



Enhancing Business Research Method Course Outcomes: The Role of Integrated PBL and PjBL Models

Untung Lasiyono¹, Wira Yudha Alam¹, Siti Istikhoroh¹

¹Faculty of Economics and Business, Universitas PGRI Adi Buana, Indonesia

*Correspondence to: untunglasiyono@unipasby.ac.id

Abstract: This research evaluates the efficacy of integrating Problem-Based Learning (PBL) and Project-Based Learning (PjBL) in business research methods at a university that provides educational and non-educational programs in Surabaya, Indonesia, aligning with national educational standards. The study aims to assess the impact of blended PBL and PjBL models on student performance, aiming for improved comprehension and application of research methods concepts. A quantitative approach was employed, sequentially applying PBL and PjBL within the curriculum. The 2022 Accounting Study Program cohort was sampled via random selection. Student-prepared research proposals were evaluated, and data were analyzed using multiple linear regression. The integrated PBL and PjBL significantly correlate with enhanced academic performance in business research methods, suggesting improved understanding and application of concepts. This study demonstrates the effectiveness of integrating PBL and PjBL to achieve competency-based educational goals in business research methods. By aligning with national standards, this approach enhances learning experiences and provides valuable insights for similar contexts.

Keywords: PBL, PjBL, outcome, business research method

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INTRODUCTION

As per the Indonesian Government Regulation Number 19 of 2005, the national educational standards mandate a competency-based curriculum to ensure high educational outcomes. This study aligns with these standards by investigating the efficacy of mixed learning models (problem-based and project-based learning) in improving course outcomes for business research methods. Recent revisions in educational theory stress the importance of active and engaged learning environments that foster critical thinking and problem-solving skills (Anderson & Krathwohl, 2001). By integrating PBL and PjBL, this research aims to evaluate their collective impact on student success, thus contributing to ongoing educational reforms. However, in practice, many lecturers still apply teaching using the lecture method, so it is only one-way learning and only involves students in discussions in question and answer sessions. They have not implemented learning that focuses on student activities, for example, using Problem-based Learning or Project-based Learning, combining the two. This happened because of obstacles, including (1) inadequate facilities, (2) teacher readiness, (3) limited time, and (4) obstacles from in-class and students (Aulia et al., 2023).

Regulation President Republic of Indonesia Number 8 of 2012 concerning The Indonesian National Qualifications Framework is a framework for grading competency qualifications that can compare, equalize, and integrate between the education sector and the job training sector as well as work experience to provide competency recognition work by the job structure in various sectors. In line with Presidential Regulation of the Republic of Indonesia Number 8 of 2012, The learning objectives of a training program influence the material, learning media, learning methods, and evaluation, and one model that can be used is Bloom's taxonomy. Bloom's taxonomy is a hierarchical structure that identifies thinking skills from low to high levels. Bloom's taxonomy was first introduced in 1956 by educational psychologist Benjamin Bloom. In 2021, it was revised by Krathwohl and experts from the School of Cognitivism, and the results of this revision are what we know as Revised Bloom's Taxonomy. According to Dimyanti and Mudjiono (2013), evaluation of learning outcomes is a process that ensures student learning value by measuring and assessing learning outcomes. Meanwhile, according to Ramdhani (2013), the evaluation of learning outcomes is an activity carried out to determine students' learning achievements within a certain time. It aims to improve the way students learn. The evaluation report aims to determine how the objectives have been achieved.

Problem-based learning is a learning model that prioritizes how active students are in critical thinking and are always skilled when solving a problem. Model problem-based learning is a learning model that uses a student-centered approach to a real problem so that students can build their knowledge independently, develop high self-skills, gain independence, and develop levels of self-trust alone (Narmaditya et al., 2017). Direct

student involvement in solving a problem is expected to provide a broad understanding of the material and develop students' creative ideas during learning. This learning model has five phases consisting of orienting students to a problem, organizing students to study, guiding individual research or groups, developing and presenting the results of the work, and analyzing and evaluating problem-solving processes (Al-Tabany, 2014; Rosidah, 2018; Shoimin, 2017; Wyness & Dalton, 2018). It is expected that the learning carried out is also an optimal student that can be active in a way independent of learning.

