Implementation of the Problem-Based Learning Model and Its Effect on Accounting Learning Outcomes During the COVID-19 Pandemic

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ABSTRACT

The transition from face-to-face learning to distance learning has decreased student learning outcomes. Departing from this phenomenon, this research is presented as an effort to overcome various obstacles experienced by teachers and students during the COVID-19 pandemic. The researcher offers a model that can be used in virtual learning activities. Beginning with finding out the extent of the influence of the problem-based learning (PBL) model on accounting learning outcomes in class X Accounting 1 students at SMK YPKK Limburg. Research data obtained from the results of the test, observation, and documentation. Then analyzed using t-test which consists of simple linear regression analysis and product moment correlation. The findings in this experimental study resulted in a simple linear regression equation model with a value of Y=33.012+4.283X and a correlation coefficient value of 0.580. After students received learning using the PBL model through distance learning and were given a post-test, their learning outcomes also increased. In other words, the implementation of the PBL model has a significant and positive effect on accounting learning outcomes during the COVID-19 pandemic.

1. Introduction

The presence of the COVID-19 pandemic has changed various aspects of the world of education. Facing these challenges, the Indonesian government has made efforts to design and formulate policies. There are quite a number of regulatory formulas made by the government regarding learning during the pandemic as a solution to the problems of the student learning process which are considered less transformative. However, starting from the process, approach, learning media, to the educational curriculum that has been implemented so far, its implementation is considered less supportive of the effectiveness of distance learning. The transition
from face-to-face learning to distance learning is believed to actually create new challenges such as: the limitations of students solving problems, the relationship between teachers and other students that looks less interactive (El Masri & Sabzalieva, 2020; Sahu, 2020).

The implementation of distance learning in schools began since the coronavirus pandemic plagued Indonesia, so schools were required to conduct distance learning while still referring to the curriculum standards and assessments set by the school curriculum. All of this was carried out in a synergistic and collaborative manner based on the instructions of the Minister of Education and Culture of the Republic of Indonesia through Circular Letter Number 4 of 2020 concerning the Implementation of Learning Policies in the Emergency Period for the Spread of COVID-19 (Kahfi, 2020; Wajdi et al., 2020). The implementation of similar lessons will of course be extended, due to the fact that the pandemic case has not been declared over as the latest government decree in Presidential Decree of the Republic of Indonesia Number 24 of 2021 concerning Determining the Factual Status of the COVID-19 Pandemic in Indonesia.

Over time, looking at the optimization of the application of distance learning in various schools, there have been a number of studies reporting the advantages and disadvantages of implementing such learning. The advantages of distance learning are that it provides many opportunities for students, makes it easier for them to connect with people from different geographical and cultural locations, is relevant for most students because it is flexible, meaning that they can learn wherever and whenever they are so that the material is learning can be accessed objectively and repeatedly (El Refae et al., 2021). Meanwhile, the weaknesses are that it has the potential to make the quality of education and learning achievement low, lack of motivation, students' attention to explanations delivered by the teacher is very low, facial expressions and body language in interacting are limited (Nurliana et al., 2021; Zaheer & Munir, 2020).

All schools in the world, without exception schools in Indonesia have also implemented distance learning which began in March 2020, at that time all elements in schools were looking for the best way to maintain student learning outcomes at the expense of the face-to-face learning process (Cahyadi et al., 2021). At the same time, students were surprised because they had no previous experience of learning with distance learning (Slamet et al., 2021). In the end, distance learning is still chosen as the only way to keep the learning process going (Syarifudin, 2020). However, student learning outcomes have decreased and distance learning with the lecture method which has been fond of being applied by teachers has not been able to improve student learning outcomes (Azhari & Fajri, 2021; Pelikan et al., 2021). Learning outcomes that have decreased can be seen from the ability of students' understanding as a cognitive domain (Widyastuti, 2021), independence and responsibility of students as a low affective domain (Luthfiyah et al., 2021), as well as skills or things that students want to practice in the learning process as a psychomotor domain are also difficult to achieve (Faridah et al., 2021). The phenomenon mentioned above may show a new discourse for everyone who is struggling in the world of education, especially for
all formal schools so that they can quickly develop strategic steps so that the learning process and results of their students can still improve.

