International Journal of Education, Information Technology and Others (IJEIT), April 2026, 9 (2), 382-396
DOI: https://jurnal.peneliti.net/index.php/IJEIT/article/view/15116
p-ISSN: 2654-2528 e-ISSN: 2623-2324
Accredited by Directorate General of Strengthening for Research and Development
Available online at https://jurnal.peneliti.net/index.php/IJEIT

Improving the Learning Outcomes of Basketball Game Chest Pass Accuracy through the Problem Based Learning (PBL) Learning Model in Class X Students of SMA Negeri 3 Ambon

Jacob Anaktototy[1], Stenly Jacob Wenno[2]

Physical Education Study Program, Health and Recreation University, Pattimura University

Received: *4 April 2026*
Revised: *15 April 2026*
Accepted: *26 April 2026*

Abstract

This study aims to improve the learning outcomes of chest pass accuracy in basketball games through the application of the Problem Based Learning (PBL) learning model in grade X students of SMA Negeri 3 Ambon. This study uses the Classroom Action Research (PTK) method which is carried out in several stages, namely planning, implementation of actions, observation, and reflection. The subject of the study is a class X student of SMA Negeri 3 Ambon. Data collection techniques are carried out through chest pass skill tests, observation of student and teacher activities, and documentation. Data analysis is carried out in a quantitative descriptive manner by comparing student learning outcomes in the initial stage, cycle I, and cycle II. The application of the PBL model is carried out by providing problems related to the accuracy of the chest pass, then students are directed to identify problems, find solutions, conduct exercises in groups, and evaluate the results of the exercises. The results of the study show that the application of the PBL learning model can improve the learning outcomes of students' chest pass accuracy . The increase can be seen from changes in students' ability to perform chest pass movements precisely, directed, and in accordance with the correct technique, as well as increased student activity and involvement during the learning process. Thus, the Problem Based Learning learning model can be used as one of the alternative learning Physical Education, Sports, and Health (PJOK) to improve the learning outcomes of chest pass skills in basketball games in grade X students of SMA Negeri 3 Ambon.

Keywords: *Problem Based Learning, learning outcomes, chest pass, basketball, Physical Education, high school students.*

(*) Corresponding Author: *anaktototyjopi@gmail.com1* , *stenlyjac97@gmail.com2*
How to Cite: Anaktototy, J., & Wenno, S. (2026). Improving the Learning Outcomes of Basketball Game Chest Pass Accuracy through the Problem Based Learning (PBL) Learning Model in Class X Students of SMA Negeri 3 Ambon. *International Journal of Education, Information Technology, and Others, 9*(2), 382-396. Retrieved from https://jurnal.peneliti.net/index.php/IJEIT/article/view/15116

INTRODUCTION

Education is one of the important aspects of human life because through education a person can develop their potential, knowledge, skills, attitudes, and personality. Education is not only oriented towards the development of intellectual abilities, but also includes the physical, social, emotional, and moral development of students. Therefore, the educational process in schools needs to be carried out comprehensively through various subjects, including Physical Education, Sports, and Health (PJOK). PJOK learning has an important role in helping students develop movement skills, physical fitness, sports skills, sportsmanship, cooperation, discipline, and a healthy lifestyle.

According to the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential. Based on this understanding, learning not only places teachers as a source of information,

but also requires students to be actively involved in the process of acquiring knowledge and skills. In the context of PJOK learning, the active involvement of students is very necessary because most of the competencies that must be achieved are related to the mastery of movement skills obtained through direct experience and practice.

Physical education according to Rosdiani (2015) is an educational process through physical activities that is systematically designed to increase the growth and development of individuals as a whole. Physical activities in PJOK learning not only aim to improve physical abilities, but can also develop the cognitive, affective, and psychomotor aspects of students. In line with this, physical education can be seen as an educational process that uses physical activity as a medium to achieve overall educational goals. Thus, PJOK learning should be designed in such a way that students get an active, fun, meaningful, and appropriate learning experience in accordance with their developmental characteristics.

One of the materials contained in PJOK learning at the high school level is the game of basketball. Basketball is a team game that requires mastery of various basic skills, such as *dribbling*, *passing*, *catching*, shooting, and other movements. Mastery of these basic skills is an important factor for students to be able to participate in the game effectively. Among these various basic skills, *passing* has a very important function because the game of basketball basically involves cooperation between players in maintaining possession of the ball and creating opportunities to score.

According to Ahmadi (2007), the game of basketball is a game played by two teams with each squad trying to put the ball into the opponent's basket and prevent the opponent from putting the ball into their own basket. In the game, the ability to pass the ball is an inseparable part of teamwork. A good pass must be done precisely, quickly, and directed so that the ball can be received by teammates well.

One form of *passing* that is important for students to master is *the chest pass*. *Chest pass* is a technique of passing the ball from the front of the chest using both hands and directed at teammates. This technique is widely used when the player is at a relatively close to medium distance from the recipient of the ball. The success of making *a chest pass* is not only determined by the strength of the hands, but also by the initial posture, position of both hands, arm movements, push from the fingers, eye and hand coordination, and the accuracy of the direction and goal of the pass.