Project-based learning is a learning model that uses projects or activities as media students conduct exploration, assessment, interpretation, synthesis, and information to produce various learning outcomes. A learning system with a project-based learning model requires authentic investigations that require real solutions to real problems. The materials, theories, or concepts students receive naturally in student work and experience activities are not just a knowledge transfer from the lecturer (Nurlaila, 2020). Using a learning project, teaching is necessary to develop a learning model in the classroom. Lecturers must inform students that they are students' learning centers, meaning that activity learning centers on the students themselves (Winarningsih, 2019). Student-centered learning is considered more suitable for the world of education (Winarningsih, 2019). Thus, designing a learning model adapted to theories and concepts is necessary. Adapting the material to the dynamics of business combinations in the era of globalization certainly provides alternative improvements in motivation, innovation, and curiosity.

Model learning-based projects, such as those previously studied by researchers, are the best platforms for developing students with high-level cognitive skills and encouraging meaningful learning (Kizkapan & Bektas, 2017). Lecturers in this project-based learning model system are facilitators who stimulate students' ability to change their thoughts into higher-level thinking. Thus, project-based learning systems are complex tasks based on challenging questions or problems involving students in design, problem-solving, decision-making, or other activities. Investigation allows students to work independently over a long period and produce a natural product (Yulianto et al., 2017). This project-based learning model can help students in the learning process: 1) Knowledge And Skills that are strong and beneficial, built through authentic tasks and work; 2) expanding knowledge through the authenticity of curricular activities supported by a process of planning learning activities or open inquiry, with results or answers that are not predetermined by a particular perspective; and 3) in the process of building knowledge through real-world experiences and interpersonal cognitive negotiations that take place in a collaborative work atmosphere. Previous studies used as references in this research discuss the implementation of PJBL and PBL. Research conducted by Guo et al. (2020) examined what student outcomes of PjBL are evaluated in higher education and What instruments are adopted to measure student outcomes. Kricsfalussy (2018) conducted research on a course developed for a professional Master's program in environment and sustainability that employs Problem- and Project-based learning, have been widely celebrated as a course model that supports the development of sustainability competencies.

This study introduces a novel evaluation of the synergistic effects of combining Problem-Based Learning (PBL) and Project-Based Learning (PjBL) within the framework of business research methods courses. While previous studies have individually assessed the impacts of PBL and PjBL, the innovative aspect of this research lies in its examination of their integrated application. We hypothesize that this combined approach not only enhances students' academic performance but also fosters a deeper understanding and practical application of business research methodologies, aligning closely with the competencies outlined in the Indonesian National Qualifications Framework. Furthermore, this research contributes to the educational literature by providing empirical evidence on the effectiveness of mixed-learning models in higher education, an underexplored area.

METHODS

This study employed a quantitative research design. Quantitative research is a research method that emphasizes collecting and analyzing data based on measurement. This method allows researchers to analyze the relationships between variables and test the proposed hypotheses (Arikunto et al., 2017). Quantitative methods in this research aim to assess the impact of the PBL and PjBL models on student outcomes in business research methods courses. The participants included students from the 2022 cohort of the Accounting Study Program. The research tested and analyzed the influence of the problem-based learning model variable (X1) on the outcome of studying business research methods (Y) and project-based learning model variables (X2) on the outcome of studying business research methods (Y). The population in this research was students of the Accounting Study Program Class of 2022, classes A, B, C, and D, Faculty of Economics and Business, while the sample study is the class of 2022 class A and class D with recruitment technique samples using random sampling. Technique data collection for problem-based learning (X1) and project-based learning (X2) variables using experiment/action and evaluation, whereas for external variables studying business research method (Y), the data use the product outcome studying business research method in the research proposal form. Deep data analysis uses quantitative multiple linear regression.

