

Development of a Project-Based Learning-Based Introductory Economics Textbook to Improve Critical and Analytical Skills

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ABSTRACT

This study was motivated by the importance of critical and analytical thinking skills for students in facing global economic dynamics, given that the current learning process is often theoretical and one-way. This study aims to examine the effectiveness of using a Project-Based Learning (PjBL) economics textbook in improving students' critical and analytical thinking skills. The method used is quantitative with a quasi-experimental design of one group pre-test and post-test on 31 first-semester students of the Economics Education Study Programme at Universitas Nusantara PGRI Kediri. The results show a significant increase in the average score from 79.03 to 97.87. Statistical testing using the Paired Samples T-Test produced a significance value of $0.001 < 0.05$, which proves that there is a real difference in ability after the intervention. Additionally, there was an increase in the homogeneity of students' abilities, as indicated by a sharp decrease in the standard deviation from 11.931 to 1.857. This study concluded that PjBL-based textbooks are effective in stimulating higher-order thinking skills and are highly suitable for widespread implementation at the university level.

Keywords: Pocket Book, Introduction to Economics, Project-Based Learning, Critical Thinking, Analytical Skills

INTRODUCTION

Higher education now plays a crucial role in producing excellent and agile human resources capable of processing global dynamics. With the rapid advancement of technology, students must be able to think critically and analytically to overcome problems in the field later on. This competence is a vital asset in the 21st century, especially in the economic sector, which demands sharp analysis of situations and accurate decision-making based on existing data (Indrawati, n.d.). As a fundamental course, an introduction to economics is compulsory and must be taken by students majoring in economics, as well as other social sciences. This course plays a role in building a foundation of thinking through the introduction of crucial concepts, starting with the phenomena of scarcity and choice, the dynamics of supply and demand, to the interaction between consumers, producers, and government policy. Mastery at this early stage is a key factor in ensuring students' success when pursuing more complex economic studies (Kriswana et.al., 2025).

In reality, the implementation of introductory economics learning still faces various obstacles. The approach used tends to be one-way and highly theoretical, where lecturers are the centre of information while students are merely passive absorbers of material. The lack of student interaction in higher-level thinking processes has an impact on their low capacity to analyse economic issues, connect theory with reality in the field, and construct logical arguments. The quality of learning is also greatly influenced by the availability of teaching materials. In general, introductory economics textbooks cover a wide range of material in a rigid and dense academic style, making them less effective for independent study. This creates an obstacle for students in grasping the concepts or essence of the material and even prolongs the process of understanding basic economic concepts (Sugianto, 2024). To overcome this problem, teaching materials need to be updated to be more effective, applicable, efficient, and relevant to reality. One innovative solution that can be used is the use of pocket books. With a concise and systematic format, pocket books will make it easier for students to absorb material without being limited by overly broad explanations. In addition, their practical form supports learning flexibility because they can be accessed anywhere, which ultimately encourages the creation of student learning independence.

Optimising the use of pocket books requires integration with a learning model that can trigger student activity. Project-based learning (PjBL) is one method that emphasises active participation through working on projects based on real issues. Through this model, students are encouraged to hone their analytical, creative, and collaborative thinking skills in completing each learning task given by the lecturer.

The combination of the introductory economics pocket book and the Project-based learning (PjBL) model is expected to create a more meaningful learning process.

Through this approach, students not only master economic theory textually, but they must also be skilled at implementing it in real-life contexts. On this basis, this article aims to examine in more depth the effectiveness of using the PjBL pocket book in efforts to improve students' sharpness of thinking and analytical skills.

The application of the introductory economics pocket book integrated with the Project-based learning (PjBL) model has a real impact on improving the quality of the learning process and outcomes for students. In this synergy, the pocketbook serves as a reference that presents the essence of economic concepts in a concise and systematic manner, while PjBL acts as an instructional framework that facilitates students to actively construct their understanding through direct learning experiences (Irmayanti et al., 2025). Through the PjBL approach, students are confronted with highly relevant real economic phenomena such as resource constraints, community consumption patterns, price dynamics, unemployment issues, and government policy interventions. These various issues are differentiated through project work, the guidelines for which have been systematically compiled in the pocketbook. In the process, students are required to be able to collect data, identify problems, process information, and create concrete solutions based on the economic theories they have mastered (Kriswana et.al., 2025).

