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Problem-Based Learning and Direct Learning Models Influence Learning Outcomes on Basic Soft Ball Game Techniques given Critical Thinking Ability

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ABSTRAK

Hasil belajar PJOK yang rendah disebabkan oleh beberapa faktor, diantaranya model pembelajaran yang monoton dan kemampuan berpikir kritis. Penelitian ini bertujuan menganalisis model Problem Based Learning *dan model pembelajaran langsung terhadap hasil belajar teknik dasar permainan softball ditinjau dari kemampuan berpikir kritis. Penelitian menggunakan desain* treatment by level *2X2. Populasi sebanyak 115 orang. Sampling sebanyak 60 orang dipilih dengan teknik* purposive sampling*. Metode pengumpulan data dengan menggunakan tes. Teknik analisis yaitu data dengan ANAVA dua jalur, dilanjutkan* independent simple t test*. Hasilnya menunjukan bahwa hasil belajar permainan softball peserta didik yang mengikuti model pembelajaran* Problem Based Learning *lebih tinggi dari yang mengikuti model pembelajaran langsung. Terdapat interaksi antara model pembelajaran dan kemampuan berpikir kritis terhadap hasil belajar permainan softball. Peserta didik dengan kemampuan berpikir kritis tinggi, mengikuti model* Problem Based Learning *mempunyai hasil belajar lebih tinggi dari pada yang mengikuti pembelajaran langsung dan peserta didik dengan kemampuan berpikir kritis rendah, mengikuti model* Problem Based Learning *mempunyai hasil belajar lebih rendah dari pada yang mengikuti pembelajaran langsung. Simpulan dari penelitian ini yaitu terdapat pengaruh model* Problem Based Learning *terhadap hasil belajar ditinjau dari kemapuan berpikir kritis. Implikasi penelitian ini guru dapat menerapkan model PBL untuk meningkatkan hasil belajar siswa.*

ABSTRACT

Several factors, including monotonous learning models and critical thinking skills, cause low PJOK learning outcomes. This research aims to analyze problem-based and direct learning models on the learning outcomes of basic softball game techniques in terms of necessary thinking skills. The research uses a 2X2 treatment by level design. The population is 115 people. A sampling of 60 people was selected using a purposive sampling technique. Data collection method using tests. The analysis technique uses data from two-way ANOVA, followed by an independent sample t-test. The results show that the learning outcomes for the softball game of students who follow the problem-based learning model are higher than those who follow the direct learning model. There is an interaction between the learning model and critical thinking skills in softball game learning outcomes. Students with high necessary thinking skills who follow the problem-based learning model have higher learning outcomes than those who follow direct learning, and students with low necessary thinking skills who follow the problem-based learning model have lower learning outcomes than those who follow explicit learning. This research concludes that the problem-based learning model influences learning outcomes regarding critical thinking abilities. This research implies that teachers can apply the PBL model to improve student learning outcomes.

1. INTRODUCTION

Learning is an interaction process between students and educators and learning resources in a learning environment. Learning is assistance provided by educators so that the process of acquiring knowledge and science, mastering skills and habits, and forming attitudes and beliefs in students can occur (Pratama, 2023; Ratana Subha Tusitadevi & Suhandi Astuti, 2021). In other words, learning is a process that

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helps students learn well. The learning process is experienced throughout a person's life and applies anywhere and anytime (Oktaviani, 2022; Sukmawati & Ghofur, 2023). Critical thinking skills are necessary for everyone living in the 21st century and, of course, in the era of the Industrial Revolution 4.0 (Marfilinda, 2019; Nastiti et al., 2022). Critical thinking skills are a necessity for students, so educators must be able to develop critical thinking skills in students (Stephani, 2017; Wartini, 2021).

