Enhancing Learning Outcomes on Monetary and Fiscal Policy through a Flipbook E-Module with a Problem-Based Learning Approach

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Abstract

Background: Learning outcomes in economics particularly in topics such as monetary and fiscal policy often remain suboptimal among high school students due to the abstract nature of the content and the limited use of engaging instructional media. Traditional teaching methods that rely heavily on printed textbooks tend to reduce student interaction and hinder the development of independent learning skills.

Aims: This study aimed to develop and evaluate a flipbook-based e-module integrated with the Problem-Based Learning (PBL) model to enhance students' conceptual understanding and academic achievement in economics.

Methods: Using the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation), the e-module was designed and validated by experts in content, media, and instructional design. The validation was followed by individual, small-group, and field testing. The module's effectiveness was assessed using a quasi-experimental design that compared pre-test and post-test scores between experimental and control groups. Data were analyzed using descriptive statistics, inferential statistics, and N-Gain calculations.

Result: The e-module received high validity ratings: 89.3% from subject matter experts, 85.43% from media experts, and 88.3% from instructional design experts. Practicality ratings were also high, with 95.53% from teachers and 90.40% from students. The experimental group showed significantly higher post-test scores (M = 80.00) than the control group (M = 63.56), with a medium N-Gain score of 0.5192, indicating an improvement in learning.

Conclusion: The flipbook-based e-module integrated with the Problem-Based Learning approach is a valid, practical, and effective learning tool. It promotes student engagement, supports independent learning, and significantly improves academic performance in economics education.

A. Introduction

Education is a fundamental pillar in any nation, including Indonesia (Gruzdeva et al., 2020). In the digital era, the challenges the education sector faces have grown increasingly complex, necessitating innovations in teaching approaches, learning media, and pedagogical methods (Gbadegeshin, 2019; Yustanti & Novita, 2019). Although various policies, such as the "Merdeka Curriculum" initiated by the Ministry of Education have been introduced to improve learning outcomes, the quality of education across different levels remains inconsistent and often suboptimal (Lestari, 2023; Sibuea et al., 2023). One clear indicator is the low

academic performance of students, particularly at the secondary education level (Delgado-Floody et al., 2020).

This issue is evident as students encounter considerable difficulties understanding economic concepts, particularly those related to "Monetary and Fiscal Policy." These difficulties are exacerbated by conventional, teacher-centered instructional methods that rely heavily on printed textbooks and lack engaging learning tools. According to the midterm assessment data from the 2023/2024 academic year, only 36.7% of Grade XI students scored above the Minimum Competency Criteria (KKTP) of 75. This highlights a significant gap between the ideal learning outcomes and the actual achievements.

Such challenges not only indicate students' limited comprehension of subject matter but also point to a lack of innovation in the teaching and learning process (Mendoza et al., 2022). Many students have reported that economics lessons are boring, irrelevant to real-life contexts, and fail to motivate them (Pamungkas, 2022). On the other hand, teachers often do not fully utilize educational technology or adopt student-centered learning models suited to the needs of 21st-century learners (Zainil et al., 2023). However, economics education demands contextual understanding and critical thinking skills to solve real-world problems (Taar & Palojoki, 2022).

Several alternative solutions have been proposed to address these issues. One promising approach is the development of an interactive e-module in the form of a flipbook, integrated with the Problem-Based Learning (PBL) model (Suhada et al., 2023). This approach is grounded in Constructivist Learning Theory, which emphasizes that learners construct knowledge actively through meaningful problem-solving experiences an essential characteristic of the PBL model (Timor et al., 2021). Additionally, the design of the flipbook-based e-module aligns with the Cognitive Theory of Multimedia Learning, which posits that learning is more effective when information is presented through a combination of visual and verbal formats, thereby enhancing cognitive processing and retention (Darmaji et al., 2019). PBL emphasizes real-world problem-solving, collaboration, and developing students' critical thinking skills (Jin et al., 2023). Research conducted by Fassbender et al. (2022) and Munawaroh et al. (2023) confirms that PBL and interactive media significantly enhance student engagement and learning outcomes. Similarly, studies by Prasetya et al. (2022) and (Sofya & Adzkia, 2023) demonstrate that flipbook-based e-modules can boost student motivation and comprehension.