This learning mechanism actively reinforces students' critical thinking skills. They are accustomed to formulating in-depth questions and conducting evaluations. This learning mechanism actively reinforces students' critical thinking skills. They are accustomed to formulating in-depth questions, evaluating information, distinguishing between facts and opinions, and testing the relevance of economic theory in solving existing problems. In line with this, students' analytical capacity also increases through logical reasoning activities, simple data processing practices,

and even the ability to draw valid conclusions based on the results of the analysis that has been carried out.

The PjBL-based pocket book also functions as an organised learning compass. The material is arranged systematically, beginning with an explanation of fundamental concepts, followed by relevant examples and project assignment instructions. This book provides clear guidelines for students in executing each stage of learning. As a result, students can more easily understand the relationship between economic concepts and form a more systematic and organised analytical framework.

The success of using PjBL-based pocket books is also reflected in the increase in student motivation to actively participate during the learning process. The classroom dynamics become more lively through incentive discussions, group collaboration, and students' courage in expressing their opinions and arguments. This shift represents a move away from the old lecturer-centred paradigm towards student-centred learning. This supportive learning environment ultimately becomes an ideal space for cultivating students' critical thinking skills and analytical abilities.

LITERATURE REVIEW

1. Pocket Book

A pocket book is defined as a concise printed teaching medium that contains essential materials in an organised manner. The purpose of the book is to simplify the process of students' understanding of the core material, so that they do not have to rely entirely on conventional textbooks, which are often too thick and complicated. The main added value of pocket books is their flexibility and practicality, which allow them to serve as quick references during learning activities (Azhari et al., 2024). Studies have proven that the use of pocket books is very effective as an instructional medium because they strengthen concept mastery and encourage student independence in learning. This medium

helps students stay focused on the essence of the material, while minimising the cognitive load that often arises from overly broad material coverage. In addition, pocket books facilitate autonomous learning because they are portable and can be accessed flexibly without space or time constraints. A study conducted (Irmayanti et al., 2025) confirmed that the use of pocket books in economics and finance courses effectively boosted students' numeracy skills. This is because pocket books successfully convert abstract and complex material into more practical terms with the inclusion of practical examples. These findings indicate that pocket books have great potential to be adapted in introductory economics courses, particularly as a tool to sharpen students' critical and analytical thinking skills. Theoretically, pocket books function as instructional media that facilitate active and autonomous learning. Through straightforward, concise, and organised presentation of material, students will be better able to construct conceptual understanding progressively and comprehensively.

2. Introduction to Economics

Introduction to Economics is a course that covers economic concepts and principles as a foundation for understanding economic phenomena. The material covers issues of scarcity, the dynamics of supply and demand, economic choices, the behaviour of economic actors, namely consumers and producers, and government intervention in the economic system. This course plays a strategic role in developing and directing students' economic thinking from an early stage (Kriswana et.al., 2025). The learning objectives of the introduction to economics are not limited to mastering theory, but also include students' ability to implement these concepts in everyday reality. On that basis, the instructional process must be structured contextually with a primary focus on problem solving. Conversely, passive learning methods that only focus on theoretical aspects are considered

ineffective in honing students' critical thinking and analytical skills.

The use of pocket books that integrate the Project-based learning (PjBL) model is considered highly relevant to the characteristics of introductory economics courses. Pocket books serve to simplify economic concepts to make them easier to digest, while PjBL provides a platform for students to explore and analyse real economic issues. The synergy between these two media and models is expected to enrich the quality of instruction while maximising the development of students' critical and analytical thinking skills (Irmayanti et al., 2025).

3. Project-Based Learning

Project-Based Learning (PjBL) is a learning paradigm that places students at the centre of the educational ecosystem through a constructivist approach. In this model, students are not merely passive recipients of information but are the main actors who are intensively involved in the design, development and completion of concrete projects that are highly relevant to their real lives. The implementation of this model has proven to be effective as a medium for stimulating creativity, as it provides space for students to explore innovative ideas, collaborate in team dynamics, and produce tangible products that represent the success of their cognitive processes (Zhafira et al., 2025).