According to Wissel (2000), *passing* is one of the fundamental skills in the game of basketball that players must master because through good passing a team can maintain possession of the ball and build an attack. *Chest passes* are carried out by pushing the ball from the front of the chest towards the goal using both hands. The accuracy of the pass is very important because mistakes in passing can cause the ball to be easily grabbed by the opponent and hinder the team's game pattern.

The accuracy or accuracy factor in performing *chest passes* is one of the important indicators in assessing the success of these skills. Accuracy shows the ability of students to direct the ball right towards a predetermined goal. Students who have good *chest pass* skills are not only able to make movements according to technical procedures, but also able to control the direction, power, and speed of the ball so that the ball can be received by the target well. Therefore, *chest pass* learning needs to provide opportunities for students to practice repeatedly with situations that resemble the actual game conditions.

However, the success of learning *chest pass* skills depends not only on the material provided, but also on the learning model used by the teacher. Learning models that are too teacher-centered and only emphasize demonstration and repetition of movements can cause some students to be less active in finding mistakes and improving their skills. In learning sports skills, students need hands-on experience, opportunities to

solve movement problems, cooperation, feedback, and evaluation of the results of the exercises.

One of the learning models that can be used to overcome these problems is *Problem Based Learning* (PBL). The PBL model is a learning model that makes problems as the starting point in the learning process. According to Barrows (1986), *Problem Based Learning* is a learning approach that uses problems as a stimulus for students to learn through the process of investigation and problem-solving. Through this model, students not only receive information from teachers, but are encouraged to think, seek information, discuss, try various alternative solutions, and evaluate the results obtained.

According to Arends (2012), *Problem Based Learning* is a learning model that uses authentic problems as the focus of learning so that students can develop thinking skills and problem-solving skills as well as gain important knowledge and concepts from the learning material. The PBL model provides opportunities for students to actively learn through problems related to life or real experiences. In PJOK learning, this approach can be applied by providing movement problems to students, for example why *the chest pass* pass is not on target, why the ball is too high or too low, how to regulate the force of the ball's thrust, and how to make effective passes in game situations.

According to Rusman (2017), problem-based learning is learning that uses real problems as a context for students to learn critical thinking and problem-solving skills as well as gain essential knowledge and concepts from the subject matter. This approach allows students to be directly involved in the learning process. In *chest pass* learning, teachers can give a problem situation, then students work in groups to identify the cause of the error, try the right techniques, give feedback to friends, and draw conclusions based on the practice experience.

The application of PBL in basketball learning is also in line with the learning principles that place students as learning subjects. Students are not only required to know how chest *pass* techniques are performed, but also understand why the technique should be done in a certain way. For example, when the ball often does not reach the target, students can be directed to identify whether the error is caused by body position, elbow position, palm direction, thrust strength, or lack of coordination between eyes and hands. Thus, the learning process becomes more meaningful as students are involved in finding and correcting their own motion mistakes.

In addition, the PBL model can encourage the formation of cooperation between students. In basketball learning activities, students can work in small groups to observe the movements of friends, provide input, conduct exercises, and evaluate results. These activities not only help improve psychomotor skills, but also develop the ability to communicate, collaborate, be responsible, and respect the opinions of others. This is in accordance with the goals of physical education which is not only oriented to physical skills, but also to the overall development of students.

Based on initial observations in the PJOK learning process on basketball material in class X of SMA Negeri 3 Ambon, there are still students who have difficulties in making *chest passes*, especially in terms of accuracy or precision of the direction of the pass. Some students have not been able to coordinate hand and body movements well, so the ball is often not right on target. In addition, there are students who do not understand the position of the hands and body when making *chest* passes. This condition can cause the ball to be too high, too low, deviated to the side, or does not reach the target friend.

Another problem is related to student involvement during the learning process. Some students still tend to wait for the teacher's instructions and have not actively analyzed the movement mistakes made. When mistakes occur in doing *chest passes*, students are not fully able to know the cause of the error and how to correct it. This

situation shows that learning needs to provide a more active experience to students so that they can find movement problems and find solutions through the practice process.

If these conditions are not treated, it is feared that students' ability to make *chest passes* will not develop optimally. Inaccuracies in passing can affect students' ability to participate in basketball games as a whole. Therefore, an innovation is needed in the learning process that can increase students' activities while helping them improve *their chest pass* skills. One alternative that can be applied is the *Problem Based Learning learning model*.

Through the application of the PBL model, *chest pass learning* can be developed through the stages of student orientation to problems, organizing students to learn, investigation or practice individually and in groups, developing and presenting results, and analyzing and evaluating the problem-solving process. In the orientation stage, the teacher provides problems related to the accuracy of the *chest pass*. Furthermore, students are directed to identify the factors that cause errors. In the investigation stage, students conduct exercises in groups and give feedback to each other. The results of the exercises are then observed and evaluated to determine the necessary technique improvements.

The use of PBL is expected to create a more active and student-centered learning atmosphere. Students get the opportunity to experience the learning process for themselves through practice, problem-solving, discussion, and evaluation. With this process, students not only memorize the stages of doing *a chest pass*, but also understand the relationship between the techniques used and the results obtained. In the end, a repetitive and meaningful learning experience is expected to improve the accuracy of students' *chest* passes.

Based on this description, it can be understood that *the chest pass* skill is one of the basic skills that is important in the game of basketball and requires directed and repeated practice. On the other hand, a learning model that provides opportunities for students to actively solve movement problems can be an alternative to improve these skills. The *Problem Based Learning* model has characteristics that allow students to be actively involved in identifying problems, finding solutions, conducting exercises, cooperating, and evaluating learning outcomes.

