

The Implementation of Problem Based Learning in The Capital Market Course: A Case Study of Cryptocurrency Investment Instruments for Students at Lambung Mangkurat University

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Abstract: *This study aimed to evaluate the effectiveness of problem-based learning (PBL) in teaching cryptocurrency investments at the Lambung Mangkurat University. Quantitative descriptive methods were used with samples of students who had taken capital-market courses. Data were collected using questionnaires to measure changes in students' PBL knowledge and perceptions. Descriptive and inferential statistics, including a one-sample test, were used for the data analysis. The results showed that students' perceptions of PBL were generally positive, with the PPBL and EPBL indicators corresponding to the expected average, whereas PPP indicators were higher than expected. This study provides insights into the adoption of PBL in cryptocurrency investment education and curriculum development. In practice, this study emphasizes the importance of PBL evaluation and optimization to maximize learning outcomes. The novelty of this research is an early exploration of the application of PBL in cryptocurrency investment, contributing to PBL theory and modern financial education.*

Keywords: Problem-Based Learning, Cryptocurrency Investment, Financial Education, Student Perception, Curriculum Development

1. Introduction

This study explores the implementation of Problem-Based Learning (PBL) in capital market education, specifically focusing on cryptocurrency investment as a case study. It addresses the increasing relevance of cryptocurrency in financial education and its potential as an investment instrument for modern students. By integrating PBL into the curriculum, this research aims to provide practical and theoretical insights into how students can better understand and manage digital assets in a dynamic market environment.

The significance of this work lies in the growing interest in cryptocurrency among young investors and the need for effective pedagogical approaches to equip them with the necessary knowledge and skills (Patan et al., 2023). While PBL is widely recognized for its ability to foster critical thinking and problem-solving skills, its application in specific areas such as cryptocurrency investment remains underexplored (Dabbagh, 2019). This research identifies the through a review of previous studies on PBL's effectiveness in general educational contexts, which have rarely been applied in modern financial education (Lim et al., 2020; Parrado-Martínez & Sánchez-Andújar, 2020; Mushlihuddin et al., 2018).

The lack of empirical evidence on the role of PBL in enhancing student engagement and understanding of emerging financial tools like cryptocurrency. Traditional teaching methods often fail to adapt to the rapid advancements in the digital investment landscape, leaving a critical void in pedagogy and practice (Compen et al., 2019). To address this gap, the present study proposes a framework for integrating PBL into cryptocurrency investment education, drawing insights from existing literature on problem-based learning, situated cognition, and financial literacy (Sherwood, 2004).

This study focuses on applying PBL to a highly relevant and contemporary subject: cryptocurrency investment (Parrado-Martínez & Sánchez-Andújar, 2020; Barrow et al., 2002). By analyzing student perceptions, evaluating educational outcomes, and identifying areas for improvement, this research contributes to bridging the gap between traditional educational practices and the demands of modern financial literacy.

2. Methodology

This study adopts a quantitative descriptive approach to examine the implementation of problem-based learning (PBL) in teaching cryptocurrency investment in capital market courses (Handoko et al., 2021), which consists of students who have previously taken a capital market course and had experience investing in cryptocurrency. The sample was selected based on predetermined inclusion and exclusion criteria to ensure that a representative group of students had relevant knowledge and experience (Zhao & Zhang, 2021). The research flow diagram used to describe the course of this study is shown in Figure 1.

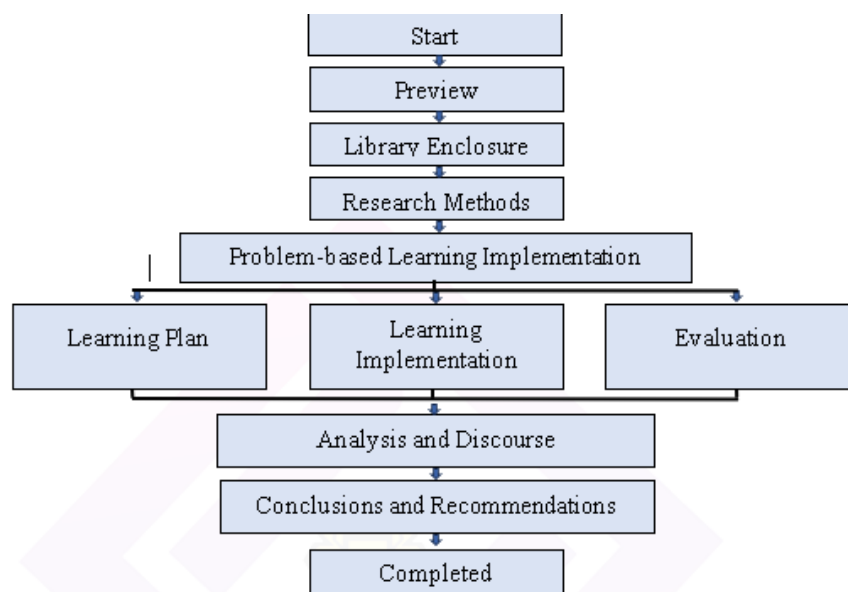


Figure 1: Research Flow Diagram

Based on figure 1. Students were given instructions on the concept of PBL, and this approach was then applied to a case study of cryptocurrency investment. Data were collected using questionnaires designed to measure changes in students' knowledge and perceptions of PBL after its implementation (Abinzano et al., 2023).