In the distance learning process, teachers are required to develop a varied and innovative learning model framework. The Problem-Based Learning (PBL) model which has been used by most schools in offline learning before the pandemic, is apparently believed to be able to overcome learning problems and is considered effective in improving student learning outcomes (Huijser et al., 2015; M Effendi, 2016). However, because the learning situation and conditions are undergoing a transition, it is deemed necessary to integrate the PBL model with online or distance learning. A study conducted by Coiado et al. (2020) also underlined that the problem-based learning model should be redesigned to an online format so that teachers and students can apply the model even in distance learning.

The learning process during the coronavirus pandemic requires educators to immediately provide a pleasant learning atmosphere for students. In the midst of health threats, students still have to focus on overcoming the learning problems they face while trying to achieve optimal learning outcomes. In addition, interaction and online knowledge construction for students must be included during virtual learning so that their ability to digest lessons can be well facilitated (Amir et al., 2020). With a problem-based learning model that is integrated with technology, of course the model becomes a very important supporter in realizing learning effectiveness. Through the PBL model, the effectiveness of distance learning is expected to be achieved by continuing to build students’ knowledge, where they can also determine strategic steps with analytical skills in solving problems collaboratively (Hendarwati et al., 2021). In addition, the teacher also acts as a mentor or facilitator in the learning process that offers metacognitive problems, and presents a learner-centered learning atmosphere through giving instructions without directly presenting solutions to the problems given (Dakabesi & Luoise, 2019; Nariman & Chrispeels, 2015). From a number of strategies presented through the PBL model, student learning outcomes are predicted to increase.

The challenges of learning during the pandemic have sparked researchers to explore the development of PBL, they hope that the learning model will remain coherent in any situation. There are several studies that elaborate PBL with learning during a pandemic (Foo et al., 2021; Hendarwati et al., 2021). One of them is the Buheji & Buheji (2020) study which reveals the implementation of PBL during the COVID-19 pandemic, such as: students asking critical questions, evaluating solutions, compiling and understanding available information to generate new knowledge, discussing findings and experiences, and reflecting on knowledge in depth. In relation to the PBL steps that will be used in this study, we chose the theory described by Arends (2012), in which there are 5 stages of PBL that must be carried out by the teacher, more details can be seen in the image below:
The problem-based learning model can of course be accepted in various disciplines and has a great chance of success if it is implemented in the learning process. Therefore, this study chose the PBL model as the model to be used in the distance learning process in vocational schools, in this case the YPKK Limbung Vocational School located in Gowa Regency, South Sulawesi Province. This school has four majors consisting of: Accounting Department, Marketing Department, Computer and Network Engineering Department, and Office Department. This study focuses on Accounting majors in service enterprise accounting subjects by taking general entries material.

After tracking student learning outcomes through initial observations at SMK YPKK Limbung class X AK 1, it appears that there is a problem in the application of the learning model used previously in providing general entries accounting materials. During the implementation of distance learning, we found that the students' learning outcomes in the affective domain were on average B, the cognitive domains produced an average score of 65, and the psychomotor domains yielded an average score of 72. Overall learning outcomes of students have not reached the Minimum Completeness Criteria (KKM) score that has been determined is 75. One of the reasons is that teachers have not been able to develop learning tools independently according to the characteristics of students (Atika et al., 2020). In addition, some teachers also have difficulty identifying the affective and psychomotor abilities of students during the implementation of distance learning (Chiew et al., 2021; Hermanto et al., 2021).

In connection with the various problems that have been revealed above and the search for the effectiveness of the learning model to be explored further, the researchers are interested in following up on this matter by designing and conducting research to determine the effect of the problem-based learning model on students' accounting learning outcomes in SMK during distance learning is applied. This research is deemed necessary to be carried out as an effort to overcome the low learning outcomes of students during the continuation of distance learning due to the COVID-19 pandemic.