Thus, research on the application of *the Problem Based Learning* model in improving chest pass *accuracy learning outcomes* is important to be carried out. This research is expected to provide an overview of the application of PBL in basketball learning as well as provide an alternative for PJOK teachers in improving student skills. Therefore, this study was conducted with the title "Improving Accuracy Learning Outcomes of *Basketball Game Chest Passes* through the *Problem Based Learning* (PBL) Learning Model in Class X Students of SMA Negeri 3 Ambon."

This study aims to determine the improvement of the accuracy learning outcomes of *basketball game chest passes* through the application of *the Problem Based Learning* (PBL) learning model in grade X students of SMA Negeri 3 Ambon.

Theoretically, this research is expected to contribute to the development of knowledge regarding the application of *the Problem Based Learning* model in Physical Education, Sports, and Health learning, especially in the basic skills of basketball games.

Practically, this research is expected to be beneficial for several parties. For students, the application of PBL is expected to improve *chest pass* skills, activeness, cooperation, problem-solving skills, and confidence in participating in PJOK learning. For teachers, the results of this research can be an alternative learning model that can be used to improve the quality of learning basketball skills. For schools, this research is expected to provide input in an effort to improve the quality of the PJOK learning process and outcomes. For future researchers, this research can be a reference material to conduct research related to the PBL model and basic basketball skills.

RESEARCH METHODS

This study uses the Classroom Action Research (PTK) method which aims to improve the learning outcomes of *chest pass* accuracy in basketball games through the application of *the Problem Based Learning* (PBL) learning model. Classroom action research was chosen because this research is oriented towards improving and improving the quality of the learning process directly in the classroom. The implementation of research is carried out in cycles, with each cycle consisting of four main stages, namely planning, implementation of action, observation, and *reflection*. The results of reflection in each cycle are used as a basis for making improvements in the next cycle until indicators of research success are achieved.

The research was carried out on Physical Education, Sports, and Health (PJOK) learning, especially the basic skills of basketball in grade X students of SMA Negeri 3 Ambon. The subjects in this study amounted to 30 students, consisting of 15 male students and 15 female students. All students in the class were used as research subjects because class action research was carried out to improve the learning process and outcomes in the classroom where the research was conducted. The object of the research was to improve the learning outcomes of *chest pass* accuracy through the application of *the Problem Based Learning* learning model.

The research was carried out through two cycles. Before the action was given, the researcher carried out initial activities in the form of observation and initial tests to determine the condition of students' ability to perform *chest passes*. The results of the initial test were used as a basis to determine the initial level of students' abilities as well as identify problems that occurred in learning. After that, the researcher prepared an action plan in the form of learning tools, *chest pass* materials, observation sheets, skill assessment instruments, and learning scenarios that refer to the syntax of the *Problem Based Learning model*.

In cycle I, the planning stage is carried out by compiling modules or learning plans, determining learning materials and objectives, preparing basketball facilities and infrastructure, preparing *chest pass* accuracy test instruments, and compiling observation sheets for student and teacher activities. At the stage of implementing actions, learning is carried out by applying the PBL model. The teacher provides a problem related to *chest pass* skills, then directs students to understand the problem. Students are then divided into groups to identify the causes of errors in doing *chest passes*, conduct exercises, discuss, observe the movements of friends, and find solutions to the problems found. The teacher plays the role of a facilitator who provides direction and feedback during the learning process.

In the observation stage, the researcher and collaborators observed the implementation of learning, student activities, student involvement in the group, students' ability to follow the PBL stage, and students' skills when performing *chest passes*. In addition, an assessment was carried out on the accuracy of the *chest pass* based on predetermined indicators. The data from observation and test results were then analyzed to determine the development of the process and student learning outcomes. Furthermore, at the reflection stage, the researcher analyzed various shortcomings and obstacles found during cycle I. The results of the reflection were used as improvement material for the implementation of actions in cycle II.

In cycle II, actions are carried out based on the results of reflection in cycle I. Planning is carried out by correcting weaknesses found in the previous cycle, especially related to the technique of conducting *chest passes*, the accuracy of the direction of the pass, movement coordination, student involvement, and the management of group activities. The implementation of learning continues to use the PBL model by providing more targeted problems and providing opportunities for students to practice more

intensively. Students are directed to identify mistakes, try various solutions, provide feedback to friends, and evaluate the results of the exercises. The teacher provides reinforcement to the correct technique and helps students correct the mistakes that are still found.

Observation in cycle II was carried out to determine changes in students' activities and skills after learning improvements were made. Assessments were carried out on students' ability to perform *chest passes*, especially in the aspects of initial attitude, movement implementation, accuracy of passing direction, movement coordination, and passing results towards the target. After the action was completed, reflection was carried out to determine the success rate of the implementation of the PBL model. The research was stopped if the success indicators that had been set were achieved and there was an increase in student learning outcomes compared to the initial conditions.

The data analysis technique in this study uses quantitative descriptive and qualitative descriptive analysis. Data analysis was carried out on the results of chest pass accuracy skill tests, the results of observation of student and teacher activities, and documentation during the learning process. Data obtained in the initial stage, cycle I, and cycle II were analyzed to determine changes in the process and improvement of student learning outcomes after the application of *the Problem Based Learning* (PBL) learning model.

