

DEVELOPMENT OF A PROJECT-BASED LEARNING ECONOMIC LITERACY MODULE TO TRAIN THE FINANCIAL INTELLIGENCE OF ELEMENTARY SCHOOL TEACHER EDUCATION STUDENTS IN THE SOCIETY 5.0 ERA

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Abstract:

The emergence of the Society 5.0 era has transformed educational and economic paradigms, requiring prospective teachers to possess strong financial literacy to navigate global dynamics. This study aims to develop a Project-Based Learning (PjBL)-based economic literacy module designed to enhance the financial intelligence of students in the Elementary School Teacher Education (PGSD) program. The development process employed the Hannafin and Peck research and development model, which consists of three stages: needs analysis, design, and development, followed by expert validation and limited field trials. The study involved 35 PGSD students as participants. Data were collected through questionnaires, interviews, observations, and learning outcome tests, then analyzed using a mixed-methods approach with quantitative and qualitative descriptive techniques. Validation results indicated a high level of feasibility across the material (89%), design (85%), and language (83%) aspects, confirming that the module is appropriate and practical for use. The findings demonstrate that the PjBL-based economic literacy module effectively improves students' financial intelligence, particularly in their ability to rationally and contextually plan, manage, and evaluate financial decisions. Student responses also indicated that the module is easy to understand, interactive, and aligned with their learning needs. Overall, the module is deemed valid, effective, and practical as a learning resource that strengthens the role of PGSD students as financial literacy agents in the Society 5.0 era.

Keywords: Project-Based Learning; Economic Literacy; Financial Intelligence; PGSD; Society 5.0

INTRODUCTION:

Generation Z has grown up alongside rapid advances in digital technology and the accelerated flow of information, including in the financial sector. Despite their extensive access to financial technology, various surveys indicate that the financial literacy level of Gen Z—particularly university students—remains relatively low. Data from the Financial Services Authority (OJK, 2022) show that Indonesia's financial literacy index has only reached 49.68%, with young people being the most vulnerable to consumerism and impulsive financial behavior. This situation highlights a critical gap between technological advancement and the ability to manage finances wisely. For university students, especially prospective elementary school teachers, low financial literacy is particularly concerning because they play an essential role in fostering healthy financial habits in younger generations.

The shifting educational paradigm in the Society 5.0 era requires learning that emphasizes not only knowledge acquisition but also the mastery of 21st-century life skills, including critical thinking, communication, collaboration, and creativity (the 4Cs). Within this context, economic literacy has become a crucial competency for pre-service teacher students. Global studies consistently report that students' financial literacy levels remain low (OECD, 2020; Lusardi & Mitchell, 2014). In Indonesia, similar trends are found across various universities, particularly among education majors who often lack sufficient exposure to practical economic concepts. The absence of contextual, applicable, and student-centered learning materials makes it difficult for students to understand fundamental financial concepts such as money management, saving, and investing. If unaddressed, this condition may weaken students' personal financial capability and hinder their ability to promote sound economic values in their future classrooms.

Low economic literacy has been identified as a major challenge that affects students' financial well-being,

academic performance, mental health, consumer behavior, and financial planning awareness (Kinkie, Sabbilla, & Subroto, 2025). Studies conducted at several universities indicate that the majority of students demonstrate low levels of economic literacy (Rosidah & Prakoso, 2021). Due to the limited emphasis on economics within the curriculum, education students generally lack a strong foundation in basic financial concepts, including budgeting, saving, and investment strategies. This is particularly concerning given that teachers play a critical role in shaping financial attitudes and habits from an early age. Without adequate economic literacy, students risk perpetuating financial misconceptions and poor financial behaviors across future generations. Moreover, low financial literacy may negatively affect students' personal and professional lives, as those with insufficient financial knowledge tend to struggle with budgeting, debt management, and investment decisions. Such circumstances can lead not only to individual financial instability but also to broader societal issues, including high levels of bad debt, low investment participation, and widening economic inequality.