Although previous studies have separately confirmed the benefits of e-modules and PBL, few have explored the integration of both in the context of economics education at the senior high school level particularly in public schools. Therefore, this research fills an important gap by developing an interactive flipbook e-module based on the Problem-Based Learning approach, tailored specifically to the topic of monetary and fiscal policy. The novelty of this study lies in its integration of PBL principles into a multimedia flipbook format. This approach has rarely been applied to economics education at the high school level. Unlike conventional digital modules, this e-module combines structured problem scenarios with interactive visual content, promoting both conceptual understanding and independent learning in a subject that is often considered abstract and difficult by students. It aims to bridge the gap between conventional teaching practices and the growing demand for contextualized, interactive learning.

Based on the issues described above, this study aims to develop a flipbook-based e-module incorporating the Problem-Based Learning model that is valid, practical, and effective in enhancing student learning outcomes in the subject of economics for Grade XI social science students. This approach is expected to produce a more adaptive learning model aligned with the principles of the Merdeka Curriculum, thus contributing to the overall improvement of educational quality.

B.   Research Methods

This research employed a Research and Development (R&D) approach using the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model, which was chosen for its systematic and flexible framework that supports iterative development and continuous improvement in instructional design (Larson & Lockee, 2019). The research aimed to develop a flipbook-based e-module integrated with the Problem-Based Learning (PBL) model for Economics, specifically focusing on monetary and fiscal policy topics for Grade XI social science students at SMAN 1 Babalan. The study was conducted at SMAN 1 Babalan, during the even semester of the 2024–2025 academic year. The research subjects were students of Grade XI IPS, with two classes selected through random sampling: XI IPS 1 served as the control class and XI IPS 2 as the experimental class. The objective of this research was to develop a flipbook e-module using Canva, designed to improve cognitive learning outcomes.

The development procedure followed the ADDIE model. In the analysis phase, researchers identified learning needs through observations and interviews with Economics teachers, revealing the inadequacy of current printed textbooks and the absence of interactive learning materials. The design phase involved structuring the content, layout, and user interface of the e-module using Canva. During the development phase, the prototype was validated by subject matter experts, media specialists, and instructional design experts. In the implementation stage, the product underwent testing at three levels: individual (three students), small group (ten students), and field testing (thirty-three students). The final evaluation phase assessed the module's practicality and effectiveness using student feedback and statistical tests on learning outcomes.

Data were collected using a variety of instruments, including observations, interviews, questionnaires, and cognitive learning tests (pre-test and post-test). Observations were conducted to assess classroom conditions and to identify teaching-learning challenges. Interviews provided insights from teachers and students, while questionnaires were used for expert validation (media, material, design) and user responses. The learning test instrument, constructed using Bloom's taxonomy, consisted of multiple-choice questions targeting knowledge, comprehension, application, analysis, synthesis, and evaluation.

The data analysis plan involved both qualitative and quantitative descriptive methods. Feasibility, practicality, and effectiveness were analyzed based on Likert scale responses. Pre-test and post-test data were subjected to normality and homogeneity tests using SPSS, followed by hypothesis testing with paired sample t-tests to determine the statistical significance of learning gains. Additionally, the normalized gain (N-Gain) score was used to measure the effectiveness of the e-module. A gain score of >0.3 was considered effective, with thresholds defined for low, moderate, and high learning improvement.

The scope of the research was limited to developing and testing the e-module for a specific Economics topic within Grade XI IPS classes at SMAN 1 Babalan. The research did not cover long-term retention, affective or psychomotor domains, or generalize to other subjects or educational levels. Limitations included constraints in technology access for some students and potential biases during self-reported feedback collection. Nevertheless, the study sought a novel instructional product that integrates technological innovation with problem-based learning principles tailored to the Indonesian senior high school context.