The data of the chest pass accuracy skill test results were analyzed by calculating the scores obtained by each student based on the scores achieved on each assessment indicator. The final score of the students was calculated using the formula:

Value = (Score obtained / Maximum score) × 100

Furthermore, to find out the average ability of all students, the formula is used:

$\bar{X} = \Sigma X / N$

Description:

$\bar{X}$ = grade point average,

ΣX = the sum of the students' total scores, and

N = the total number of students.

The number of research subjects was 30 students consisting of 15 male students and 15 female students. The average score was used to determine the overall development of the classroom's ability at each stage of research, namely the initial condition, cycle I, and cycle II.

In addition to the average score, an analysis is carried out on student learning completeness. Learning completeness is used to determine the number of students who have reached the Minimum Completeness Criteria (KKM) or completeness criteria set by the school. The percentage of learning completeness is calculated by the formula:

$P = (F/N) \times 100\%$

Description:

P = percentage of learning completion,

F = the number of students who achieved completion, and

N = the total number of students.

With a total of 30 students, the percentage of completeness can be determined based on the number of students who achieve the completeness score. For example, if 24 students have reached the completeness criteria, then the percentage of completeness is 80%. The results are then compared between the initial conditions, cycle I, and cycle II to determine the improvement in learning outcomes after the application of the PBL model.

To determine the increase in learning outcomes in a classical way, the analysis was carried out by comparing the percentage of completeness at each stage of the research. The increase from the initial condition to cycle I and from cycle I to cycle II can be calculated with the formula:

Improvement = Percentage of the final stage − Percentage of the initial stage

In addition, the average increase in student learning outcomes can be found by comparing the average scores in each cycle. In this way, it can be known whether the application of the PBL model provides a change in students' ability to perform *chest pass accuracy*.

Analysis was also carried out on student activities during the learning process. Student activity data was obtained through observation sheets which included several indicators, including students' attention to the teacher's explanation, activeness in participating in learning activities, involvement in identifying problems, cooperation in groups, activeness in chest *pass* exercises, ability to give and receive feedback, and involvement in evaluating learning outcomes. Each indicator was scored according to the observation guidelines that had been prepared. The percentage of student activity was calculated using the formula:

Activity Percentage = (Score obtained / Maximum score) × 100%

The results of the percentage of activities are then categorized based on predetermined criteria to describe the level of student activity during the learning process. Activity analysis is carried out in each cycle so that changes in student involvement after the implementation of the PBL model can be known.

Teacher activity data is also analyzed through observation sheets. Observation of teacher activities includes the teacher's ability to convey learning objectives, organize students, provide problems, guide the group investigation process, provide feedback, manage the class, and evaluate the learning process and results. The score obtained is then calculated in the form of a percentage with the same formula, namely:

Teacher Activity Percentage = (Score obtained / Maximum score) × 100%

The data from the observation of student and teacher activities were then analyzed descriptively to provide an overview of the change in the quality of the learning process from cycle I to cycle II.

Qualitative descriptive analysis was used to interpret the results of observations and field notes during the research. Qualitative data in the form of student behavior, student responses to learning, group cooperation, difficulties experienced by students, and corrective actions taken by teachers in each cycle were analyzed through the stages of data reduction, data presentation, and conclusion drawn. The results of the analysis were used as reflection material to determine improvement in actions in the next cycle.

Furthermore, to determine the magnitude of the increase in learning outcomes from the initial condition to the end of the research, the average score data and the percentage of completeness were systematically compared. The comparison was presented in the form of a table containing the average score, the number of students who were completed, the number of students who had not completed, and the percentage of completeness at each stage of the research. The results of the comparison were used to determine whether the actions provided through *the Problem Based Learning model* were able to improve the learning outcomes of *students' chest pass* accuracy .

The success of the research is determined based on the indicators of the success of the action, namely an increase in the average score of *chest pass* accuracy skills, an increase in the percentage of learning completeness, and an increase in student activity during the learning process. The research is declared successful if the learning results in cycle II show an improvement compared to the initial condition and cycle I and have achieved the completeness criteria set in the study. Thus, data analysis not only focuses on achieving students' final grades, but also considers changes in the learning process and student involvement during the implementation of the *Problem Based Learning model*.

RESEARCH RESULTS

Early Conditions (Precycle)

Before the action was taken, the researcher carried out initial observation and chest pass accuracy skills tests on class X students of SMA Negeri 3 Ambon which amounted to 30 students, consisting of 15 male students and 15 female students. The results of the observation showed that most students still had difficulty in doing *chest passes* with the correct technique. Mistakes that are often found include inappropriate hand position, poor coordination of body movements, and inaccurate passing direction. In addition, student activity in learning is still low because learning tends to be teacher-centered so that students are less involved in the process of finding and correcting movement errors.

The results of the initial test showed that the students' ability to perform *chest pass accuracy* was still relatively low. Of the 30 students, only 12 students (40%) achieved completeness, while 18 students (60%) did not achieve completeness. The average grade of the class in the pre-cycle stage was 68.33.

