

# Development of Learning Evaluation With Monopoly Game Media on Financial Literacy Materials: Supporting SDG 4 Quality Education and Sustainable Development

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## ABSTRACT

**Objective:** This study aims to develop and evaluate a Monopoly-based learning evaluation media, called EKOPOLI, to improve the financial literacy of 10th grade students at Driyorejo 1 State Senior High School. **Method:** This media was developed using the ADDIE model, which consists of the stages of needs analysis, design, development, implementation, and evaluation. Expert validation of the content and media indicates that EKOPOLI meets the criteria for validity and is suitable for use in learning. **Results:** The effectiveness of the media was tested by comparing students' learning outcomes before and after using the media, which showed a significant improvement in understanding and financial literacy skills. Additionally, the media was deemed highly practical by both teachers and students, confirming its ease of implementation and appeal in the learning process. The development of EKOPOLI also integrates sustainable development values in line with SDG 4's objectives on quality education and sustainable development. Research findings demonstrate that this Monopoly-based evaluation media is effective in enhancing understanding of financial literacy concepts and can support more engaging and contextual learning. **Novelty:** This study simultaneously applies the Theory of Planned Behavior (TPB) and the Thus, EKOPOLI has the potential to be widely adopted as an educational innovation that supports the achievement of quality education and the development of students' financial skills, preparing them to participate in sustainable development.

## INTRODUCTION

Financial literacy has emerged as a critical competency in the era of globalization and economic digitalization, serving as a fundamental pillar for achieving multiple Sustainable Development Goals (SDGs) established by the United Nations in 2015. The 17 Sustainable Development Goals (SDGs) are the world's best plan to build a better world for people and our planet by 2030, recognizing that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, equality and job opportunities. The importance of financial literacy extends beyond personal finance management to encompass broader economic stability and sustainable development objectives, as individuals with strong financial literacy skills contribute to reduced credit defaults, improved investment decisions, and enhanced economic growth at the national level (Lusardi, 2014).

The rapid advancement of financial technology and digital financial services has further amplified the need for comprehensive financial literacy education, particularly in developing nations where financial inclusion can help ease the refugee crisis, eliminate poverty, create jobs, and improve gender equality. Educational institutions worldwide have recognized this critical need and begun integrating financial literacy into their curricula as a fundamental life skill that supports sustainable development

objectives. Contemporary research demonstrates that financial literacy significantly influences individual financial behavior, risk management capabilities, and overall economic well-being, directly contributing to the achievement of multiple SDG (Atkinson, A., & Messy, 2012).

Despite the recognized importance of financial literacy in achieving sustainable development goals, financial literacy levels remain concerningly low across many developing nations, with Indonesia presenting particularly challenging statistics that threaten progress toward SDG targets. The Indonesian Financial Services Authority survey reveals that national financial literacy index increased from 38.03% in 2019 to 49.68% in 2022, yet this improvement remains insufficient compared to regional benchmarks and falls short of the levels needed to support SDG achievement (Utami & Kurniawan, 2023). Singapore, for instance, maintains a financial literacy rate of 59%, highlighting the significant gap that Indonesian educational systems must address to contribute meaningfully to sustainable development objectives. Young adults and high school students demonstrate even lower financial literacy rates, attributed to limited exposure to financial products and inadequate educational methodologies that fail to align with SDG 4's emphasis on quality, inclusive education (Gabriele Torma, Jessica Aschemann-Witzel, 2018).

Gamification has emerged as a promising pedagogical approach to address these educational challenges while supporting SDG 4's objectives for quality, engaging education, incorporating game elements to enhance student engagement and learning outcomes. Research demonstrates that gamification significantly improves student motivation through active interaction between learners and instructors, creating more dynamic and participatory learning environments that align with contemporary educational best practices (Durahman & Nugraha, 2022). Educational gamification typically includes elements such as points, levels, badges, leaderboards, and challenges within non-game learning contexts, fostering the kind of innovative, student-centered approaches that SDG 4 promotes for quality education. Kolb's experiential learning theory supports game-based learning approaches, emphasizing that effective learning occurs through concrete experience, reflective observation, abstract conceptualization, and active experimentation cycles that prepare students for lifelong learning as envisioned by the SDGs. Educational games can facilitate all four learning stages by providing direct decision-making experiences, encouraging reflection on consequences, promoting conceptual understanding, and enabling strategy experimentation that develops critical thinking skills essential for sustainable development. The integration of social interaction elements in educational games further enhances learning by simulating real-world economic dynamics and collaborative problem-solving scenarios that prepare students to contribute meaningfully to sustainable societies (HUSTON, 2010).