C. Results and Discussion

1. Results

This study aimed to develop a flipbook-based e-module integrated with the Problem-Based Learning (PBL) model and evaluate its validity, practicality, and effectiveness in improving student learning outcomes in economics, particularly in the area of monetary and fiscal policy. The research was conducted through five stages following the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation.

The analysis stage involved assessing the needs of teachers and students at SMAN 1 Babalan. Questionnaire results indicated that 95% of economics teachers and over 90% of students strongly needed a digital, interactive, and independent learning resource. Observations also revealed that students predominantly have visual and kinesthetic learning styles, have low interest in economics, and require additional learning materials to support independent study. Moreover, the curriculum analysis highlighted the importance of mastering conceptual understanding and process skills in economics, including conducting simple and drawing conclusions from real-world data.

In the design phase, the e-module was conceptualized as a digital flipbook built using Canva and enhanced with multimedia tools such as CapCut and Benime. The module content was aligned with the PBL model, incorporating steps such as problem orientation, investigation, and solution presentation. Storyboards were developed to plan content structure, including interactive features such as quizzes, videos, and hyperlinks to support student engagement.

During the development stage, the product underwent expert validation. Material experts rated the content with an average score of 89.3%, media experts 85.43%, and instructional design experts 88.3%, all categorized as "highly feasible." Suggestions for improvement, such as enhancing visual elements, enriching references, and improving navigation buttons, were incorporated in the revised version. The implementation phase involved three levels of product testing: individual, small group, and field testing. In the individual trial with three students, the module scored 88.18% in feasibility. The small group trial with ten students 82.84%, while field testing with 33 students resulted in an overall feasibility score of 89.64%.

Across all trials, students responded positively to the design, content clarity, interactivity, and ease of use of the e-module.

The evaluation phase was conducted by comparing learning outcomes between the experimental class (using the e-module) and the control class (using presentation slides). Pre-test results indicated that the experimental and control groups had comparable average scores (54.06 and 54.34, respectively), suggesting a similar baseline understanding. However, post-test outcomes showed a notable increase in the experimental group, which reached an average score of 80.00, compared to 63.56 in the control group. These results are illustrated in a pre-post-test comparison graph that clearly shows the performance gap after the intervention. Statistical analysis supported the effectiveness of the e-module. The Shapiro-Wilk test confirmed that the data were normally distributed, and Levene's test indicated homogeneity of variance. An independent samples t-test revealed a statistically significant difference in learning outcomes between the two groups ($t = 9.847$, $p < 0.001$), confirming the positive impact of the intervention. Furthermore, the N-Gain score for the experimental group was 0.5192, which falls into the moderate effectiveness category. The following table summarizes the interpretation of N-Gain scores used in this study:

Table 1. N-Gain Score Range

Score Range	Effectiveness Level
$g < 0.3$	Low
$0.3 \leq g \leq 0.7$	Medium (Moderate)
$g > 0.7$	High

These findings indicate that the flipbook-based e-module significantly improved students' conceptual understanding and learning outcomes compared to traditional instruction.

In addition to effectiveness, the practicality of the e-module was evaluated. Teachers rated it 95.53% practical, while students scored 90.40%, both of which were categorized as "highly practical." These results suggest that the e-module is effective in improving learning outcomes and easy to use and implement in the classroom setting. In summary, the results indicate that the developed flipbook-based e-module using the Problem-Based Learning model is highly valid, practical, and effective in supporting student learning in economics. It addresses the learning needs of students, aligns with curriculum goals, and enhances understanding of abstract economic concepts through interactive and engaging digital content.

2. Discussion

Flipbook-based e-modules combined with the Problem-Based Learning (PBL) approach are effective in enhancing conceptual understanding and fostering independent learning, as they merge real-world problem-solving with interactive digital media. PBL encourages students to actively construct knowledge, while the flipbook format guided by multimedia learning theory supports engagement through visuals, animation, and interactivity. This dual approach makes abstract concepts like monetary and fiscal policy more accessible and meaningful. Previous studies, such as those by Hugerat et al. (2021) and Khusaini et al. (2018) so found that PBL and digital modules improved critical thinking and learning motivation. However, this study is distinct in applying a PBL-based flipbook specifically to economics learning, offering a novel and practical solution for abstract content in high school classrooms.