The data analysis used quantitative approaches and descriptive statistics to evaluate students' responses to PBL interventions (Silva et al., 2018). This approach allows the identification of patterns and trends in students' understanding of cryptocurrency investments after the PBL

experience. The main objective of this study was to gain a deeper understanding of the effectiveness of PBL in improving students' understanding and skills in managing digital assets in a dynamic capital market. Thus, this research not only provides an overview of the implementation of PBL in a specific context but also contributes new insights into the use of innovative methodologies in modern financial education at the college level.

3. Results and Discussions

A. Descriptive Analysis

Descriptive analysis provided an overview of the averages and standard deviations of each assessment indicator in the questionnaire.

Table 1: Descriptive Analysis

No	Description	Mean	Std. Deviation
V1	Perception (PPBL)		
	PPBL_1	2.89	.712
	PPBL_2	3.25	.440
	PPBL_3	3.13	.747
V2	Evaluation (EPBL)		
	EPBL_1	3.13	.668
	EPBL_2	2.55	.741
	EPBL_3	3.07	.634
	EPBL_4	3.20	.704
	EPBL_5	2.78	.658
	EPBL_6	2.95	.731
V3	Assesment (PPP)		
	PPP_1	3.09	.554
	PPP_2	3.05	.678
	PPP_3	3.36	.485

Source: Ouput SPSS Ver.25 (2024)

Table 1 provides a general overview of the descriptive analysis results as described for each indicator.

PPBL_1 to PPBL_3

This indicator is related to the perception of problem-based learning. The average score ranges from 2.89 to 3.25 with a standard deviation between 0.440 and 0.747. This shows the variation in students' perceptions of problem-based learning effectiveness.

EPBL_1 to EPBL_6:

This indicator measures the perception of problem-based learning elements in specific contexts such as cryptocurrency investments. Averages range from 2.55 to 3.20 with standard deviations between 0.634 and 0.741. Although some aspects were rated positively, some areas required improvement.

PPP_1 to PPP_3

This indicator is related to the perception of problem-based learning. Average scores between 3.05 and 3.36 with standard deviations between 0.485 and 0.678, indicate perceptions that tend to be positive but with significant variations.

B. Inferential analysis

Inferential analysis was used to examine the effectiveness of and perceptions of students towards PBL in the context of cryptocurrency investment. Statistical tests such as the one-sample t-test can be used to compare the average score of the indicator with the expected average value (test value =3).

Table 2: One-Sample Test

No	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
V1	1.299	54	.199	.090909090909091	-.049396072330652	.231214254148834
V2	-.708	54	.482	-.054545454545456	-.208943125203737	.099852216112825
V3	2.557	54	.013	.169696969696970	.036632892883971	.302761046509970

Source: Ouput SPSS Ver.25 (2024)

Table 2 provides a general overview of the results of the one-sample t-test, which are described for each aspect as follows.

V1 (PPBL)

The t-test results showed that $t = 1.299$, $df = 54$, and $p = 0.199$. With a p-value > 0.05 , there was no significant difference between the PPBL_1 score average and expected average value. This suggests that students' perceptions of this indicator were at the expected level.

V2 (EPBL)

The t-test results showed $t = -0.708$, $df = 54$, and $p = 0.482$. With a p-value > 0.05 , there was no significant difference between the average PPBL_2 score and expected average value. This shows that the students' perceptions of these indicators were in line with their expectations.

V3 (PPP)

The t-test results showed that $t = 2.557$, $df = 54$, and $p = 0.013$. With a p-value < 0.05 , there was a significant difference between the PPBL_3 score average and expected average value. This suggests that students' perceptions of this indicator were higher than expected.

4. Discussion

From the results of descriptive and inferential analyses, it can be concluded that students' perceptions of problem-based learning (PBL) in the context of cryptocurrency investment vary. In general, the indicators used in this study showed positive perceptions; however, some indicators indicated a need for improvement.

Significant differences in (PPP) suggest that some aspects of problem-based learning may be more effective or appreciated by students than others are. This may indicate that there are specific elements in PBL that contribute to student understanding and involvement in the material (Evi et al., 2020).

In contrast, the insignificant results in (PPBL) and (EPBL) indicate that students' perceptions of these aspects are at the expected level, but there is no significant improvement. This may indicate areas in which improvements or adjustments can be made to improve PBL effectiveness. In a broader context, these findings are in line with the literature on PBL implementation, which suggests that this approach can enhance conceptual understanding and problem-solving skills (Ariyanto et al., 2020).

This study provides important insights into the adoption of problem-based learning methods in cryptocurrency investment education. These findings can be the basis for the further development of curricula and teaching methods to ensure that all aspects of problem-based learning can be maximized to enhance student understanding and engagement.

5. Conclusion

This study assessed the effectiveness and perceptions of students regarding problem-based learning in the context of cryptocurrency investments. The descriptive analysis suggests that students' perceptions of PBL are generally positive, although there are variations in some indicators. The t-test (one-sample t-test) showed that the perceptions of PPBL and EPBL indicators corresponded to the expected average values, whereas PPP indicators showed higher perceptions than expected, indicating that certain aspects of PBL were more effective in this context. These findings provide important insights for curriculum development, suggesting that, although PBL is well received, there is room for improvement in some areas. In addition, this study emphasizes the importance of PBL evaluation and optimization to ensure that this method can maximize student learning outcomes. Further research with larger samples and in different contexts is suggested to reinforce these findings and expand the generalizability of the results as well as to explore additional factors that affect the effectiveness of PBL.

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