Table 1. Learning Outcomes of *Chest Pass* Accuracy in Precycle

Description	Results
Number of students	30
Students complete	12
Students have not completed	18
Completion percentage	40,00%
The percentage has not been completed	60,00%
Average score	68,33

These results show that the accuracy of students' *chest passes* still needs to be improved through the application of a more active and student-centered learning model, namely *the Problem Based Learning* (PBL) model.

Results of Cycle I

The implementation of actions in the first cycle was carried out by applying the *Problem Based Learning* learning model. The teacher provides problems related to the technique and accuracy of *the chest pass*, then students work in groups to identify mistakes, conduct exercises, and find solutions to the problems found. During learning, students begin to show better involvement in discussion and practice activities.

Based on the results of observations, student activities have increased compared to the initial condition. Students began to actively discuss, observe the movements of friends, and provide input on the techniques carried out. However, there are still some students who are not able to perform *chest passes* correctly and consistently.

The test results in the first cycle showed an increase in students' abilities. Of the 30 students, as many as 21 students (70%) had achieved completeness, while 9 students (30%) had not achieved completeness. The average grade of the class increased to 76.50.

Table 2. Learning Outcomes of *Chest Pass* Accuracy in Cycle I

Description	Results
Number of students	30
Students complete	21
Students have not completed	9
Completion percentage	70,00%
The percentage has not been completed	30,00%
Average score	76,50

The increase in learning outcomes in the first cycle showed that the application of the PBL model began to have a positive impact on the accuracy of students' *chest passes*. However, the results obtained have not reached the indicators of research success so the action is continued in the second cycle.

Results of Cycle II

The implementation of actions in cycle II is carried out by correcting the weaknesses found in cycle I. Teachers provide more intensive guidance, clarify *chest pass* techniques, and increase student involvement in problem-solving activities and group exercises.

The observation results showed that student activities were increasing. Students looked more confident, actively discussed, gave each other feedback, and were able to correct movement mistakes independently. Cooperation in groups also went better compared to the previous cycle.

The test results in cycle II showed a significant increase. Of the 30 students, as many as 27 students (90%) had achieved completeness, while only 3 students (10%) had not achieved completeness. The average grade of the class increased to 84.67.

Table 3. Learning Outcomes of *Chest Pass* Accuracy in Cycle II

Description	**Results**
Number of students	30
Students complete	27
Students have not completed	3
Completion percentage	90,00%
The percentage has not been completed	10,00%
Average score	84,67

The results in cycle II show that the indicators of research success have been achieved. Most of the students have been able to perform *chest passes* with correct technique and a better level of accuracy.

Comparison of Precycle, Cycle I, and Cycle II Results

Comparison of student learning outcomes at each stage of the research showed a consistent improvement after the application of the *Problem Based Learning model*.

Table 4. Comparison of *Chest Pass Accuracy Learning Outcomes*

Stages	**Average Score**	**Completed Students**	**Completion Percentage**
Precycle	68,33	12	40,00%
Cycle I	76,50	21	70,00%
Cycle II	84,67	27	90,00%

Based on the table, the average score of students increased from 68.33 in the pre-cycle to 76.50 in the first cycle and increased again to 84.67 in the second cycle. The percentage of learning completeness also increased from 40.00% in the pre-cycle to 70.00% in the first cycle, then increased to 90.00% in the second cycle.

The improvement in learning outcomes shows that the application of the *Problem Based Learning* model is able to improve students' *chest pass* accuracy abilities . Through problem-solving activities, group discussions, exercises, and providing feedback, students become more active in the learning process and are able to understand

and improve *chest pass* techniques more effectively. Thus, the PBL model has been proven to improve the learning outcomes of *basketball game chest pass* accuracy in grade X students of SMA Negeri 3 Ambon.

DISCUSSION

The results of the study show that the application of *the Problem Based Learning* (PBL) learning model can improve the learning outcomes of *chest pass accuracy* in basketball games in grade X students of SMA Negeri 3 Ambon. This increase can be seen from the change in the average score and the percentage of student learning completeness at each stage of the research. In the initial or preliminary condition, the average score of students was 68.33 with a percentage of completeness of 40% or 12 out of 30 students. After the application of the PBL model in cycle I, the average score increased to 76.50 with a percentage of completeness of 70% or 21 students. Furthermore, after learning improvements were made in cycle II, the average score increased to 84.67 with a percentage of completeness of 90% or 27 students. The data shows a gradual increase after learning using the PBL model.

In the pre-par condition, the low learning outcomes indicate that some students have not mastered the *chest pass technique* optimally. Difficulties can be seen in the accuracy of the direction of the pass, coordination of movements, hand position, and power regulation when pushing the ball. These conditions are also related to the low involvement of students in the learning process. Students tend to follow the teacher's instructions without much opportunity to analyze movement errors and find solutions independently. In the learning of sports skills, conditions like this can hinder the development of abilities because mastery of movement skills requires practical experience, repetition, feedback, and opportunities to correct mistakes.

The application of PBL in the first cycle provides changes to the learning process. Students begin to be involved in problems directly related to *chest pass skills*. The teacher not only provides examples of movements, but directs students to identify problems, discuss the causes of errors, do exercises, and try to improve movements. The change in the process is followed by an increase in learning outcomes. From 30 students, the number of students who achieved completeness increased from 12 students in the pre-cycle to 21 students in the first cycle. The average score also increased from 68.33 to 76.50.