Critical thinking is a systematic process that enables students to formulate and evaluate their beliefs and opinions (Dupri et al., 2019; Mudita et al., 2019). Critical thinking is a mental process that analyzes or evaluates information. Understanding information deeply can form a belief in the truth of the information obtained or expressed opinion (Rezkillah, 2020; Taufiqurrahman, 2023). The active process shows the desire or motivation to find answers and achieve understanding. Critical thinking is to make continuous considerations; active considerations are based on in-depth studies by applying thinking methods and reflecting on producing valid, correct, and strong conclusions. Critical thinking skills are currently in great demand so that children in the future when receiving information, do not immediately believe it, are not easily influenced, and always check the truth of the information obtained (Hart et al., 2021; Suryaningsih & Koeswanti, 2021). In critical thinking activities, students are required to complete tasks as well as possible and seek relevant information to help them complete tasks. Therefore, critical thinking skills are very important to develop in learning. Many factors, including the quality of students and teachers, availability of teaching materials, curriculum, facilities, and management, greatly influence the quality of an educational program. Learning will run effectively if, in the learning itself, students feel happy and comfortable and enjoy the learning that is carried out (Bellaera et al., 2021; Mabruroh, 2019). Good learning will contribute positively to the results of learning. So, a creative and innovative process is needed to create high learning motivation. Educators' readiness, appropriate curriculum, availability of learning resources, and support for stable devices and networks must be considered for effectively communicating between students and educators.

SMA Negeri Bali Mandara is a boarding school that provides full educational assistance for poor and high-achieving students from all over the province of Bali. SMA Negeri Bali Mandara has a vision "to become the leading school in creating future leaders", which means becoming a leading school and producing future leaders. Based on initial observations carried out using interview techniques with Physical Education, Sports, and Health subject teachers at SMA Negeri Bali Mandara, it was stated that in the 2021/2022 school year, the learning material that was most below the Minimum Completion Criteria was in the Softball game material, namely for class XI IPS there were 21 out of 56 students (37.5%) whose scores were below the Minimum Completion Criteria and 35 out of 56 students above the Minimum Completion Criteria (62.5%). The teacher used a direct learning model to deliver the basic softball game technique material during the teaching and learning process. The use of the direct learning model is still considered monotonous, causing boredom in students and reducing students' interest in learning, which will affect students' learning outcomes later. Learning outcomes are when someone has learned, there will be a change in behavior in that person, for example, from not knowing to knowing, not understanding to understanding. The characteristics of students at SMA Negeri Bali Mandara are mostly very active. The motivation of students to learn is very high. Still, because the learning model is monotonous, some students feel bored and tend to listen to the teacher's explanation. For that reason, the learning model used by the teacher has a very big influence on the teaching and learning process.

The solution to the problem with the right learning model is for teachers to create a meaningful and enjoyable learning atmosphere for students. Teachers must choose the right model to convey a concept to their students. Teachers can use an appropriate model to convey material to students for optimal learning outcomes. Learning models that can help students relate material to real life. The learning model is problem-based (Rahmadani & Taufina, 2020; Zahrawati, 2020). Problem-based learning is a learner-centered approach where students learn about a subject by working in groups to solve open-ended problems. These problems drive motivation and active learning (Ramandanti & Supardi, 2020; Wati, 2022). The application of the Problem-Based Learning model with concrete media can be an effort to improve learning outcomes for basic softball techniques (Wati, 2022). The Problem-Based Learning model raises problems as the first step in collecting and integrating new knowledge. The Problem-Based Learning model promotes social constructivist principles, turning learning experiences into a goldmine of lifelong learning opportunities. Online problem-solving training improves student performance, problem-solving skills, and classroom interactions. Furthermore, Problem-Based Learning provides students with the opportunity to practice critical thinking skills in a variety of contexts. Using the Problem-Based Learning model in the classroom helps students develop critical thinking skills, improve learning outcomes, and increase student activity (Bosica et al., 2021; Pramestika et al., 2020).

Characteristics of Problem-Based Learning are implementing contextual learning, the problems presented can motivate students to learn, integrity learning is learning motivated by unlimited problems,

students are actively involved in learning, work collaboration, and various skills, experiences, and concepts. The problem-based learning model is a group learning model that starts from a problem so that students can solve problems in everyday life (Wati, 2022; Zahrawati, 2020). Based on the description, we use the problem-based learning model to present contextual problems based on students' real lives. This can stimulate students' abilities to solve problems by using all the knowledge they have or from other learning sources. Related to the description above, this study was conducted to provide considerations for teachers, especially in high schools, to apply one of the Problem-Based Learning learning models so that the learning process can run effectively and efficiently. Problem-based learning is divided into five steps: providing problems, organizing students, analyzing and discussing, developing and displaying work, and reviewing and providing assessments of the investigation process. Problem-based learning has several important characteristic items and has meaning, namely about submitting problems, focusing on interdisciplinary relationships, authentic investigations, and producing products or works that are then exhibited (Indariani et al., 2018; Nastiti et al., 2022; Nasution & Oktaviani, 2020).

