Empowering Student Learning Outcomes Through Problem-Based Learning in Social Science

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ABSTRACT

The purpose of this investigation was to examine the impact of the problem-based learning (PBL) approach on the learning outcomes of seventh-grade students in the subject of Social Science. The study employed a quasi-experimental design and targeted all seventh-grade students at SMPN 03 Batang Anai Padang Pariaman. Purposive sampling was utilized to select two classes, utilizing class VII.4 as the experimental group and class VII.5 as the control group, each containing 32 students. The PBL model was employed in the experimental group through instructional videos, while direct observation assignments were used in the control group. The findings demonstrated that the PBL model significantly enhanced the learning outcomes of students in the experimental group, thereby validating the effectiveness of this approach in enhancing the learning outcomes of students.

KEYWORD:
Learning Outcomes, Problem Based Learning, Videos, Observation.

INTRODUCTION

Education development should be prioritized as a nation's progress can be observed based on its educational advancement (Susanto et al, 2020; Rasmitadila et al, 2021). Therefore, the components involved in the education process such as students, teachers, teaching and learning processes, management, education services, and other supporting facilities should be well-coordinated and affiliated. This is in line with the national education goals which aim to improve the quality of education, enhance the nation's intelligence, and shape high-quality character.

According to the Minister of Education and Culture of the Republic of Indonesia, "Merdeka Belajar" (Freedom to Learn) means freedom to think, freedom to innovate, freedom to learn independently and creatively. This means that schools, teachers, and students have the freedom to learn and prepare for learning (Hendri, 2020). Philosophically, the freedom to learn is based on humanism and constructivism (Hendri, 2020; Yusuf & Arfiansyah, 2021), progressivism (Mustaghfiroh, 2020), and the philosophy of education of Ki Hadjar Dewantara (Ainia, 2020; Masito & Cahyani, 2020; Saleh, 2020). The basic essence of education is the education of a free soul (Hendratmoko et al., 2017). A free soul is related to positive thinking patterns, noble and beautiful feelings, and noble will (Hadiwijoyo, 2016).
The main activity of a school as a form of educational service to the community is learning. Schools are given the freedom to choose the appropriate strategies, methods, models, and learning techniques that suit the characteristics of the subject matter, students, teachers, and the actual conditions of available resources in the school. Generally, student-centered learning is more capable of empowering student learning. Choosing the right learning model that suits the needs of the students can create a fun, comfortable, and interactive learning environment between students and teachers. This will directly affect the students’ ability to understand the material presented by the teacher as a facilitator and motivator, and can improve student learning outcomes (Susanti, Sebrina & Rahmidani, 2021).

The Minister of Education and Culture Regulation No. 22 of 2016 outlines three learning models that can serve as references for teachers aiming to support the attainment of Higher Order Thinking Skills (HOTS) in their students. These models emphasize the importance of designing and implementing learning activities that encourage curiosity, scientific inquiry, and social behavior. Specifically, the three learning models are: Discovery/Inquiry Learning, Problem-Based Learning, and Project-Based Learning. A learning model is a structured approach developed based on theory to organize the teaching and learning process and achieve specific learning objectives (Sani, 2014). The learning process involves interactive communication among learning resources, teachers, and students (Rusman, 2010:16). Hence, teachers should carefully plan the learning process, including selecting an appropriate learning model that can improve students’ learning outcomes.

Unsatisfactory results can be observed in the learning outcomes of seventh-grade students at SMPN 03 Batang Anai. This is demonstrated by the outcomes of the students’ daily Social Studies assessments, as indicated in Table 1 below:

Table 1. Students' Daily Test Scores in Social Studies VII grade at SMPN 03 Batang Anai Semester I Academic Year 2022/2023

<table>
<thead>
<tr>
<th>Class</th>
<th>Scores</th>
<th>Minimum Mastery Criteria (KKM)</th>
<th>Passed Students</th>
<th>Not Passed Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII.1</td>
<td>32</td>
<td>70</td>
<td>20</td>
<td>62.50%</td>
</tr>
<tr>
<td>VII.2</td>
<td>32</td>
<td>70</td>
<td>18</td>
<td>56.25%</td>
</tr>
<tr>
<td>VII.3</td>
<td>32</td>
<td>70</td>
<td>15</td>
<td>46.88%</td>
</tr>
<tr>
<td>VII.4</td>
<td>32</td>
<td>70</td>
<td>12</td>
<td>37.50%</td>
</tr>
<tr>
<td>VII.5</td>
<td>32</td>
<td>70</td>
<td>11</td>
<td>34.38%</td>
</tr>
<tr>
<td>VII.6</td>
<td>32</td>
<td>70</td>
<td>16</td>
<td>50%</td>
</tr>
<tr>
<td>VII.7</td>
<td>32</td>
<td>70</td>
<td>15</td>
<td>46.88%</td>
</tr>
<tr>
<td>VII.8</td>
<td>32</td>
<td>70</td>
<td>13</td>
<td>40.63%</td>
</tr>
</tbody>
</table>