Educational institutions therefore have a strategic role in strengthening the economics curriculum, particularly for students in teacher education programs. This can be achieved through supplementary courses and financial literacy training that equip students with a comprehensive understanding of essential economic concepts. Aisyahrani (2024) emphasizes that economics education at the higher education level has proven effective in improving students' financial literacy and enhancing their ability to manage personal finances. Collaboration between universities, government agencies, and financial institutions is also essential in delivering financial education that is practical, relevant, and aligned with developments in digital financial services (Chatrine et al., 2025). Higher education institutions have the potential to serve as agents of change through formal and informal learning activities that foster improved economic understanding and attitudes among students (Nugraha et al., 2021). In addition, economic education within the family contributes significantly to shaping students' financial behavior, indicating that financial literacy develops through the interaction between formal education and social environments (Putra, 2022). As future educators, students must therefore master not only pedagogical theory but also practical competencies—such as economic literacy and financial intelligence—to promote healthy financial habits in the next generation.

Despite its importance, economic literacy learning in higher education remains suboptimal. As'ad and Zulfikar (2020) reported that students' economic literacy levels remain moderate, suggesting that existing learning approaches have not sufficiently improved students' understanding of economic concepts. Budiwati et al. (2020) similarly found that economic and financial literacy across higher education institutions remains low, with current learning models failing to emphasize applied and constructivist aspects. In the Society 5.0 era, education plays a crucial role in developing an intelligent and adaptive society capable of integrating technological advancements into daily life. Therefore, educational institutions must prepare the younger generation to adapt to rapid technological change and acquire the skills necessary to meet emerging challenges. Economic literacy constitutes one of the essential competencies in this context. In an increasingly digitalized society, understanding economic concepts and mechanisms is vital for informed decision-making. Economic literacy enables individuals to comprehend how economic systems function, make prudent financial choices, and develop critical thinking skills in the decision-making process (Olii & Yusuf, 2021, as cited in Maritim et al., 2024).

Project-Based Learning (PjBL) aligns with the learning needs of the Society 5.0 era, which emphasizes the integration of technology, creativity, and problem-solving in real-world contexts. Through projects based on everyday economic problems, students can develop financial intelligence that is applicable and relevant to their lives. Based on this urgency, this study aims to develop an economic literacy module based on Project-Based Learning (PjBL) to train the financial intelligence of PGSD students. This research is expected to provide theoretical contributions in the development of project-based learning models in the field of economic literacy, as well as practical contributions in the form of providing valid, effective, and contextual teaching modules for use in higher education.

Project-Based Learning (PjBL) aligns with the educational needs of the Society 5.0 era, which emphasizes the integration of technology, creativity, and problem-solving in real-world contexts. Through the application of PjBL, students can be directly involved in relevant, everyday economic projects, thereby developing practical financial intelligence. Debi (2020) demonstrated that PjBL effectively improves financial literacy skills in early childhood, which can be adapted for college students to also improve their financial skills. Pratiwi (2025) revealed that PjBL-based modules in Islamic education management study programs can equip students with entrepreneurial skills and contextual economic literacy. Meanwhile, Lubis et al., (2024) confirmed that PjBL has been proven to improve learning outcomes in creative economics courses, demonstrating the model's effectiveness in teaching economic concepts practically. Based on these findings, the development of a PjBL-based economic literacy module for PGSD students is relevant, as it can provide theoretical contributions in the development of learning models and practical contributions in the form of valid, effective, and contextual teaching modules.

This research was designed to address the low financial intelligence of students caused by a lack of understanding in financial decision-making, financial planning, and consumptive and impulsive behavior. This condition not only impacts academic well-being but also affects students' mental well-being. Based on this urgency, teaching materials are needed that can facilitate students' needs (Rabia et al., 2023), related to economic issues to train financial intelligence. This research was conducted to develop a PjBL-based economic literacy module that can train the financial intelligence of PGSD students in the Society 5.0 era. This research is expected to provide a theoretical contribution in the form of a teaching material development model that is

appropriate to the characteristics of PGSD students, as well as a practical contribution in providing a valid, effective, and relevant module for application in economic literacy learning in higher education.