Previous research findings state that the problem-based learning model can improve students' critical thinking skills in physical education (Zahrawati, 2020). The Problem-Based Learning model in learning Poco-Poco rhythmic gymnastics sports can provide strong stimulation to learn movement independently and solve problems in groups effectively so that mastery of Poco-Poco sports movement skills can achieve completion and increase student motivation in participating in learning, which is marked by increased student attention and effective time for active movement; and reduced free time and rest (W. P. Dewi et al., 2021; Sukmawati & Ghofur, 2023). The Problem-Based Learning model can significantly improve learning outcomes for basic volleyball service techniques (Nastiti et al., 2022; Saepuloh et al., 2021). The Problem-Based Learning model influences students' critical thinking skills in volleyball learning (Bosica et al., 2021; Rahmadani et al., 2023). The STAD-type cooperative learning model assisted by the Google Classroom application and the Problem-Based Learning learning model assisted by the Google Classroom application in basketball learning positively affect student learning outcomes (Allahawiah et al., 2023; Barus, 2021). Based on several previous research results show that the learning model and critical thinking skills of students can affect the learning outcomes of basic softball techniques. So, this study was conducted at SMA Negeri Bali Mandara to analyze the Problem-based Learning and direct learning models and the learning outcomes of basic softball techniques regarding critical thinking skills. The research that may be conducted is a study with a factorial treatment design by level 2x2.

2. METHOD

This study is a study with a factorial design Treatment by level 2X2. Factorial design is a modification of the true experimental design, namely by considering the possibility of moderator variables that affect the treatment (independent variable) on the results (dependent variable) (Sugiyono, 2019). The design used in this study is a two-factor design, namely treatment by level design. The time of this study was carried out in the semester. The population in this study was the eleventh grade of SMA Negeri Bali Mandara, namely 115 students. The sample size was 60 people, consisting of 30 people with high critical thinking skills and 30 with low critical thinking skills. Each group was divided again into a treatment group using the Problem-based Learning learning model and a direct learning model using ordinal pairing so that each group's critical thinking skills were equal. The Data Collection Method is a test method used to measure the learning outcomes of basic softball techniques in terms of knowledge and critical thinking skills. The type of instrument used in this study is an assessment instrument for knowledge, skills, and critical thinking skills. The critical thinking ability test is measured by giving a test according to the indicators: evaluation, interpretation, inference, analysis, and explanation. The instrument grid is presented in Table 1, and Table 2.

Table 1. Grid of Learning Outcome Knowledge Test

Basic Competencies	Question Indicator	Cognitive Level	Item Number	Total
3.2 Analyze the motor skills of a small ball game and prepare an	3.2.1 explain, analyze, and evaluate the basic techniques of throwing the ball in softball	C2, C4, C5	1,2,3,4,5	5
	3.2.2 explain, analyze, and evaluate the basic techniques of catching the ball in softball	C2, C4, C5	6,7,8,9,10	5

Basic Competencies	Question Indicator	Cognitive Level	Item Number	Total
improvement plan *)	3.2.3 explain, analyze, and evaluate the basic techniques of hitting the ball in softball	C2, C4, C5	11,12,13,14,15	5
	3.2.4 explain, analyze, and evaluate the basic techniques of running to the base in softball	C2, C4, C5	16,17,18,19,20	5
Total				**20**

Table 2. Critical thinking ability test

No.	Indicator (Skills)	Sub-Indicator (Sub-Skills)	Question Number	Total
1	Evaluation	Evaluating arguments (evaluating the premises of an argument)	1,2,3	3
		Evaluating arguments (considering the conclusion of an argument)	4,5,6	3
2	Interpretation	Decoding meaning (detecting and deciphering information, reasons, goals, values, views, rules, procedures, criteria, or inferential relationships expressed in communication systems, such as language, social behavior, images, numbers, graphs, tables, charts, signs, and symbols)	7,8,9,10,11,12	5
3	Analysis	Analyzing arguments (identifying and distinguishing additional elements of reasoning, such as intermediate conclusions and unstated assumptions)	13,14	2
		Analyzing arguments (identifying and distinguishing the main conclusion and other premises that support the premises)	15,16	2
		Examining ideas (identifying issues or problems)	17,18	2
4	Inference	Drawing conclusions (determining several conclusions supported by strong evidence)	19,20,21,22, 23,24	6
		Estimating alternatives (formulating alternative solutions to problems)	25	1
5	Evaluation	Stating results (intended to produce a strong statement, description, or representation about the results of one's reasoning activities, which include analyzing, evaluating, concluding, or monitoring the results)	26,27,28,29, 30	5