Source: The data from Social Studies Subject Teacher of Class VII SMPN 03 Batang Anai, 2022

As depicted in Table 1, the academic performance of seventh-grade students in SMPN 03 Batang Anai was below the desired standard. The most significant proportion of incomplete academic progress was observed in classes VII.4 and VII.5.

Based on preliminary observations conducted by the author at SMPN 03 Batang Anai, the subpar performance of students in social sciences was attributable to various internal and external factors. External factors that hindered the academic progress of seventh-grade students include the use of monotonous and unstimulating teaching methods and learning models by instructors that fail to captivate students’ attention and interest in the subject matter (Suryabrata in Ramainas, 2006). On the other hand, internal factors included the presence of students who were inattentive during lessons, indulging in distractions such as chatting with classmates, creating disruptions, being noisy, and lacking focus. Some students even daydreamed or exited the classroom. When teachers questioned them, they struggled to respond or express their opinions.

The issues identified stemmed from multiple factors such as students’ disinterest in abstract and memorization-focused social sciences subjects, alongside the use of monotonous teaching techniques. Furthermore, instructors had not been successful in motivating students to actively participate in learning these subjects, which primarily involved abstract concepts and memorization. Hence, it is crucial for teachers to be more inventive and resourceful in implementing diverse teaching approaches for social sciences subjects.
To enhance student engagement and academic performance in Social Studies, one of the self-directed learning curriculum models that can be employed is the Problem-Based Learning (PBL) model. PBL is an approach that presents learners with real-world problems, aiding them in comprehending the subject matter more effectively (Nofziarni, 2019; Nomura, Soma, Kijima & Matsuyama, 2023; Lubis, Suryadarma & Yanto, 2022). The approach commences with a problem, and the instructor functions as a metacognitive mentor, directing learners towards a deeper understanding of the material, which they then analyze and present independently (Suliyati, 2018). PBL is designed to encourage students to become more active and analytical thinkers in resolving challenges encountered during the learning process (Nofziarni et al., 2019; Tadjer, Lafifi, 2022).

The efficacy of Problem-Based Learning can be further heightened through the integration of instructional media that facilitates students’ comprehension of the material (Ratnawati et al., 2020). For instance, the Problem-Based Learning model can be augmented with instructional videos, or the observation-based learning model can emphasize local wisdom, as emphasized by the Merdeka Belajar curriculum that prioritizes enjoyable and student-centered learning. This approach considers academic success as not solely the responsibility of teachers, but also involves peers in the learning process.

Integrating video media into the learning process is crucial in engaging students and is considered a vital teaching component. Visual media, particularly videos, has become an increasingly popular tool in creating an enjoyable learning experience that stimulates interest and enhances students’ understanding of the subject matter being taught (Yolanda, Gunawan, & Sutrio, 2019; Suniasih, 2021).

Apart from incorporating video media into Social Studies learning via the PBL model, teachers can also optimize PBL implementation through assignments that require direct student observation (Dewi, 2012; Samsudin, 2016). These assignments are intended to furnish students with firsthand information and knowledge about social, economic, and political norms that have significant impacts on the economy and well-being of the neighboring community. Students can obtain problem phenomena from their observations, which will then be analyzed and discussed collectively in a classroom setting in groups, with teacher guidance facilitating the learning process (Aslan, 2021). The purpose of this research is to investigate the impact of two distinct learning models - Problem Based Learning (PBL) assisted by video learning and PBL through direct observation assignments - on the learning outcomes of seventh-grade students in Social Studies at SMPN 03 Batang Anai.