In line with this, PjBL is often understood as an instructional method that integrates real-world problems into the learning system. The integration of these problems aims to make it easier for students to contextualise abstract theories so that they are easier to understand and absorb in depth. Through this context-based approach, students not only learn about academic content but also hone their critical thinking skills in evaluating various options to formulate the best decisions as solutions to the problems they face (Anggraini & Wulandari, 2021).

In the PjBL learning structure, there is a significant transformation of roles between

educators and students. Students take full responsibility as designers and executors of projects that demand a high degree of independence and self-management. On the other hand, teachers shift their role from being the sole authority on knowledge to being facilitators who are tasked with guiding, motivating, and providing the necessary support during the investigation process (Zhafira et al., 2025).

The advantage of this model lies in the creation of a learning environment rooted in the real world. The educational process that takes place within the corridor of reality provides broader meaning for students, where each subject studied is directly related to their daily life experiences. By connecting classroom theory and field practice, PjBL bridges the gap between academic knowledge and the functional skills needed in the future (Zhafira et al., 2025).

4. Critical and Analytical Skills

Critical and analytical thinking skills are fundamental intellectual assets that enable individuals to determine a more measured direction in life. Mastery of these skills not only impacts academic intelligence, but also determines an individual's success in pursuing their long-term ambitions and goals. Through critical and analytical reasoning, a person is able to make reflective considerations in filtering various information so that the decisions made have a strong argumentative basis and can be accounted for in terms of their validity (Rizki, 2024).

In practical terms, sharp critical and analytical thinking serves as a key instrument in solving complex problems at the university level. Students are required to be able to turn existing challenges into logical and reasonable solutions through deepening their critical and analytical reasoning. It should be emphasised that this competency is not a natural talent that appears suddenly, but rather a skill that must be honed consistently. The formation of a critical and analytical mindset is highly dependent on a disciplined attitude and

exploratory behaviour in the search for scientific truth (Rizki, 2024). The implementation of the Project-Based Learning model is an ideal platform for students to practise their critical and analytical thinking skills in real-life situations. In the early stages of project-based learning, students with critical and analytical skills will be evident in the way they dissect a set of raw data to find the root of the problem. The ability to identify problems critically and analytically is crucial so that the designed project has a strong foundation and does not miss the mark in providing solutions (Luthfah, 2021).

Furthermore, the critical and analytical thinking process in project work includes the ability of students to communicate their ideas in a structured and convincing manner. After conducting a series of experiments or project investigations, students are challenged to evaluate each step taken from a critical and analytical perspective. This final stage allows students to draw valid conclusions based on field data, so that the project output truly reflects a critical and analytical intellectual process and is ready to be tested academically (Luthfah, 2021).

MATERIALS & METHODS

This study employs a quantitative approach with a quasi-experimental design. The main focus of this study is to test the effectiveness of using an introductory economics pocket book integrated with the Project Based Learning (PjBL) model on improving students' critical thinking and analytical skills. The design applied is one pretest and posttest. In this design, the researcher only involved one group of subjects without an external control class for comparison. This class of students is accustomed to conventional methods such as lectures and discussions, so the results of the study will see the transformation of students' abilities after being given new treatment.

The targets or subjects in this research were first-semester students in the economics

education study programme at Universitas Nusantara PGRI Kediri who were taking an introductory economics course. A total of 31 students participated in the study, comprising 3 male students and 28 female students. The sample was determined using purposive sampling. This technique was chosen based on predetermined criteria, namely the relevance of student characteristics to the research focus, ease of access for researchers to subjects, and efficiency of research implementation time. The research flow was systematically arranged through four main stages. In the initial phase, the preparatory stage, the researcher compiled teaching materials in the form of a pocket book on introductory economics based on PJBL. In addition, evaluation tools in the form of pre-tests and post-tests were also developed and validated to ensure their suitability. The second stage was the implementation stage, which began with measuring the students' initial abilities through a pre-test. After that, the students received treatment in the form of a learning process supported by the use of the PJBL pocket book as a learning resource in lectures. The third stage was the evaluation stage, where students were given a post-test after the entire learning series. This step aimed to measure the final achievement after the subjects interacted with the learning media being developed. The fourth stage was the data analysis stage, where the data obtained from the pre-test and post-test scores were then processed and compared statistically. This analysis was conducted to identify the significance of changes in students' critical thinking and analytical abilities.