Before being used, the research instrument was tested to determine whether the learning outcomes of the basic softball game technique and critical thinking ability tests were suitable for the research instruments. This study used two analysis techniques, namely descriptive analysis and variance analysis. Descriptive analysis was used to describe students' learning outcome test scores. The variance analysis used in this study was a two-way variance analysis, with the variants being the learning model and students' critical thinking ability. Descriptive analysis is useful for summarizing several statistical values that show the learning outcomes of students' basic softball game techniques according to the learning model or presented as a table according to the treatment group. Descriptive analysis is in the form of data presentation with a frequency distribution list and histogram. This study's learning outcome test consisted of 20 multiple-choice questions that refer to indicators for basic softball game techniques. The student learning outcome test was constructed based on Bloom's taxonomy, revised by Anderson and Krathwohl. Based on the learning outcome test assessment rubric, the ideal maximum score for the learning outcome test that students can achieve is 100, and the minimum score is 0. Analysis Prerequisite Test Technique Before the data is analyzed further, the data in this study was first subjected to an analysis prerequisite test, namely the normality test and the homogeneity test.

3. RESULT AND DISCUSSION

Result

The results of the data normality test were based on the data on the learning outcomes of critical thinking skills of students who followed the problem-based learning model and students who followed the direct learning model. In this study, the normality of the data was tested using the Kolmogorov-Smirnov test technique using SPSS 25.0 for Windows. The following are the results of the data distribution test for the group with the Problem-Based Learning model and the group with the direct learning model using the Kolmogorov-Smirnov technique. The results of the data distribution normality test are presented in Table 3.

Table 3. Results of testing the normality of data distribution

Group	Kolmogorov-Smirnov		
	Statistic	df	Significance
Problem-Based Learning Model	0.152	30	0.075
Direct Learning Model	0.165	30	0.055

The normality test of the distribution of learning outcomes data of basic softball techniques in the group with the Problem-Based Learning model obtained a significance of 0.075, and in the direct learning model group obtained a significance of 0.055 with a significance level set at 0.05 where the significance level obtained is greater than the significance level set. Thus, the test scores of learning outcomes of basic softball techniques come from a normally distributed population. The calculation of the normality test with the SPSS application can be seen in the appendix. The variance homogeneity test is carried out to determine whether the sample group comes from a population with the same variance. The homogeneity test of variance is seen in Table 4.

Table 4. Test of homogeneity of variance

Data Group	Levene Test			
	Statistic	df1	df2	Significance
learning Outcomes of basic Softball Techniques	1.178	3	56	0.326

Based on the homogeneity test of variance with the Levene Test, it can be seen that the significance value for the basic softball technique learning outcome test is 0.325> 0.05, so H0 is accepted, and the population variance is homogeneous. Hypothesis testing uses a two-way analysis of variance (ANOVA) test. A summary of the results of the two-way analysis of variance (ANOVA) test using SPSS 25 for Windows is presented in Table 5.

Table 5. Results of the two-way analysis of variance (ANOVA) test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
(A) Learning model	120.417	1	120.417	4.193	.045
(B) Critical thinking skills	350.417	1	350.417	12.201	.001
(A*B) Learning model*critical thinking skills	326.667	1	326.667	11.374	.001
Error	**1608.333**	**56**	**28.720**		
Total	**365887.500**	**60**			
Corrected Total	**2405.833**	**59**			

Based on the results of the two-way ANOVA analysis, the value of A (learning model) has a significance value of 0.045 <0.05, so there is a difference in the learning outcomes of basic softball techniques between students who follow the Problem-Based Learning model and the direct learning model, so the calculation is continued to compare the average learning outcomes of basic softball techniques. The learning outcomes of basic softball techniques between students who follow the Problem-Based Learning model = 79.25> from students who follow the direct learning model = 76.41. Then, H1 is accepted. So, the learning outcomes of basic softball techniques between students who follow the Problem-based Learning model are higher than those who follow the direct learning model. Based on the two-way ANOVA analysis results, the value of A * B (learning model * critical thinking skills) has a significance value of 0.000> 0.05,