2. Methodology

This type of research is a pre-experimental design in the form of a one-group pre-test post-test design, using a quantitative approach (Sugiyono, 2019). The
researcher will give a pre-test before the treatment is carried out, then we give a post-test after the problem-based learning model treatment in accounting learning is carried out. The population in this study consisted of 3 classes: X Accounting 1, X Accounting 2, and X Accounting 3 which totaled 105 students. While the sample that we chose was based on purposive sampling technique, namely class X Accounting 1, which amounted to 34 students. The class was chosen as a sample with the consideration that the average score of students during distance learning was not up to the KKM standard that had been determined.

Researchers obtained data through the process of observation, documentation, and giving tests. We provide written tests in the form of multiple choice questions with 20 numbers and 1 number of essay questions that are valid and reliable. The test is given as a tool to measure the skills, knowledge, intelligence, abilities or talents of individuals or groups (Bundu, 2017). Learning was carried out for 3 meetings: the first meeting was held for the purpose of giving a pre test, the second meeting was giving treatment, and the third meeting was giving a post test. All meetings and procedures for the PBL model are held through distance learning via google meet. The data analysis techniques used in this study are descriptive percentage analysis and statistical tests consisting of simple linear regression analysis, product moment correlation.

3. Results and Discussion

This study presents a description of the data that has been obtained from the observations of students using google forms and test results through the implementation of pre-test and post-test online using google meet. The students who participated in the research came from class X Accounting 1 for the 2020/2021 academic year. The data presented includes the frequency distribution of all indicators that have been captured along with the percentage of frequency and score. To see the improvement between the actual score and the ideal score, the researcher ranks each variable (Narimawati et al., 2020). The results of the recapitulation of student respondents' answers from the problem-based learning model variables can be seen in the table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Actual Score</th>
<th>Ideal Score</th>
<th>Actual Score (%)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Student orientation on problems</td>
<td>128</td>
<td>136</td>
<td>94.1</td>
<td>Very good</td>
</tr>
<tr>
<td>2.</td>
<td>Organizing students to learn</td>
<td>32</td>
<td>34</td>
<td>94.1</td>
<td>Very good</td>
</tr>
<tr>
<td>3.</td>
<td>Guiding individual and group investigations</td>
<td>60</td>
<td>68</td>
<td>88.2</td>
<td>Very good</td>
</tr>
<tr>
<td>4.</td>
<td>Develop and present the work</td>
<td>56</td>
<td>68</td>
<td>82.3</td>
<td>Very good</td>
</tr>
<tr>
<td>5.</td>
<td>Analyze and evaluate the problem solving process</td>
<td>148</td>
<td>170</td>
<td>87</td>
<td>Very good</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>424</td>
<td>476</td>
<td>87</td>
<td>Very good</td>
</tr>
</tbody>
</table>

Based on table 1 above, it can be seen that the percentage of indicator data for problem-based learning variables produces a value of 89.14%. In other words, it
can be concluded that the application of the problem-based learning model in service company accounting subjects with general journal material is carried out very well. Meanwhile, the description of the pre-test and post-test scores of the learning outcome variables can be seen in the table 2 below:

<table>
<thead>
<tr>
<th>Satisfaction Level</th>
<th>Category</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Percentage (%)</td>
<td>N</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>92-100</td>
<td>Very high</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>83-91</td>
<td>High</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>75-82</td>
<td>Medium</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>66-74</td>
<td>Low</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>&lt;65</td>
<td>Very low</td>
<td>15</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

Based on table 2 above, there are 28 students who scored below the KKM in the low and very low categories before the application of the PBL model. After receiving learning using the PBL model through distance learning and being given a post-test, student learning outcomes have increased. In other words, there is a good change in score after the PBL model is applied.

In addition, the researcher also presents the results of the t-test. First, the results of simple linear regression calculations using SPSS v.25 for windows can be seen in the table 3.