METHOD

Economic literacy is an individual's ability to understand, manage, and make decisions related to economic resources to achieve well-being (Lusardi & Mitchell, 2014). In an educational context, economic literacy encompasses not only knowledge of financial concepts but also skills and attitudes for wise financial management. For students in teacher education programs, economic literacy serves a dual function: as a personal competency and as a pedagogical tool for instilling economic values in students.

Various studies show that students' economic literacy levels remain relatively low (OECD, 2020; OJK, 2022). This is due to a lack of contextual teaching materials, a limited number of practical learning experiences, and theoretical teaching methods. Therefore, a learning approach that integrates conceptual knowledge with real-world experiences is needed.

This study used the Hannafin & Peck Research and Development (R&D) model. This model was chosen because it emphasizes a systematic process in developing teaching materials that goes through three main stages: needs analysis, design, development, and implementation (Fauziah, 2018). The Hannafin & Peck model is relevant for this study because it allows for the development of modules that are tailored to student needs and can be systematically tested through expert validation and field trials.

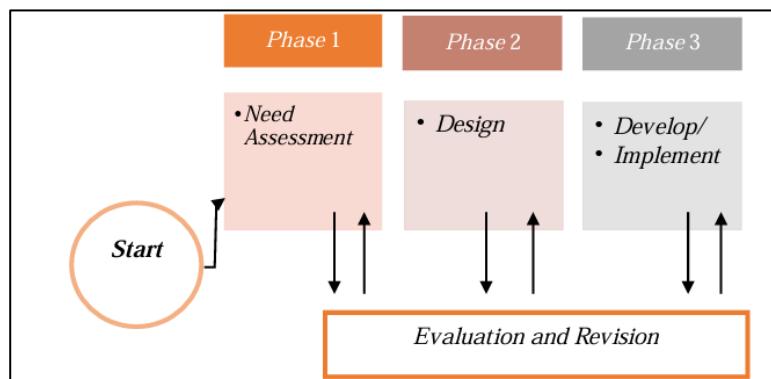


Figure 1. Hannafin & Peck Development Model (Fauziah, 2018)

Content validity measures the extent to which teaching materials cover all aspects of the material being taught. To assess content validity, the following formula is used (Sonjaya et al., 2022):

$$\text{Validity} = \frac{\text{Jumlah aspek yang tercakup}}{\text{Jumlah total aspek}} \times 100\%$$

Content validity was also assessed by material, design, and language experts. After assessment, the scores obtained were analyzed as percentages using the following formula:

$$\text{Validity percentage} = \frac{\text{Skor yang diperoleh}}{\text{Skor maksimal}} \times 100\%$$

Validation result categories are adjusted according to the score range:

Table 1. Validity Criteria for Teaching Materials (Ismaila et al., 2020)

Criteria	Score (%)
Very Valid	86-100
Valid	71-85
Quite Valid	56-70
Less Valid	41-55
Invalid	<40

The validity assessment criteria use the following Likert scale.

Table 2. Likert Scale Score Criteria

Criteria	Score
Very good	4
Good	3
Enough	2
Not good	1

a. Practicality of teaching materials

The practicality of the teaching materials is assessed based on user responses to the developed teaching materials. Practicality is assessed using the following formula:

$$P = \frac{Q}{R} \times 100\%$$

Information:

P = practicality value

Q = score obtained

R = highest score

The criteria for assessing practicality are as follows.

Table 3. Practicality Assessment Criteria

Interval	Criteria
81-100	Very Practical
61-80	Practical
41-60	Quite Practical
21-40	Less practical
0-20	Impractical

b. Effectiveness of teaching materials

The effectiveness of the teaching materials in this study was measured using the N-gain score with a one-group pretest-posttest design. The formula for measuring N-gain is (Syafriani et al., 2023)

$$N\text{-gain} = \frac{\text{Skor posttest} - \text{Skor pretest}}{\text{Skor maksimum} - \text{Skor pretest}}$$

The interpretation of N-gain is as follows.