RESEARCH METHOD

This study was classified as a quasi-experimental study as it aimed to investigate the impact of two independent variables, namely the Problem Based Learning (PBL) model assisted by learning videos (X1) and the PBL model through direct observation assignments (X2), on the dependent variable, which was the learning outcomes (Y), of all seventh-grade students (population) at SMPN 03 Batang Anai, Padang Pariaman Regency, enrolled in the academic year 2022/2023. The sample for this study was selected using purposive sampling technique (Arikunto, 2007) based on classes with nearly the same average score. Class VII.4 (32 students) and class VII.5 (32 students) were selected as the experimental and control groups, respectively.

This study utilized both primary and secondary data. The primary data were collected through pre- and post-tests consisting of 25 objective or multiple-choice questions for each class. The research focused on the competency standard of KD 3.3, which pertained to comprehending the concept of interaction between humans and space in generating various activities, specifically in relation to the role of entrepreneurship in advancing the Indonesian economy.

The methodology of this study involved the collection of both primary and secondary data. The primary data were collected through the administration of a multiple-choice test consisting of 25 items as a pretest and posttest to measure validity, reliability, difficulty level, and item discrimination. The N-gain, normality test, homogeneity test, and hypothesis testing were calculated using this data. The hypothesis testing aimed to determine whether the null hypothesis (H0) could be accepted or rejected. The research hypothesis stated that there would be a significant difference in social sciences learning outcomes using the Problem Based Learning (PBL) model with video-assisted learning and the Problem Based Learning (PBL) model through direct observation assignments among seventh-grade students in SMPN 03 Batang Anai.
RESULT AND DISCUSSION

Research Findings

After the research process was carried out, student learning outcomes in the form of scores were obtained, which were then processed to become pre-test and post-test scores. Both of these scores were analyzed and compared to see the development of student learning outcomes. The following are the student test scores in both sample classes.

The pre-test was conducted to assess the initial ability of students in both sample classes before the teaching and learning process took place. The pre-test questions used in this study were the same for both the experimental class (VII.4) and the control class (VII.5). The pre-test scores of students in the experimental and control classes are shown in the following table:

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Students</th>
<th>Test</th>
<th>Lowest Score</th>
<th>Highest Score</th>
<th>Average Score</th>
<th>% of Mastery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>32</td>
<td>Pre-test</td>
<td>32</td>
<td>76</td>
<td>57</td>
<td>9.38</td>
</tr>
<tr>
<td>control</td>
<td>32</td>
<td>Post-test</td>
<td>68</td>
<td>96</td>
<td>84.6</td>
<td>96.88</td>
</tr>
<tr>
<td>Experiment</td>
<td>32</td>
<td>Pre-test</td>
<td>16</td>
<td>76</td>
<td>42.9</td>
<td>9.38</td>
</tr>
<tr>
<td>control</td>
<td>32</td>
<td>Post-test</td>
<td>60</td>
<td>92</td>
<td>77.4</td>
<td>84.38</td>
</tr>
</tbody>
</table>

Source: Processed primary data, 2023

Based on the data presented in Table 1, it can be observed that the experimental group comprised of 32 students who achieved pre-test scores ranging from 32 to 76 with an average score of 57, while the control group obtained pre-test scores ranging from 16 to 76 with an average score of 42.9. Additionally, the post-test scores for the experimental group ranged from 68 to 96 with an average score of 84.6, while the post-test scores for the control group ranged from 60 to 92 with an average score of 77.4. Notably, the proportion of students who passed the post-test in the experimental group was higher than that of the control group. Based on the pre-test and post-test outcomes from the experimental and control groups, the average scores for social sciences learning outcomes are presented in the following graph:

![Chart showing comparison of pre-test and post-test scores between experimental and control groups]

Figure 1. Comparison of pre-test and post-test scores in the experimental and control classes.

Source: Primary Data Processing, 2023

Based on Figure 1, there was a difference in the average score of post-test results between the experimental and control groups before and after the treatment. The average score of the experimental group as higher than the average score of the control group.

The improvement of students’ learning outcomes was obtained by comparing the pre-test scores with the post-test scores obtained by the two sample classes (experimental and control classes). Based on the calculation of pre-test and post-test scores, it can be seen that there was an improvement in learning outcomes in both sample classes. The progress of student scores can be seen in the table below:
Table 3. Average Learning Outcome Improvement

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Pre-test Mean</th>
<th>Post-test Mean</th>
<th>Average Gain (Δ)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>32</td>
<td>57</td>
<td>84.6</td>
<td>0.64</td>
<td>Medium</td>
</tr>
<tr>
<td>Control</td>
<td>32</td>
<td>42.9</td>
<td>77.4</td>
<td>0.56</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Source: Primary Data Processing, 2023

Based on the table above, there was an increase in the average learning outcomes for both classes in terms of knowledge aspect. Additionally, the average gained in student learning outcomes who learned using the Problem Based Learning model aided by videos was higher compared to the average gain in student learning outcomes who learned using the Problem Based Learning model with direct observation assignments.