so H0 is rejected. So, there is an interaction between the learning model (A) and critical thinking skills (B) on the learning outcomes of students (Y) using basic softball techniques. An independent sample t-test is used for this simple effect test. The independent sample t-test results with SPSS for each simple effect. First, for students with high critical thinking skills, those using the Problem-Based Learning model have higher learning outcomes for basic softball techniques than those using the direct learning model. The analysis results for students with high critical thinking skills obtained a probability value (p) of the t-test on equal variances assumed of 0.000. The probability value (p) <0.05, so H0 is rejected. This shows a difference in the learning outcomes of students with high critical thinking skills who follow the Problem-Based Learning model and those who follow the direct learning model. Based on the mean difference value (average difference) of 7.500, the average normalized gain score for the learning outcomes of students with high critical thinking skills who follow the Problem-Based Learning model is higher than those who follow the direct learning model. For students with low critical thinking skills, those who use the direct learning model have higher learning outcomes for basic softball techniques than those who use the problem-based learning model. Analysis results with t-test The probability value (p) of the t-test on equal variances assumed is 0.039. The probability value (p) <0.05, so H0 is rejected. This shows a difference in learning outcomes between students with low critical thinking skills who follow the Problem-Based Learning model and those who follow the direct learning model. Based on the mean difference value (average difference) of -1.833, it can be seen that the average normalized gain score of learning outcomes of students with low critical thinking skills who follow the Problem-Based Learning model is lower than those who follow the direct learning model.

Discussion

First, the Learning Outcomes of Basic Softball Game Techniques in Students Who Follow the Problem-Based Learning Model are Higher than Those Who Follow the Direct Learning Model. The Problem-Based Learning Model is a learning model that emphasizes solving problems previously given by the teacher in the form of questions so that, in this case, students are required to be active and think about everything, especially in terms of their knowledge based on their abilities and knowledge sought from various sources that support this (Rezkillah, 2020; Zahrawati, 2020). The Problem-Based Learning model also has benefits so that students remember and improve their understanding of the teaching material, increase focus on relevant knowledge, encourage thinking, build teamwork, train leadership, and social skills, motivate students/learners, and build learning skills (life-long learning skills) (Gabriele et al., 2016; Saepuloh et al., 2021). The results of the study showed that the average value of the learning outcomes of basic softball techniques for students who followed the Problem-Based Learning model showed that the learning outcomes of basic softball techniques in the group that followed the Problem-Based Learning model were higher than those who followed the direct learning model. This situation occurs because students who follow the Problem-Based Learning model challenge their abilities more so that their motivation increases; in addition, students directly solve a problem that is given according to reality, so this can trigger students to find the right way to solve the problem themselves or with their groups. This finding is reinforced by previous findings stating that there is an increase in student scores through the Problem-Based Learning model (W. P. Dewi et al., 2021; Mariskhantari et al., 2022). The Problem-Based Learning model assisted by visual media influences elementary school student's critical thinking skills and science learning outcomes (Bosica et al., 2021; Nurrohma & Adistana, 2021). Application of cooperative learning model of group investigation type and Problem-Based Learning on students' badminton material knowledge learning outcomes (Anggreni et al., 2021).

Second, there is an interaction between critical thinking skills and learning models on the learning outcomes of basic softball techniques. The Problem-Based Learning model and the direct learning model show different essential emphases. The Problem-Based Learning model tends to be student-centered, requiring students to actively participate in the entire learning process, while the direct learning model is teacher-centered; the teacher holds control in the entire learning process. The difference in the essence of these two learning models requires consideration in their application, one of which is students' critical thinking skills. The Problem-based Learning model is suitable for students with high critical thinking skills, while the direct learning model is more appropriate for students with low critical thinking skills. Students with high critical thinking skills are certainly very happy with the Problem-Based Learning model because they can explore their abilities in mastering the basic softball technique material. Students with high critical thinking skills will be happy to be given broad learning opportunities. In the direct learning model, students with high critical thinking skills tend to get bored and tired quickly because they only pay attention to the teacher explaining and demonstrating skills and waiting for their friends to practice in turns. Students with low critical thinking skills need help finding it. They are unhappy with the Problem-Based Learning model because they need more initiative to learn from various sources and are reluctant to look for broader

materials to explore their abilities. Students with low critical thinking skills are more comfortable with the direct learning model because the teacher has given all the materials, and students have to wait for the teacher. Previous findings stated an interaction between critical thinking skills and learning models on the learning outcomes of basic softball techniques in grade eleven students of SMA Negeri Bali Mandara (Pratama, 2023; Rezkillah, 2020). There is an interaction effect between the learning model and critical thinking skills on the understanding of physics science. There is an interaction effect between applying problem-based learning models and critical thinking skills on sixth-grade elementary school students' ability to solve mathematical problems (W. P. Dewi et al., 2021).