The instrument used in the pretest phase was multiple-choice questions with objective selection, which aimed to provide standardised initial assessment, considering that students had not yet been exposed to the material in the pocketbook. With multiple-choice questions, the assessment was carried out more consistently in terms of students' basic understanding. Conversely, the instrument in the posttest phase switched to

essay questions. The use of essay questions is considered more representative in exploring students' understanding, sharpness of argumentation, and analytical capacity after they have studied the material through the PJBL-based pocket book. Students' critical thinking patterns and comparing the effectiveness of learning outcomes before and after using the learning media.

RESULT

The following is an analysis of the effectiveness of pocket books on teaching materials for Introduction to Economics Based on Project Based Learning (PjBL). This study aims to measure the contribution of media in overcoming learning obstacles and improving students' critical and analytical skills.

Table 1. Student Test Results

Test	Pre-Test	Post-Test
Lowest Score	50	96
Highest Score	90	100
Average	79.032	97.871
Number of Students	31	31

This study shows the positive impact of learning interventions on students' academic achievement. A clear change in the level of understanding was observed after students

used pocket books in their learning process. Empirical data identified that the use of this media was able to encourage more even mastery of the material and had a direct effect on improving the overall quality of learning outcomes.

In the initial stage before the media was used, the pre-test results showed quite a wide variation in student competence. The lowest score recorded was 50, while the highest score reached 90, with a class average of 79.032. This condition reflects that the mastery of basic economic concepts among students still needs further strengthening in order to achieve the expected competency standards. After the students received the pocket books, the post-test results showed a stable and significant improvement. This was evidenced by the lowest score jumping to 96 and the highest score reaching a perfect score of 100. This increase in academic quality was also reflected in the class average score, which increased dramatically to 97.871. This achievement proves that the pocket book media developed is very effective in helping students explore the material in depth, while also optimising their analytical skills.

Table 2. Comparison of Initial and Final Test Results

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	79.032	31	11.931	2.143
	Post-Test	97.871	31	1.857	0.333

This study shows that there has been substantial development in student competency following the implementation of the learning media and methods developed. Empirically, the effectiveness of this treatment is reflected in the progressive shift in achievement scores. This indicates that the use of these learning tools is able to provide the right stimulation to help students absorb the material more deeply. In the initial stage, the average pre-test score was 79.032, which describes the level of students' mastery of the material before receiving the media. Then, there was a

significant increase in the post-test stage, reaching an average of 97.871. A comparative analysis of the two test results shows consistent academic progress, while also proving that learning obstacles can be minimised through systematic learning procedures. Thus, the data obtained reinforces the proposition regarding the effectiveness of this learning model as an instrument to substantially improve student learning outcomes. The equalisation of student abilities and the effectiveness of using PjBL-based pocket books is not only evident from the increase in average scores,

but also from the increased homogeneity of student abilities. The data shows a sharp decrease in standard deviation from 11.931 in the pre-test to 1.857 in the post-test. This proves that this learning medium has succeeded in reducing the gap in learning, so that learning outcomes in the classroom are more evenly distributed.

The surge in conceptual understanding shown by descriptive statistics reinforces these findings through a significant increase in average scores before and after the intervention. This significant increase in scores is a strong indicator that the introductory economics pocketbook has a real impact on sharpening students' critical and analytical thinking skills. The consistency of learning achievement and

another indicator of the success of this media is the drastic narrowing of the score range. While in the pre-test the difference between the highest and lowest scores was nearly 40 points, in the post-test the difference was only 4 points. This figure shows that almost all students consistently achieved a very high standard of mastery of the material. The implementation of the PjBL pocket book had a very positive impact on students, and this book is also significant. This medium is not only effective in increasing quantitative scores, but also successfully creates equal academic quality and the ability to calculate correctly according to formulas, as well as optimising students' critical thinking skills collectively.