These findings are in line with Arends' view of PBL which places authentic problems as the focus of learning and provides opportunities for students to develop thinking skills and problem-solving skills. In the context of this study, the problems given are not only theoretical problems, but in the form of real problems in movement skills, such as the ball is not on target, the direction of the pass deviates, or the thrust force of the ball is not appropriate. By exposing students to these problems, students have the opportunity to connect technical knowledge with practical experience. The concept of PBL that uses problems as the focus of learning is also consistent with the PBL literature which emphasizes the variety of learning designs and the importance of matching methods to the goals and characteristics of students.

The results of the research can also be explained based on the thoughts of Barrows (1986). Barrows explained that PBL is not a single learning method, but includes various problem-based learning designs. Differences in design and teachers' skills in managing learning can result in different learning experiences. In this study, PBL was applied through providing problems regarding *the accuracy of chest passes,* group formation, investigation and practice processes, providing feedback, and evaluating training results. Thus, students not only receive chest *pass techniques* from teachers, but are involved in the process of finding the cause of errors and determining how to correct them.

The improvement in results in cycle I has not fully reached the set target because there are still 9 students who have not reached completion. The results of reflection show that some students still have difficulty in applying techniques consistently. In addition, some students are still passive in group discussions and have not been optimal in providing feedback to friends. Therefore, actions in cycle II are carried out by providing more intensive guidance, clarifying technique demonstrations, increasing practice opportunities, and directing students to be more active in observing and evaluating movements.

The improvement of actions in cycle II resulted in a greater increase. The average score increased from 76.50 in cycle I to 84.67 in cycle II. The number of students who achieved completeness increased from 21 to 27 students, while the percentage of completeness increased from 70% to 90%. Thus, there was an increase in completeness by 20 percentage points from cycle I to cycle II. When compared to the pre-cycle condition, the percentage of completeness increased by 50 percentage points, from 40% to 90%.

The improvement is also relevant to Rusman's view of problem-based learning that uses problems as a context for students to develop thinking skills and problem-solving skills. In *chest pass* learning, students gain experience to identify technical problems, conduct movement experiments, discuss results, and make improvements. This process makes students more active as learning subjects. Thus, the increase in learning outcomes is not only influenced by the increase in the frequency of exercises, but also by the change in the learning process from receiving information to identifying problems and finding solutions.

The results of this study can then be compared with previous research. Benny Aprial M.'s research on grade X students of SMA Negeri 5 Tanjung Balai showed that the application of PBL with a scientific approach to *chest pass* material increased learning completeness from 59.38% in cycle I to 84.38% in cycle II, with an average score increasing from 73.34 to 80.09. The findings have a pattern that is in line with this study, namely that there was an increase in learning outcomes after the PBL action was given in two cycles. Although the percentages and average scores differed due to the characteristics of different subjects, instruments, and learning conditions, both studies showed an improvement after the implementation of problem-based learning.

The results of this study are also in line with the research of Adirahma (2023) which involved 30 students in learning the game of basketball. The study reported that the application of PBL increased the completeness of the knowledge aspect from 66.6% in the first cycle to 100% in the second cycle, while the skill aspect increased from 73.33% to 86.6%. The similarity in the number of subjects with this study provides a relevant comparative context, although the materials, instruments, and assessment indicators are not entirely the same. These results show that PBL can be applied to basketball learning to improve aspects of knowledge and skills.

Other more recent studies have also shown a similar pattern. Sukiyandari, A'la, and Rahmawati (2026) reported an increase in learning outcomes of basic basketball passing techniques after the application of PBL in the second-cycle classroom action study. In the study, the percentage of success of learning outcomes increased from 50% in the pre-cycle to 60% in the first cycle and 75% in the second cycle. The findings reinforce the results of this study that the application of PBL in learning basic basketball techniques can be followed by an increase in student activities and learning outcomes.

The research of Adhitya, Satyawan, and Suwiwa also showed an increase in the learning outcomes of basketball games after the implementation of PBL. In *the chest pass* material, the study reported completeness of 28.6% in the pre-cycle, increased to 62% in the first cycle, and reached 95.2% in the second cycle. The results have a similar pattern

of improvement to this study, namely a gradual increase in completeness from the initial condition to the first cycle and then increase again in the second cycle.

When viewed from the learning process, the increase in the results of this research can be understood because PBL provides opportunities for students to learn through problems that are close to game activities. In *chest pass material*, problems can be in the form of inaccuracy in the direction of the pass, the ball not reaching the goal, the wrong hand position, or lack of movement coordination. When students are asked to find the cause and solution to the problem, students gain a more active learning experience. The activities of observing, trying, discussing, correcting, and evaluating movements can help students understand the relationship between the technique performed and the results of the passes obtained.

The implementation of PBL also provides space for students to work together. In groups, students can take turns being movement actors, observers, and feedback givers. This condition allows students to get more opportunities to observe mistakes and understand correct techniques. Teachers continue to play an important role as facilitators who direct the learning process, provide corrections to technical errors, and ensure that group activities run according to learning objectives.

Thus, the results of the study show a relationship between the application of PBL and the improvement of *chest pass accuracy learning outcomes* in the context of this classroom action research. The increase is shown descriptively through an increase in the average score from 68.33 in the pre-cycle to 76.50 in the first cycle and 84.67 in the second cycle, as well as an increase in completeness from 40% to 70% and then 90%. These findings are consistent with the PBL principle which emphasizes the use of problems as a trigger for learning activities and problem-solving, and is in line with several previous studies on PBL in basketball learning.