This study employed a structured quantitative research design to evaluate the efficacy of integrating Problem-Based Learning (PBL) and Project-Based Learning (PjBL) within a business research methods course at a university that provides educational and non-educational programs in Surabaya, Indonesia. Participants comprised students from the 2022 cohort of the Accounting Study Program, who were selected using a random sampling technique to ensure a representative subset of classes A and D from the total student population. Data collection was conducted through a controlled educational intervention where: 1) During Lectures 1-7, the problem-based learning model (X1) was implemented. Data on this intervention were gathered through observations, student feedback, and specific assessments designed to gauge the depth of problem-solving skills and theoretical understanding; 2) For Lectures 8-15, the project-based learning model (X2) was utilized. Evaluation at this stage focused on the quality and innovation of student-generated projects and the effectiveness of their research proposals, measured against predetermined criteria. The primary data sources included students' research proposals, evaluated using a detailed rubric that assessed their application of business research methods concepts learned through PBL and PjBL. This approach allowed for the collection of nuanced data regarding the impact of each learning model on student comprehension and practical application skills.

The collected data were subjected to a rigorous quantitative analysis using multiple linear regression techniques to determine the impact of the PBL (X1) and PjBL (X2) models on students' learning outcomes (Y). Before regression analysis, several diagnostic tests were conducted to ensure the validity of the regression model: 1) Normality Test: Checked whether the data distribution followed a normal curve, which is a prerequisite for the application of multiple linear regression; 2) Multicollinearity Test: Assessed whether there was a high correlation between independent variables, which could distort the estimation of regression coefficients; 3) Heteroscedasticity Test: Ensured that the variance of the residuals was constant across all levels of the independent variables, indicating uniformity in the data spread; 4) Autocorrelation Test: Verified that the residuals were independent of each other, an assumption critical for regression analyses; and 5) Post-diagnostic testing, the regression model was refined and tested for its explanatory power using the coefficient of determination (R^2) and adjusted R^2 , which provided insights into the proportion of variance in the dependent variable explained by the independent variables. The hypothesis testing was executed using the F-test to check the overall significance of the regression model, and the individual contributions of PBL and PjBL were analyzed through t-tests on their respective coefficients. The results from these analyses were then compiled and presented, providing a clear view of how the integration of PBL and PjBL influences students' academic performance and application skills in the business research methods course. This detailed analysis not only underscored the statistical significance of the findings but also highlighted the practical implications of mixed-learning models in enhancing educational outcomes.

RESULT AND DISCUSSION

The data obtained from the analysis are presented in the following table:

Table 1. Data on PBL, PjBL, and Outcomes variables

Respondent	PBL	PjBL	Outcomes	Respondent	PBL	PjBL	Outcomes
1	75	0	0	20	85	80	85
2	80	80	85	21	0	70	90
3	85	75	90	22	85	75	70
4	85	80	85	23	80	80	80
5	85	80	80	24	85	75	85
6	85	85	90	25	80	80	90
7	80	75	90	26	80	75	80
8	80	75	85	27	80	75	0
9	80	80	90	28	0	0	70
10	85	80	90	29	80	80	85
11	80	75	90	30	80	80	90
12	85	75	90	31	85	80	90
13	80	75	85	32	75	80	90
14	80	85	80	33	85	85	90
15	85	80	90	34	80	75	85
16	85	75	80	35	75	85	85
17	85	0	0	36	80	80	85
19	75	80	90				

Source: Evaluation results midsemester, end-semester, and end assignments

Table 2. Analysis Results PBL Contribution, PjBL towards Outcomes

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	Df2	Sig. F Change	Durbin-Watson
1	,764	,584	,559	16.16361	,584	23,844	2	34	,000	2,399

a. Predictor: (Constant), PjBL, PBL

b. Dependent Variable: OUTCOME

Source: Results of data analysis with SPSS program

Table 3. Hypothesis Test Analysis Results

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	12458.978	2	6229,489	23,844	,000
Residual	8882.914	34	261,262		
Total	21341.892	36			

a. Dependent Variable: OUTCOME

b. Predictor: (Constant), PjBL, PBL

Source: Results of data analysis with SPSS program

Based on the results analysis, multiple linear regression shows that a mix of problem-based learning models and project-based learning models contributes positively to the outcome of studying business research methods, with an R Square value of 0.584. (Sugiyono, 2010) shows that the contribution of the problem-based learning model and the project-based learning model on the outcome of studying business research methods amounted to 58.4 percent. Temporariesbased on testing hypotheses show that the mix of problem-based learning models and project-based learning models has a positive influence on the outcome of the business research method with $F_{\text{calculated}}$ results amounting to more than 23,844 extensive from F_{table} , whereas tested through level significance obtained value 0.000 is below 0.05, with thereby significant proven (Arikunto et al., 2017).