2.1. Implications

The findings of this study provide significant implications for teaching and learning practices in secondary education, particularly in economics. Integrating of a flipbook-based e-module with the Problem-Based Learning (PBL) model is an effective instructional approach that enhances student engagement, fosters critical thinking, and improves learning outcomes. The interactive design of the e-module, featuring videos, animations, quizzes, and contextual problem-solving tasks, aligns well with the learning styles and preferences of visual and kinesthetic learners. Moreover, this digital resource supports independent learning and can be accessed anytime and anywhere, making it a practical solution for classroom and remote learning contexts. For educators, using this model offers a pedagogical innovation that can reduce reliance on conventional lectures and textbooks, enabling more student-centered learning environments.

2.2. Research Contribution

This research contributes to the growing body of literature on educational technology and instructional design by providing a validated model for developing interactive e-learning materials using the ADDIE framework and integrating PBL principles. While previous studies have separately demonstrated the benefits of e-modules or PBL, this study presents a novel integration of both within the context of

economics education in Indonesian senior high schools. The study's rigorous evaluation—through expert validation, user trials, and statistical effectiveness testing—further strengthens its contribution to the field. The module can serve as a prototype for developing similar digital learning tools in other subjects or educational levels, particularly in areas that require conceptual understanding and critical thinking.

2.3. Limitations

Despite its promising results, this study has several limitations. First, the research was limited to a relatively small sample of 33 students from a single school, which restricts the generalizability of the findings. Broader testing across multiple schools with diverse student populations is necessary to confirm the module's effectiveness in varied educational contexts. Second, the study only focused on cognitive learning outcomes and did not evaluate affective or psychomotor domains. Third, differences in students' access to technology and individual study habits outside of school may have influenced learning outcomes but were not fully controlled. Lastly, the research did not measure the long-term retention of knowledge gained through the e-module.

2.4. Suggestions

Based on the results and limitations, several suggestions can be proposed. For educators, it is recommended to adopt and adapt the flipbook-based e-module to complement their teaching strategies, especially in concept-heavy subjects. Future research should expand the scope by involving larger and more diverse samples to enhance generalizability. Additionally, studies should explore the impact of such modules on other learning domains (e.g., motivation, collaboration, and problem-solving skills) and evaluate their long-term effectiveness. Researchers are also encouraged to experiment with more advanced features such as gamification, AI-based feedback, or adaptive learning to further personalize the student experience. Lastly, collaboration between teachers, instructional designers, and developers is essential to ensure the sustainability and scalability of digital learning innovations like this e-module.

D. Conclusion

This study successfully developed a flipbook-based e-module integrated with the Problem-Based Learning (PBL) model to address the challenges of teaching abstract economic concepts specifically monetary and fiscal policy in senior high schools. The resulting e-module was validated as a pedagogically sound and engaging learning tool, supporting active and independent learning. Beyond its effectiveness in improving student learning outcomes, the e-module offers a practical solution for integrating technology with student-centered learning approaches in economics education. The findings underscore the potential of combining interactive digital media with PBL to enhance conceptual understanding and motivation. Educators are encouraged to adopt such innovative learning tools to enrich classroom instruction, especially in subjects often perceived as difficult or abstract. Curriculum developers and policymakers may also consider integrating digital modules like this into broader educational frameworks to support blended and flexible learning environments. Future research could explore the scalability of this approach across different topics, grade levels, and educational settings, as well as examine its long-term impact on learning retention and critical thinking skills. Continued innovation in digital learning resources remains essential to meet the evolving needs of 21st-century education.

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F. Author Contribution Statement

RKS was responsible for the conceptualization of the study, data collection, product development, and drafting of the manuscript. AHS contributed to the methodological design, statistical analysis, and interpretation of the research findings. SH assisted in the validation process, critical review of the instructional design, and final editing of the manuscript. All authors have read and approved the final version of the manuscript.

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