Table 3. Significance Levels of Initial and Final Test Results

Paired Samples Test								
	Paired Differences					t	df	Sig. (2 tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-test & Post-Test	-18.8838	11.463	2.058	-23.043	-14.633	-9.150	30	0.001

Based on the comparative test results, a significance value of 0.001 was found, which is below the significance level of 0.05. This statistical finding proves that there is a very significant difference in the condition of the subjects between the phases before and after the treatment was given. Thus, the research hypothesis proposed can be accepted because it shows empirically valid changes.

This achievement indicates that the interventions applied, such as the use of teaching materials or innovative learning media, are highly effective in the process of knowledge transformation. This effect can be seen from the increase in the subjects' capacity in mastering introductory economics courses and the critical and analytical thinking skills of students. This shows that the material compiled in the learning media has succeeded in facilitating a better cognitive process for students.

Overall, this data confirms that the learning instruments applied are capable of being effective stimulants in the educational process. Thus, these results reinforce the argument that the use of appropriate learning instruments can significantly optimise student academic achievement.

DISCUSSION

The interpretation of the research results confirms that the use of pocket books introducing economics based on PjBL effectively improves students' critical and analytical thinking skills. The increase in the average scores from the pre-test and post-test is empirical evidence that this learning medium has a positive effect on students' mastery of concepts and sharpness of thinking. The internalisation of concepts through the PjBL approach is very significant. The results obtained during learning show that this pocket book functions as a concise reference source.

With the integration of the PjBL method, students are encouraged to actively engage in analysing economic phenomena, formulating solutions through structured projects, and connecting theory with reality. These activities systematically hone higher-order thinking skills that are crucial in the study of economics.

Statistical tests reinforce these findings with significant scores, indicating that changes in student scores are a real impact of learning interventions, not just a coincidence. This confirms that the combination of pocketbook media and PjBL strategies is highly relevant to the characteristics and learning needs of students. These findings are in line with the principles of constructivism, where students build knowledge independently through contextual and meaningful learning experiences. The practical advantages of pocket books, which are portable and concise, also facilitate flexible access to material, which in turn accelerates the understanding of highly complex economic concepts.

In addition to quantitative data, this study also notes an improvement in the quality of the learning process in the classroom. The implementation of this media triggers active participation, sharp analysis of economic issues by students, and also the courage of students when they want to express their opinions. Overall, the use of PjBL-based pocket books has been proven to be able to stimulate students' ability to think at a high level effectively. Collectively, the results of the study conclude that PjBL-based pocket books are a superior alternative learning media at the higher education level.

CONCLUSION

This study concludes that the implementation of a PjBL-based introductory economics pocket book can effectively improve students' critical and analytical thinking skills. This conclusion is based on the following findings:

1. A comparison of pre-test and post-test scores shows a significant average

increase, from 79.03 to 97.87. The lowest score jumped dramatically from 50 to 96, while the highest score reached a perfect score of 100. This indicates a substantial improvement in students' understanding of economic concepts and their ability to analyse problems systematically.

2. The effectiveness of this media is also evident from the increased homogeneity of students' abilities, as shown by a sharp decrease in standard deviation from 11.931 to 1.857. In addition, the range between the highest and lowest scores narrowed from 40 points to 4 points. This proves that almost all students consistently achieved a high standard of mastery of the material.
3. The results of the paired samples T-Test obtained a significance value of 0.001, which is smaller than the significance level of 0.05. These statistical findings prove that there is a very clear difference in ability before and after the treatment, so that intervention through PjBL-based pocket books is certain to have an impact on students.

Overall, the PjBL-based introductory economics pocket book has proven to be a highly effective learning medium for developing students' higher-level skills. This positive impact has been academically and statistically validated. Therefore, this medium is highly suitable for wider implementation in higher education institutions.

Declaration by Authors

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