Table 4. Distribution of N-Gain Scores

N-gain value	Category
$g > 0.7$	Tall
$0.3 \leq g \leq 0.7$	Currently
$g < 0.3$	Low

The division of N-gain categories in the form of % is as follows.

Table 5. Interpretation Categories of N-Gain Effectiveness

Percentage (%)	Interpretation
< 40	Ineffective
40 – 55	Less Effective
56 – 75	Quite Effective
> 76	Effective

RESULTS

Descriptives The developed Project-Based Learning-based economic literacy module has been validated by three expert groups: material experts, design experts, and language experts. The validation results show that the module achieved a high average score, with the following details: material aspect reaching 89% (very valid category), design aspect 85% (valid category), and language aspect 83% (valid category). These findings indicate that the developed module is suitable for use as teaching material for Elementary School Teacher Education (PGSD) students.

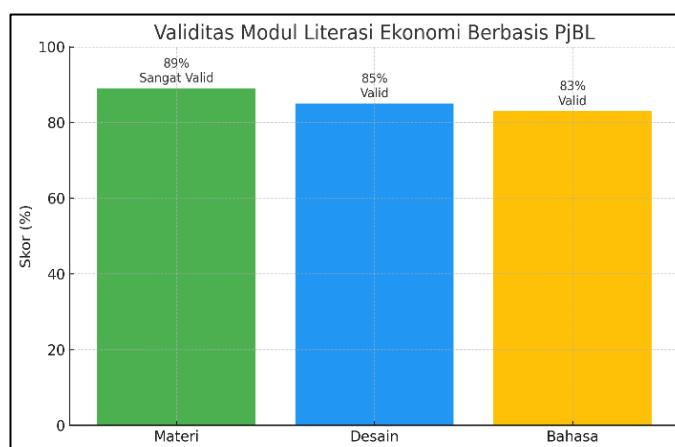


Figure 3. Module validity graph

The trial was conducted on 35 PGSD students through pretest and posttest stages. The pretest results indicated that most students still had low to moderate levels of economic literacy. After participating in the PjBL-based module, there was a significant increase in the average posttest score. This improvement reflects the module's positive influence on students' financial literacy, both in terms of conceptual knowledge and practical skills in

financial management.

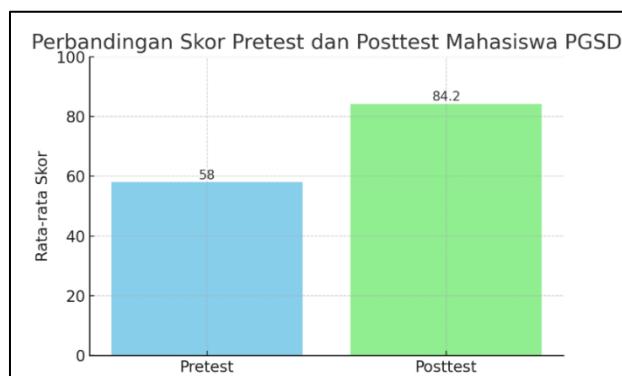


Figure 4. Pretest and posttest scores

The results of the students' economic literacy tests before and after using the module showed significant improvement. The average pretest score was 58, while the average posttest score was 84.2.

To test the significance of this increase, a paired sample t-test was conducted. The analysis results showed a significant difference ($p < 0.001$), thus concluding that the PjBL-based economic literacy module was effective in improving the financial intelligence of PGSD students.

Table 6. Pretest–Posttest t-Test Results

Variables	Average	N	t-count	Sig. (p)
Pretest	58.0	35		
Posttest	84.2	35	-9.76*	0,000

*Note: significant at $\alpha = 0.05$

The t-test results showed a p value < 0.001 , which means there was a significant difference between the pretest and posttest scores.