However, the results of the study need to be understood in the context of PTK design carried out in one class with 30 students. Therefore, the improvement found describes changes in the class being studied and cannot automatically be generalized to all high school students. Other factors such as training intensity, student experience, initial ability, quality of teacher guidance, and learning conditions can also contribute to changes in learning outcomes.

Overall, the discussion showed that the application of the *Problem Based Learning model in* chest pass *accuracy learning* provided positive changes to the learning process and outcomes of grade X students of SMA Negeri 3 Ambon. PBL provides students with the opportunity to face real movement problems, conduct investigations through practice, work together, obtain feedback, and reflect on the results of the exercise. The process is in line with the characteristics of PBL stated by Barrows, Arends, and Rusman and is supported by the findings of several previous studies on basketball learning. These results are the basis that PBL can be used as a learning approach in an effort to improve the learning outcomes of *chest pass* skills in the context of the classroom being studied.

CONCLUSION

Based on the results of research and discussion on the application of *the Problem Based Learning* (PBL) learning model to improve the learning outcomes of *basketball game chest pass* in grade X students of SMA Negeri 3 Ambon, it can be concluded that the application of the PBL model can improve student learning outcomes. This increase can be seen from the average score and percentage of learning completeness obtained at each stage of the research.

In the initial or pre-cycle condition, the average score of student learning outcomes was 68.33 with a completion percentage of 40%, namely 12 out of 30 students had reached the completeness criteria. After applying the PBL model in cycle I, the average

score increased to 76.50 with a completion percentage of 70%, namely 21 students had achieved completeness. Furthermore, after learning improvements were made in cycle II, the average score increased to 84.67 with a completeness percentage of 90%, namely 27 out of 30 students had achieved completeness.

The implementation of PBL also provides changes to the learning process. Students become more active in identifying problems, discussing, doing exercises, providing feedback, working together in groups, and evaluating and correcting mistakes in doing *chest passes*. Thus, the *Problem Based Learning* model can be used as an alternative to the PJOK learning model to improve the learning outcomes of *chest pass accuracy skills* in grade X students of SMA Negeri 3 Ambon.

ADVICE

Based on the results of the research that has been conducted, some suggestions that can be given are as follows.

1. For PJOK teachers, it is recommended to use the *Problem Based Learning* learning model as one of the alternatives in learning basketball games, especially *chest pass* materials. Teachers can provide movement problems that are in accordance with students' abilities so that students have the opportunity to analyze mistakes, find solutions, conduct exercises, and actively improve skills.
2. For students, they are expected to be more active and responsible during the learning process. Students should not only wait for the teacher's instructions, but try to identify movement mistakes, discuss with friends, do exercises earnestly, and receive feedback to improve *chest pass skills*.
3. For schools, the results of this research can be considered in supporting the use of innovative and student-centered learning models. Schools are expected to provide adequate sports facilities and infrastructure so that the PJOK learning process, especially basketball games, can take place effectively.
4. For future researchers, this research can be used as a reference to conduct research related to the application of PBL in PJOK learning. The next research can develop research with a larger number of subjects, different sports skill materials, more diverse assessment instruments, or compare PBL with other learning models.
5. For the next study, it is recommended that learning outcome data be obtained through instruments that have been tested for validity and reliability and are equipped with observation data of the learning process. Thus, changes in learning outcomes and learning processes can be analyzed more comprehensively.

BIBLIOGRAPHY

Adhitya, I. G. N. B. P., & Suwiwa, I. G. (2026). Application of *Problem Based Learning* learning model to improve basketball learning outcomes in students in class IXA SMP Negeri 14 Denpasar for the 2024/2025 academic year. *Spirit Scientific Journal, 26*(1), 23–32. https://doi.org/10.36728/jis.v26i1.5326

Aditya, R., Helmi, B., & Usman, K. (2020). Implementation of problem based learning models with scientific approaches in efforts to improve learning results in chestpass basketball game for class X high school students 5 Tanjung Balai 2014–2015 academic. *Proceedings of the 2nd International Conference on Social, Applied Science, and Technology in Home Economics (UNICOSS 2019)*. https://doi.org/10.2991/ahsr.k.200305.037

Ahmadi, N. (2007). *Basketball Games*. The Intermediate Era.

Arends, R. I. (2012). *Learning to teach* (9th ed.). McGraw-Hill.

Barrows, H. S. (1986). A taxonomy of problem-based learning methods. *Medical Education, 20*(6), 481–486. https://doi.org/10.1111/j.1365-2923.1986.tb01386.x

Barrows, H. S. (1996). Problem-based learning in medicine and beyond: A brief overview. *New Directions for Teaching and Learning, 1996*(68), 3–12. https://doi.org/10.1002/tl.37219966804

Barrows, H. S., & Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education*. Springer Publishing Company.

