stated is 30 people. The

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instruments used are an interest questionnaire and a learning achievement test. Next, it will be analyzed using descriptive statistics, normality tests, homogeneity tests, and t-tests.

Table1.
Questionnaire assessment scale

Statement	Score
Strongly agree	5
Agree	4
Disagree Less	3
Don't agree	2
Strongly Disagree	1

(Kapoor, S., & Agrawal, 2021)

RESULTS AND DISCUSSION

Result

Descriptive data analysis was conducted to provide a picture of the data, including the mean, standard deviation, variance, maximum value, minimum value, and total. Next, prerequisite and analysis tests were conducted, namely normality and homogeneity tests. Hypothesis testing used a t-test to determine the effects and differences in results between the pretest and posttest, with the stipulation that the data must be normally distributed and homogeneous.

Table 2.
Improvement of pretest-posttest results

Indicator	Pretest Average	Posttest Average	Improvement
Attention	22.4	22.5	0.44%
Pleasure	18.3	19.1	4.37%
Will	17.5	18.0	2.85%
Active involvement	17.9	18.7	4.46%
Interest in the material	15.6	16.3	4.48%
All indicators	91.7	94.6	3.16%

Table 2 shows the comparison between pretest and posttest data, indicating an overall average score increase of 3.16%, from an average of 91.7 in the pretest to 94.6 in the posttest. When viewed based on indicators, the largest increase occurred in the aspect of interest in the material, namely, 4.48%. Other indicators that also experienced significant increases were active involvement (4.46%), enjoyment (4.37%), and willingness (2.85%). These results indicate that the program-based learning method with facility deficiencies is able to increase interest and learning outcomes.

Table 3.
Descriptive Statistics

	N	Min.	Max.	Sum	Mean	Std. Deviation
Pretest	30	76	115	2758	91.93	9,199
Posttest	30	80	118	2841	94.70	10,219

The results of descriptive data analysis show that in the pretest (initial test), a total score of 2758 was obtained with an average (mean) of 91.93, a standard deviation of 9.199. with a minimum score of 76 and a maximum score of 115. Then, in the posttest (final test),

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a total score of 2841 was obtained with an average (mean) of 94.70, a standard deviation of 10219. with a minimum score of 80 and a maximum score of 118.

Table 4.
Normality Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	df.	Sig.	Statistics	df.	Sig.
Pretest	.174	30	.021	.936	30	.070
Posttest	.129	30	.200	.947	30	.138

The results of the data normality test used the Shapiro-Wilk test because it is suitable for small sample sizes (less than 50). In the table, the number of samples (df) is 30 for both data. The significance value (Sig.) for the pretest is 0.070 and for the posttest is 0.138. Because both Sig. Values are greater than 0.05; it can be concluded that the data are normally distributed.

Table 5.
Homogeneity Test

Levene Statistics	df1	df2	Sig.
.424	1	58	.517

Based on Table 4, the results of the homogeneity test indicate that the analyzed data are homogeneous. This is due to the significance value of 0.517 > 0.05. Further analysis can be conducted because it can be confirmed that there are no significant differences in the data versions.

Table 6.
Hypothesis Test t Test

Test	t	df	Sig. (2-tailed)	Mean Difference	95% CI (Lower-Upper)
Pretest	54,740	29	0,000	91,933	88.50 – 95.37
Posttest	50,759	29	0,000	94,700	90.88 – 98.52

Based on Table 6, the t-test results show that the significance value of both the pretest and posttest is 0.000. Therefore, tcount>t table and the significance value of 0.000 <0.05, so the results show that there is a significant difference, which indicates that the interval or treatment given may be effective.

Discussion

Increasing Student Interest in Learning

The pretest-posttest results showed an average increase in learning interest scores of 3.16%, from 91.7 to 94.6. Indicators such as interest in the material (4.48%), active involvement (4.46%), enjoyment (4.37%), and willingness (2.85%) experienced significant increases. This indicates that PBL can increase student motivation despite limited facilities, because this method encourages students to face real problems and collaborate. This finding is in line with the research of Hmelo-Silver (2004), who emphasized PBL as an approach that increases active involvement and motivation through solving real-world problems. Recent sources, such as Kusasiha et al. (2024) in the Journal of Educational Technology and Learning, support that PBL improves students' critical thinking skills and motivation in the context of sports learning, even with limited facilities.

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Improving Student Learning Outcomes

Descriptive statistical analysis showed a pretest mean of 91.93 (standard deviation 9.199) and a posttest mean of 94.70 (standard deviation 10.219), with increasing minimum and maximum values. Normality tests (Shapiro-Wilk, Sig. > 0.05) and homogeneity (Levene, Sig. = 0.517) ensured the data were valid for further analysis. The t-test showed a significant difference (Sig. = 0.000), indicating the effectiveness of PBL in improving learning outcomes of basic big ball techniques. Facility deficiencies, such as non-standard fields and limited tools, did not hinder the effectiveness of PBL because this method stimulated students' creativity to find alternative solutions. Pramasanti & Kundera's (2025) research in Metta: Jurnal Ilmu Multidisipali confirmed that PBL assisted by digital media can improve student learning outcomes, especially in conditions of limited facilities, with significant improvements in motor skills aspects.

PBL overcomes these limitations by focusing on group collaboration and independent inquiry, enabling students to be more actively engaged. Recent studies, such as Riskayani (2022) in the Undiksha Journal of Physical Education, Sports, and Health, show that PBL increases activity and learning outcomes in basic sports techniques, including ball games, with greater effectiveness than traditional methods in a school environment with limited facilities. The limitations and implications of this study include the small sample size (30 students) and quasi-experimental design, thus limiting generalizability to SMP Wiraguna Limbangan. However, these findings provide insight that PBL can be an innovative alternative for physical education in schools with limited facilities. Practical implications include recommendations for teachers to integrate PBL into the curriculum, supported by digital resources. Hung's (2023) research in the Interdisciplinary Journal of Problem-Based Learning emphasizes the importance of PBL methodology for educational studies, including in contexts with limited facilities, and encourages further research for large-scale validation.

CONCLUSION

This study concludes that the Problem-Based Learning (PBL) method significantly improves students' interest and learning outcomes in basic ball techniques at SMP Wiraguna Limbangan, despite facing facility deficiencies. The average increase in learning interest scores of 3.16% and a significant t-test result (Sig. = 0.000) demonstrate the effectiveness of PBL in encouraging active engagement, creativity, and real-world problem solving. These findings advance scientific knowledge on sports education by demonstrating that limited facilities are not a major barrier when innovative learning methods such as PBL are implemented, in line with literature emphasizing PBL as an approach that improves student motivation.

Limitations of this study include the small sample size and specific location, making the results difficult to generalize widely. Suggestions for further research include expanding the sample, integrating digital technology into PBL, and evaluating the long-term impact on students' physical development. Practical recommendations for schools

include training teachers in PBL implementation and allocating alternative resources to support inclusive and effective sports learning, the context of inclusive education. Thus, this study contributes to the development of adaptive learning strategies in school environments with limited facilities.

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