The N-gain calculation is used to determine the level of improvement in student learning outcomes. The N-gain formula is:

$$N\text{-gain} = \frac{\text{Skor posttest} - \text{Skor pretest}}{\text{Skor maksimum} - \text{Skor pretest}}$$

With a maximum score of 100, obtained:

$$N\text{-gain} = \frac{84,2 - 58}{100 - 58} = 0,62 \frac{26,2}{42}$$

The calculation results show that $N\text{-gain} = 0.62$ is in the medium category, and the effectiveness percentage $\approx 62\%$ is quite effective.

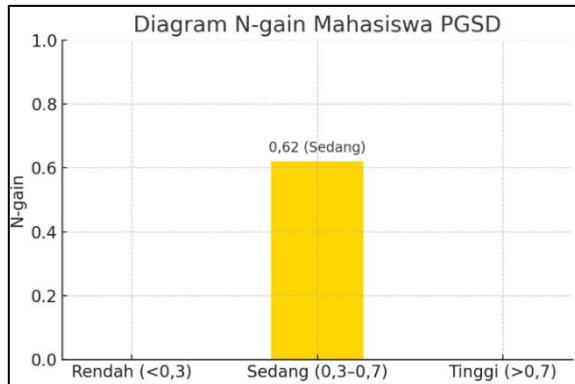


Figure 7. N-Gain Score

In addition to improving test scores, student responses to the module were also very positive. Based on questionnaire results, the majority of students stated that the module was easy to understand, engaging, and helped them learn to relate economic concepts to everyday life. The module was also deemed to provide a more active and collaborative learning experience than conventional learning.

DISCUSSION

The results of this study demonstrate that the development of a Project-Based Learning (PjBL)-based economic literacy module successfully met the eligibility criteria based on expert validation and proved effective in improving the financial intelligence of PGSD students. Three key aspects that warrant further discussion include: (1) the validity of the module, (2) the module's effectiveness in enhancing student learning outcomes,

and (3) the module's relevance to the demands of education in the Society 5.0 era.

Expert validation produced high scores across three aspects—material (89%), design (85%), and language (83%)—indicating that the module adheres to established academic quality standards. These results are consistent with Maemunah and Suwarno (2022), who argue that modules developed based on student needs tend to receive excellent expert evaluations. The material validity score of 89% signifies that the module content aligns closely with the intended learning outcomes of economic literacy, including money management, budget planning, basic investment concepts, and the importance of financial decision-making. The design validity score of 85% reflects that the module's layout, organization, and structural arrangement effectively support readability and student engagement. This finding aligns with Sholeh et al. (2024), who emphasized the importance of interactive learning design in enhancing the effectiveness of PjBL. The language aspect, which scored 83%, also indicates that the module employs a communication style appropriate for PGSD students, making abstract economic concepts more accessible.

Implementation of the PjBL-based module resulted in a substantial increase in students' pretest and posttest scores. Before using the module, most students were classified in the low-to-moderate economic literacy category. Following implementation, students' scores improved consistently, demonstrating that the module effectively enhanced financial literacy. These findings support the theoretical premise that PjBL fosters meaningful learning experiences by engaging students directly in problem-solving and the application of concepts to real-life situations. This is reinforced by a systematic review conducted by Yusri et al. (2024), which concluded that PjBL strengthens conceptual understanding through active participation and contextualized learning. Thus, students not only comprehend economic theory but also apply it in personal financial management.

Both t-test results and N-gain analysis further confirmed the module's effectiveness. The increase in the average score from 58 to 84.2 was statistically significant ($p < 0.001$), and the N-gain score of 0.62 indicated a moderate level of improvement with substantial effectiveness. These results demonstrate that the PjBL-based module has a tangible positive impact on the financial intelligence of PGSD students. This interpretation suggests that students acquired both theoretical knowledge and practical financial management skills. PjBL allows students to actively engage in real-life projects, making learning more meaningful and relevant. Additionally, the improvement in PGSD students' economic literacy aligns with the competencies required in the Society 5.0 era, where financial intelligence complements digital literacy and adaptive capabilities. Consequently, this module serves as an innovative learning resource for PGSD lecturers to better prepare future teachers capable of cultivating financial skills among elementary school students.