The third finding is that the learning outcomes of basic softball techniques of students with high critical thinking skills who follow the Problem-Based Learning model are higher than those who follow the direct learning model. Critical thinking skills are the ability to think logically, reflectively, systematically, and productively, which can be applied in making considerations and making decisions in solving a problem well. Critical thinking skills play a big role in a person's success in learning (A. C. Dewi et al., 2019). Critical thinking skills affect their ability to solve problems using the Problem-based Learning model, which requires students to solve problems to follow the learning well (Azisah et al., 2023; Stephani, 2017). This finding is reinforced by previous research stating that the learning outcomes of basic softball techniques for students who have high critical thinking skills who follow the Problem-Based Learning model are higher than those who follow the direct learning model (Mashudi, 2021; Rakhmayani & Hamdu, 2021). Students whose learning implements learning with the PBL model have significantly better problem-solving abilities compared to students whose learning uses direct learning. Students' mathematical problem-solving abilities among students with a FI cognitive style and following the Problem-Based Learning model are higher than those who follow the direct learning model (Nastiti et al., 2022). The Problem-based Learning model, assisted by visual media, influences elementary school students' critical thinking skills and science learning outcomes (Lestari et al., 2021).

The fourth finding is that the learning outcomes of basic softball techniques of students who have low critical thinking skills and follow the Problem-Based Learning model are lower than those who follow the direct learning model. More critical thinking skills will be needed to think logically, reflectively, systematically, and productively, which will be applied in making considerations and making decisions in solving a problem well. It would be better if the teacher gave the material directly, and they usually have more difficulty receiving knowledge from various sources. Students with low critical thinking skills try to receive knowledge and practice the skills demonstrated by the teacher again. Thus, when the learning process is carried out, they will focus on the teacher and follow everything conveyed and demonstrated by the teacher. Students try to memorize the learning material and will follow all the movements demonstrated by the teacher because they do not dare to refuse, so they will inevitably practice. In the Problem-Based Learning model, activeness and cooperation between students are needed to solve a problem so that their knowledge and skills can be mastered well (Salcombe & Harjono, 2022). So, students with low critical thinking skills are often overwhelmed in following the problem-based learning model; they tend to be more passive and only receive knowledge from the teacher. This allows the knowledge and skills students acquire to be less than optimal. The direct learning model is more appropriate for students with low critical thinking skills. One of the advantages of the direct learning model is that it can be used to teach explicit concepts and skills to students with low critical thinking skills. Students' mathematical problem-solving abilities between students with a cognitive style of FD and those who follow Problem-Based Learning are higher than those of students who follow direct learning (Juliantini et al., 2020). The understanding of physics science of children taught with a quantum learning model is lower than the contextual teaching and learning model in children with low critical thinking skills. This study only measures the presence or absence of the influence of the Problem-Based Learning model on the learning outcomes of basic softball techniques without further examining the direction of the influence given. In the future, a study can be conducted to examine the extent to which the direction of the influence given by the Problem-Based Learning model on the learning outcomes of Physical Education, Sports, and Health students. This study implies that teachers can apply the PBL model to improve student learning outcomes.

4. CONCLUSION

The learning outcomes of Basic Softball Game Techniques with the Problem-Based Learning model are higher than those with the direct learning model. There is an interaction between the learning model and critical thinking skills in the learning outcomes of Basic Softball Game Techniques. The learning outcomes of basic softball techniques of students who have high critical thinking skills and follow the Problem-Based Learning model are higher than those who follow the direct learning model. The learning outcomes of basic softball techniques of students with low critical thinking skills who follow the Problem-

Based Learning model are lower than those who follow the direct learning model. It is recommended that teachers use the Problem-Based Learning model as an alternative learning method that can be applied in class to optimize learning outcomes for students with high critical thinking skills. This research was conducted on the topic of basic softball game techniques in grade eleven of SMA Negeri Bali Mandara so that to obtain more general evidence from the application of the Problem-Based Learning model, other researchers are expected to try other topics to determine the effect of the application of the Problem-Based Learning model in learning Physical Education, Sports, and Health in more depth.

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