The normality test of the data in this study was analyzed using the Kolmogorov-Smirnov test with the assistance of SPSS 25 for Windows at a significance level of 0.05 or 5%. Data were considered normal if the significance value (Sig.) > 0.05 and vice versa if the significance value (Sig.) < 0.05, indicating that the data in the study did not have a normal distribution. The results of the pre-test and post-test normality tests for the social sciences learning outcomes can be seen in the following table:

Table 4. Normality Test Results

<table>
<thead>
<tr>
<th>Tests of Normality</th>
<th>Kolmogorov-Smirnov Statistic</th>
<th>df</th>
<th>Sig.</th>
<th>Shapiro-Wilk Statistic</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>postest_ekspr</td>
<td>.127</td>
<td>32</td>
<td>.200*</td>
<td>.953</td>
<td>32</td>
<td>.178</td>
</tr>
<tr>
<td>pretest_ekspr</td>
<td>.120</td>
<td>32</td>
<td>.200*</td>
<td>.969</td>
<td>32</td>
<td>.473</td>
</tr>
<tr>
<td>postest_control</td>
<td>.227</td>
<td>32</td>
<td>.120*</td>
<td>.935</td>
<td>32</td>
<td>.154</td>
</tr>
<tr>
<td>pretest_control</td>
<td>.152</td>
<td>32</td>
<td>.058*</td>
<td>.953</td>
<td>32</td>
<td>.176</td>
</tr>
</tbody>
</table>

* This is a lower bound of the true significance.

Based on Table 4, the significance values obtained from the Kolmogorov-Smirnov test for pre-test data were 0.200 for the experimental class and 0.058 for the control class, while for post-test data, the values were 0.200 for the experimental class and 0.120 for the control class, with a significance level of 5%. Therefore, it can be concluded that the research data follows a normal distribution.

The homogeneity test was conducted on the pre-test and post-test data of the experimental and control groups. The results of the homogeneity test can be seen in Table 5.

Table 5. The homogeneity test on the pre-test and post-test

<table>
<thead>
<tr>
<th>Test of Homogeneity of Variances</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning outcome (SOCIAL SCIENCES)</td>
<td>Based on Mean</td>
<td>.472</td>
<td>62</td>
<td>.495</td>
</tr>
<tr>
<td></td>
<td>Based on Median</td>
<td>.332</td>
<td>62</td>
<td>.567</td>
</tr>
<tr>
<td></td>
<td>Based on Median and with adjusted df</td>
<td>.332</td>
<td>57.550</td>
<td>.567</td>
</tr>
<tr>
<td></td>
<td>Based on trimmed mean</td>
<td>.419</td>
<td>62</td>
<td>.520</td>
</tr>
</tbody>
</table>

Source: Primary data processing, 2023

Based on Table 5, it is shown that the significance value of the homogeneity test using Levene's statistic formula with the help of SPSS 25 for Windows was 0.495 for the results of the pre-test and post-test of the experimental and control classes. The data was considered homogenous if the significance level was greater than 0.05. Therefore, it can be concluded that the sig. value of 0.495>0.05, indicating that the data was homogenous.

In this study, the hypothesis test was conducted using the z-test since the sample size was greater than 30, assisted by the SPSS 25 for Windows application with a significance level of 5% or 0.05. The testing criteria were that if the 2-tailed Sig. value was less than 0.05, then H0 was rejected and Ha was accepted; if the 2-tailed Sig. value was greater than 0.05, then H0 was accepted and Ha was rejected at the 5% significance level. The
results of the z-test for the post-test scores of students' social sciences learning outcomes can be seen in Table 6:

Table 6. Results of Hypothesis Test for social sciences Post-test Scores

<table>
<thead>
<tr>
<th>Pair</th>
<th>Learning outcome (social sciences)</th>
<th>95% Confidence Interval of the Difference</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mean 79.500 Std. Deviation 8.951</td>
<td>Mean 77.264 Std. Error 1.119</td>
<td>t 63.000 df 81.736 Lower 71.051 Upper 71.051</td>
</tr>
</tbody>
</table>

Source: Primary data processing, 2023

Based on the table above, it can be seen that the significance value (2-tailed) was 0.000 which was < 0.05. According to the decision criteria, H0 was rejected and H1 was accepted.