<table>
<thead>
<tr>
<th>Coefficientsa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
</tr>
<tr>
<td>PBL (X)</td>
</tr>
</tbody>
</table>

Based on table 3 above, the resulting simple linear regression equation model is

\[ Y = 33,012 + 4,283X \]

From the equation model, it can be seen that the constant value (a) is 33.012, while the regression coefficient value (b) is 4.283. That is, the problem-based learning model has a positive effect on learning outcomes. If the PBL model increases by one unit, the learning outcomes will also increase by 4.283 units. The table above also shows a sig. value of 0.000 < 0.05, where the significant value is less than 5% and the \( t_{\text{hitung}} \) value is 4.024 > \( t_{\text{table}} \) is 2.042 which means that it can be explained that the PBL model variable has a significant effect on the learning outcome variable.
Furthermore, the results of the product moment correlation analysis are described in the following table 4:

<table>
<thead>
<tr>
<th>Model Summary( ^b )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), PBL (X)

From table 4, the correlation coefficient value is 0.580. Thus, the PBL model variable on learning outcomes has a correlation that is included in the strong category. In addition, the table above also shows an R Square value of 0.336. That is, 33.6% of the learning outcomes variables are influenced by the factors contained in the PBL model variables.

The results of the research described above can be said to support previous studies. The application of the PBL model has an effect on improving student learning outcomes (Permatasari et al., 2019), as well as when learning activities are held using online distance learning methods (Shofwani & Rochmah, 2021). Especially in accounting subjects, previously it has also been proven by Masru’ah et al. (2021) that students' accounting learning outcomes can increase because in their learning activities they are required to explore information as well as solve the problems given. Not much different from the study reported by Aliyah & Wahjudi (2021) which revealed an increase in student learning outcomes, specifically on spreadsheet material using problem-solving-based video media. By optimizing the implementation of the PBL model, students will try to read and think about the problem first, so that they can understand and plan to solve the problems given (Rahayu & Widayati, 2019). Likewise, what has been stated by Kurniasih & Sani (2015) that the PBL model can help the process of developing thinking skills and problem solving of students, because they learn authentically and independently.

SMK 1 YPKK Limbung itself has implemented distance learning since April 2020. Students learn online using WhatsApp Groups and teachers as instructors, sometimes also through Google Meet so teachers can monitor student learning activities. Therefore, the ability of teachers and students in terms of using IT is also very much needed to make distance learning effective (Yurniwati & Utomo, 2020). After listening to the facts that occurred in the field, students who receive learning with the problem-based learning model were also more enthusiastic about participating in learning because the online learning atmosphere also felt more interactive than before. This can be seen before the post-test, where teachers who teach through Google Meet still try to implement various experimental steps in PBL, so that teachers no longer use the lecture method and make themselves the center of learning, but the teacher is present as a facilitator who help students access information. Such efforts also automatically assist teachers in identifying the affective abilities and activeness possessed by individual students. Similar to what has been described by Haryati et al. (2021) that during distance learning held
online, so many students find virtual learning activities carried out in various ways, some are watching videos (youtube or teacher presentations), group discussions via google meet, and other types that are in accordance with the learning design.

4. Conclusion

To respond to problems related to teachers and students in learning that tends to be less interactive during distance learning, the learning model must follow the needs of students, especially in order to maintain and improve their learning outcomes. From the experimental research results and the discussion above, we show the contribution of the problem-based learning model to student learning outcomes during the COVID-19 pandemic in accounting subjects, especially in general entries materials. This study proves that the role of PBL has a significant and positive effect on students' accounting learning outcomes during distance learning at SMK YPKK Limbung.

Even so, there are recommendations that are important to note so that the results of this research continue to run continuously, among others, namely that teachers should use the PBL model and optimize its implementation so that the learning process is interesting and not boring. In that way, students can more easily learn virtually and understand accounting lessons while improving their learning outcomes. As for subjects other than accounting, further experimental research is needed so that the PBL model can be seen to what extent it is effective in improving student learning outcomes.

Acknowledgement

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