The combined outcomes of expert validation, t-test, and N-gain test provide strong evidence that the module is feasible, effective, and relevant for use in economic literacy instruction for PGSD students. Positive student responses further reinforce the module's practicality. Most students reported that the module helped them understand economic literacy in a more contextual, meaningful, and enjoyable manner. These findings support prior research by Lesnowati and Hafifi (2021), which showed that applying PjBL to economics courses substantially increased student motivation and participation, particularly when dealing with perceived difficult content.

Education in the Society 5.0 era necessitates the development of a generation capable of leveraging technology while possessing strong financial intelligence. This PjBL-based module responds to such demands by integrating economic literacy with 21st-century competencies—the 4Cs: critical thinking, collaboration, communication, and creativity. Through real-life projects, PGSD students not only strengthen their economic literacy but also develop broader skills essential for modern society. According to the OECD (2020), financial literacy is a key determinant of a generation's resilience amid global uncertainty. In the Indonesian context, PGSD students trained with this module will be better equipped to instill foundational financial skills in elementary school students. Therefore, the implications of this research extend beyond higher education and contribute to strengthening financial education at the basic education level.

The findings of this study underscore the importance of economic literacy for prospective educators, aligning with the perspectives presented in Educational Innovation in Society 5.0 Era: Challenges and Opportunities (Purnomo & Herwin, 2021), which emphasize that educational transformation requires innovation and human-centered approaches. By developing a PjBL-based module, this research highlights economic literacy as a core competency while providing a practical and contextual pedagogical solution for teacher education programs. Theoretically, this research contributes by adapting the Hannafin and Peck model to develop a PjBL-based economic literacy module, demonstrating the model's systematic approach in producing teaching materials aligned with learner needs. Practically, the study provides an alternative teaching resource that PGSD lecturers can immediately adopt in economic literacy instruction. Moreover, the module has the potential to improve the quality of basic education, as teachers with strong economic literacy are better equipped to instill healthy financial habits in children—such as saving, managing pocket money, and distinguishing between needs and wants. Thus, the module not only benefits PGSD students but also supports the development of financially literate future generations.

Despite the positive outcomes, several limitations must be acknowledged. First, the number of participants was limited to 35 students from a single university, making broad generalizations difficult. Second, the study was conducted as a limited pilot trial and has not yet been implemented widely across varied instructional contexts. Third, the assessment of students' financial intelligence focused primarily on cognitive aspects, leaving affective and psychomotor dimensions underexplored.

Future research should involve a larger and more diverse sample across different study programs and institutions. Longitudinal studies are also recommended to evaluate the module's long-term effectiveness, such as examining changes in students' financial behavior after completing a semester-long course. Additionally, the module could be further developed into an interactive digital format to better match the characteristics of Generation Z learners in the Society 5.0 era, who are highly accustomed to digital-based learning

CONCLUSION

This study produced a Project-Based Learning (PjBL)-based economic literacy module specifically designed to strengthen the financial intelligence of Elementary School Teacher Education (PGSD) students in the Society 5.0 era. Expert validation confirmed that the module was suitable for use, with high feasibility scores across the content, design, and language aspects. Limited trials further demonstrated that the module significantly improved students' economic literacy, including both conceptual understanding and practical financial management skills.

The module also received positive responses from students, who found it engaging, applicable, and supportive of active and collaborative learning. Thus, the PjBL-based economic literacy module serves as an innovative instructional alternative for higher education, particularly within PGSD programs. Nevertheless, this study has several limitations, including the small number of participants and the restricted scope of the trial. Therefore, future research is recommended to involve a larger and more diverse sample and to evaluate the module's effectiveness in broader and more varied learning contexts.

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