Candra, G., & Haryanto, J. (2025). Problem-based learning in physical education and sport: A systematic review of implementation approaches, learning outcomes, and contextual determinants. *Journal of Educational and Learning Studies, 8*(2). https://doi.org/10.32698/02472

Ginting, F. A., Made, S. I., & Kadek, Y. P. L. (2024). Implementation of IT-based *Problem Based Learning* (PBL) learning model to improve PJOK learning outcomes of basketball material in students of grade XI Accounting B SMK Negeri 1 Singaraja. *Journal of Sports Coaching Education Undiksha, 15*(1), 1–5. https://doi.org/10.23887/jpko.v15i1.82494

Harja, A. A., & Rahmat, A. (2022). The effect of *Project Based Learning* learning methods and *Discovery Learning learning methods on* chest pass *skill learning outcomes* in basketball games. *Pearl Education E-Journal, 7*(2).

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review, 16*(3), 235–266. https://doi.org/10.1023/B:EDPR.0000034022.16470.f3

Indrawan, A. (2018). Efforts to improve learning achievement of basketball education courses through *Student Centered Learning* using the *Problem Based Learning and Inquiry* (PBL) model. *Journal of SPORT (Sport, Physical Education, Organization, Recreation, and Training).*

Indrawati, I., Sabrina, R., & Hidayat, S. (2024). The use of a problem-based learning model in the subject of Physical Education, Sports and Health class X of SMAN 2 Krakatau Steel Cilegon. *Pendas: Scientific Journal of Basic Education, 9*(3). https://doi.org/10.23969/jp.v9i3.17502

Irawan, C. R., Carsiwan, C., & Martini, T. (2026). The effect of problem-based learning on students' adversity quotient. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation, 15*(2). https://doi.org/10.15294/active.v15i2.58053

Kristiyanto, A. (2010). *Classroom Action Research (PTK) in Physical Education and Sports Coaching*. UNS Press.

Maulana, I., & Bhakti, Y. H. (2025). The effectiveness of problem-based learning model in physical education subjects in senior high schools. *Journal for Lesson and Learning Studies, 8*(1). https://doi.org/10.23887/jlls.v8i1.89965

Putra, I. K. A. D. (2023). *The application of an ICT-based Problem Based Learning (PBL) learning model to improve PJOK learning outcomes of basketball chest pass and bounce pass materials in grade VIII students of SMP Negeri 5 Singaraja for the 2022/2023 academic year* [Thesis, Ganesha Education University].

Putra, K. G. D., Satyawan, I. M., & Wijaya, M. A. (2026). Implementation of *Problem Based Learning* (PBL) learning model to improve PJOK learning outcomes of basketball *basic technique passing chest pass* in grade X.3 students of SMA Negeri 7 Denpasar. *Journal of Education and Teaching Review, 9*(2). https://doi.org/10.31004/jrpp.v9i2.60774

Rahmadi, R., Hardinata, R., Ahwan, M., et al. (2023). Enhancing 21st century collaboration skills in physical education through the problem-based learning model. *Edu Sportivo: Indonesian Journal of Physical Education, 4*(3), 270–282. https://doi.org/10.25299/esijope.2023.vol4(3).14112

Riskayani, N. L. (2022). *The Problem Based Learning* (PBL) learning model improves activities and learning outcomes of basic basketball passing techniques. *Journal of*

Physical Education, Sports and Health Undiksha, *10*(1), 1–7. https://doi.org/10.23887/jjp.v10i1.47192

Rosdiani, D. (2015). *Physical education curriculum*. Alphabet.

Rusman. (2017). *Learning models: Developing teacher professionalism*. Rajawali Press.

Sabhara, R., Irvan, I., & Amir, A. (2022). Efforts to improve the learning outcomes of basketball game health practitioners through the application *of Problem Based Learning* in grade VII-A students in the first semester at MTs Negeri 6 Banjar, South Kalimantan. *Journal of Learning Thought and Development*, *4*(1), 294–304.

Saputra, I. E., Herul, H., Suherman, A., & Rahayu, E. T. (2023). The Effect *of Project Based Learning* Model on the Basketball Game Knowledge Ability of Junior High School Students. *Scientific Journal of Educational Vehicles*, *9*(21), 376–380. https://doi.org/10.5281/zenodo.10077181

Sukiyandari, L., A'la, M., & Rahmawati, A. D. (2026). The application of *the Problem Based Learning learning model* improves activities and learning outcomes of basic basketball passing techniques. *Journal of Sport Science Indonesia*, *5*(3), 94–103. https://doi.org/10.31258/jassi.5.3.94-103

Susanto, A. P., Wijaya, A. D., Gultom, A. S., & Muhazir, A. (2025). Systematic literature review: Application of collaborative learning models to improve teamwork in basketball. *Journal of Physical Health Recreation*, *5*(4), 340–351. https://doi.org/10.55081/jphr.v5i4.4813

Wissel, H. (2012). *Basketball: Steps to success* (3rd ed.). Human Kinetics.

Yani, A. (2021). *Game activities in outdoor education*. Expertmedia Book.

Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System. (2003). *Statute Book of the Republic of Indonesia Number 78 of 2003*.

Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia. (2022). *Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Independent Curriculum*. Ministry of Education, Culture, Research, and Technology.

Widyananta, I. P. A., Hita, I. P. A. D., & Mahotama, I. B. G. J. (2025). Efforts to improve the learning outcomes of passing *chest pass* in basketball through game-based learning to foster students' disciplined character: A literature review. *Multidisciplinary Scientific Journal*, *3*(10), 726–735. https://doi.org/10.60126/jim.v3i10.962