Discussion

Based on the data analysis, it is evident that a significant difference existed in the learning outcomes of students who were taught using the problem-based learning (PBL) model with instructional videos in the experimental group, compared to the PBL model that employed direct observation assignments in the control group. This is substantiated by the descriptive analysis which revealed that the average learning outcome score for students in the experimental group was 84.6 with a mastery level of 96.88%, while for those in the control group, the average score was 77.4 with a mastery level of 84.38%. Furthermore, the inferential analysis for hypothesis testing clearly demonstrated that H0 was rejected and H1 was accepted. The results indicated that the use of the PBL learning model assisted by instructional videos had a significantly positive impact on students' learning outcomes, compared to the PBL learning model that used direct observation assignments.

The Problem Based Learning (PBL) model is an instructional method characterized by the use of real-world problems as the context for students to learn critical thinking and problem-solving skills (Falestin, 2010). Essentially, both the Problem Based Learning (PBL) learning model assisted by instructional videos and the PBL learning model through direct observation assignments require students to be active and think critically, and to be willing to collaborate with their groupmates regardless of their backgrounds, ethnicity, race, and culture. In practice, the teacher has also provided guidance, facilities, and encouragement for students to actively participate in learning, so that this learning model can really provide significant input in improving students' learning outcomes in social sciences. However, in its implementation, it requires a joint effort between students and teachers. Without the willingness or motivation of students to learn with this learning model, it will not be effective to use (Nomura, Soma, Kijima & Matsuyama, 2023; Alt & Raichel, 2022).

In essence, choosing and using a teaching method is a strategy for teachers based on their methodological knowledge and teaching experience, which has become integrated into their teaching practice. Therefore, ultimately, the best approach is to combine various teaching methods, models, and techniques that are tailored to the needs and circumstances of students, as well as the characteristics of the subject matter to be taught (Wahab, 2008).

Therefore, this research is expected to provide a solution to the problem of low learning outcomes in social sciences. If social sciences teachers typically use the same PBL learning method without variation, then from now on they should pay attention to other teaching methods or models, such as the PBL learning model assisted by instructional videos.

This research is consistent with the findings of a study conducted by Ni Kadek Peni Virgiantini et al. (2022); Megawati, Nursalam & Muhajir (2022); Walangadi, Umar & Sale (2022) which also showed a significant impact of the Problem Based Learning model assisted by audio-visual media on students' learning outcomes in social studies. Their study concluded that the Problem Based Learning (PBL) model successfully improved the average value of students' learning outcomes in social studies.

Basically, there are no fixed rules for selecting a teaching method to be used in learning a particular subject matter. However, it is also not a problem if a teacher uses several different teaching methods, as there is no one method, technique, or teaching model that is effective for all types of materials to be taught. Instead, what is
needed is a teacher's skill in providing variations and combinations of several types, techniques, methods, and models that ultimately enable students to truly comprehend the material and improve their learning outcomes (Seibert, 2021; Fitria, Imran & Ahda, 2022; Susanti et al, 2022).

Based on the research findings, it is known that both the Problem Based Learning (PBL) learning model assisted by instructional videos and the PBL learning model through direct observation assignments could improve learning outcomes. However, based on the data obtained, it turned out that the PBL learning model through direct observation assignments was more effective in improving learning outcomes in seventh-grade students students, especially in the subject of Social Studies, specifically on the topic of the role of entrepreneurship in building the Indonesian economy.

CONCLUSION

Based on the discussion of the research results presented, it can be concluded that there was an effect of the Problem Based Learning Model on the social sciences learning outcomes of students in class VII.4 and VII.5 at SMPN 03 Batang Anai, Padang Pariaman Regency, registered in the academic year 2022/2023. The average mastery of learning outcomes obtained in the experiment was 84.6, while in the control class it was 77.4. The results of the hypothesis testing showed that the null hypothesis (H0) was rejected and the alternative hypothesis (Ha) was accepted. Thus, it can be concluded that the Problem Based Learning model had an effect on the learning outcomes of students in social sciences in seventh-grade students at SMPN 03 Batang Anai. The learning outcomes of students using the PBL learning model aided by instructional videos in the experimental class were higher than the learning outcomes of students using the PBL learning model through direct observation assignments in the control class.

REFERENCES