There is an influence of the problem-based learning model and the project-based learning model on outcome studying business research method shows that the learning model provides students with a chance to provide solution ideas for problems with various strategies used until taking the decision solution problem, which shows that students become centers in the college process or not lecturers who become center skins every meeting lecture in class. The opinion of Hsu et al. (2016) explains that problem-based learning can increase students' reading activities and improve students' skills in studying independently. Every student was allowed to carry out active learning activities to the best of their abilities. Students can also propose ideas, thoughts, or opinions that will be discussed without being burdened by the fear of being wrong.

Students were also allowed to share information so that it could be learned through discussion with the group. This means that teaching is more effective with peers than with lecturers (Anita, 2003). In line with this, Shoimin (2017) presents another advantage of this learning model, namely students can quickly master learning materials that have been taught by the lecturer and are also able to overcome learning difficulties through discussions with groups and lecturers, just being a facilitator in the teaching and learning process. In addition, this learning model can also develop student learning activities, namely answering questions, carrying out discussions with student groups, collaborating with the group, presenting the results of the group discussion, asking a question, and making a statement opinion themselves (Nisak & Sari, 2013). This learning model can contribute to successful learning because students can develop and improve their learning abilities. The problem-based learning model can also help students learn actively, develop behavior independence in activity teaching and learning, and foster a sense of responsibility for process learning (Khusaini, et al., 2018).

Asvifah (2019) states that learning model problem-based learning can also help students understand and construct their knowledge by solving problems carried out carefully without having to remember and store the information obtained so that a problem can be resolved well. This learning model requires students to solve a problem provided by the lecturer. This learning model is suitable when applying the required material solution problem because materials that require direct skills and more profound understanding must be resolved so that students can understand the material better if they are faced with real problems that must be resolved (Narmaditya et al., 2017). Students will also learn by solving problems by constructing their knowledge into the problem to be solved (Narmaditya et al., 2017). Students can also understand the materials more profoundly and comprehensively. When applied, this learning model shows an improvement and is also an alternative learning model to improve cognitive, affective, and physical motor skills (Rahayuningsih, 2017). If the problem-based learning model is correct, it will help students develop appropriate skills to increase their competitiveness in the future (Hsu et al., 2016). The results align with Asyari et al. (2016) and Herlina and Sibarani (2017), who

state that model learning stimulates students from a traditional approach to a more skilled inquiry. It places students as the center of learning itself. These results are, of course, in line with research from Kizkapan and Bektas (2017), Nordin (2013), and Rahayuningsih (2017) that this learning system model increases students' cognitive levels and, of course, satisfies the results. It is a concept or theory and a direct understanding of the practice. The significance of the study revealed that students exposed to the combined PBL and PjBL models scored significantly higher in their research proposal assessments, indicating a positive impact on learning outcomes (see Table 1: Data on PBL, PjBL, and Outcomes variables). These results are consistent with findings by Prasetyo and Hernando (2023), who noted similar improvements in advanced accounting courses employing project-based learning systems. Moreover, the observed increase in student engagement and proposal quality underscores the potential of integrated learning models to foster critical thinking and applied skills, aligning with the objectives of the Indonesian National Qualifications Framework (Rahayuningsih, 2017).

CONCLUSION

In conclusion, integrating problem-based and project-based learning models significantly enhances student outcomes in business research methods courses. These findings support adopting mixed learning strategies to meet the competencies required by the Indonesian National Qualifications Framework, potentially influencing curriculum development across educational institutions. Future research can explore the longitudinal impact of these models across different disciplines to validate their effectiveness further.

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