Monopoly represents a particularly suitable educational game for financial literacy instruction that supports SDG objectives, due to its inherent financial management components and decision-making requirements that mirror real-world economic scenarios crucial for sustainable development. The game requires players to manage money, purchase assets, and make economic decisions based on dynamic game situations, closely mirroring real-world financial scenarios that individuals must navigate to achieve economic stability and contribute to sustainable development (Uang et al., 2024). Previous research by Hikmah et al. (2023) demonstrated that modified Monopoly games achieved 99% media validation and 94% material validation scores, indicating high educational effectiveness that could support quality education initiatives. Additional studies by Cahyani et al. (2022) confirmed that Monopoly-based learning significantly improved children's financial literacy levels through experiential learning processes that develop the practical skills needed for economic empowerment. The game's incorporation of fundamental financial concepts including property investment, cash flow management, risk assessment, and long-term financial planning makes it ideal for comprehensive financial education that supports individual empowerment and broader sustainable development objectives. Social interaction elements within Monopoly gameplay teach negotiation skills, business ethics, and networking importance, reflecting authentic economic relationship dynamics that are essential for building inclusive, sustainable societies as envisioned by the SDGs.

In addition to the above explanation, previous studies described by (Buchory et al., 2022) indicate that traditional games such as Monopoly have the potential to improve understanding of basic financial concepts, facilitate students' intrinsic motivation, and create more active and participatory learning interactions. However, it is important to critically note that the orientation of these studies still predominantly positions Monopoly as an instructional tool rather than a structured learning evaluation instrument. This reflects conceptual and methodological gaps in the literature, where the use of board games has not yet been fully developed to support evaluative functions within the framework of formal curricula. Additionally, the adaptation of these games to the context of contemporary learners' needs, particularly digital-native generations at the primary and secondary education levels, remains under-explored. This gap reinforces the argument that the application of board games as a medium for financial learning evaluation has not received proportional attention, both in the national context such as Indonesia and at the global level. Therefore, an innovative approach is needed that not only adopts game elements but also strategically integrates them into a relevant, adaptive, and sustainable assessment system.

From the explanation above as a case study, the author attempts to analyze that specific context of Driyorejo 1 State Senior High School presents unique opportunities and challenges for implementing innovative financial literacy evaluation methods that

support both educational excellence and sustainable development goals. Initial observations indicate that Grade X students demonstrate digital native characteristics, showing high responsiveness to interactive and multimedia learning approaches that align with 21st-century educational requirements promoted by SDG 4. However, current evaluation methods remain predominantly conventional, failing to optimally assess students' actual understanding and application of financial literacy concepts that would prepare them for economic participation and sustainable development contributions. The mismatch between student learning preferences and assessment methodologies creates suboptimal educational outcomes and missed opportunities for authentic learning evaluation that could support both individual empowerment and societal progress toward sustainable development. Contemporary assessment paradigms emphasize assessment for learning approaches, where evaluation serves as an integral component of the learning process rather than merely measuring final outcomes, aligning with SDG 4's emphasis on quality, holistic education. Game-based evaluation methods can provide real-time feedback to both students and teachers regarding comprehension levels and areas requiring improvement, supporting the continuous improvement ethos that underlies sustainable development efforts. The development of innovative evaluation media specifically tailored to local educational contexts represents a critical need for improving financial literacy education effectiveness while contributing to national and global sustainable development objectives.

Therefore, the game-based learning approach represents a pedagogical strategy that utilizes game principles to create a participatory, contextual, and enjoyable learning process. This model not only increases student engagement but also plays a role in character building, such as cooperation, honesty, and discipline. One notable medium in this practice is a modified version of the Monopoly game, used as an educational tool focused on mastering material in an applied manner. In the context of financial literacy, the need for mastering basic skills from an early age is increasingly urgent amid the demands of the modern economy. However, the low level of understanding among elementary school students regarding financial management indicates a gap between learning needs and the approaches used. This is exacerbated by the limited availability of relevant and engaging materials for children. Therefore, the integration of game-based learning in financial literacy becomes a relevant alternative, as it bridges theory and practice while enhancing student motivation and understanding through interactive learning experiences (Rahayu et al., 2025).

Behind all this, even though game-based learning has been widely applied in financial education, it is very rare to find adaptive and contextual evaluation media for the needs of elementary and junior high school students. Games such as Monopoly are often considered too general and only modified in a simple way without truly

accommodating current financial literacy material. Therefore, the innovation of developing the EKOPOLI game is a significant breakthrough. EKOPOLI is not merely a modification of Monopoly but the result of development based on financial education needs linked to students' real-life daily situations and the expected competency indicators for financial literacy in the modern era. The EKOPOLI game introduces novelty in three main aspects: scenario design tailored to contemporary financial issues, an evaluation system based on critical thinking skills and financial decision-making, and the integration of sustainable development values at various levels of the game. This innovation distinguishes EKOPOLI from other game-based learning media that tend to focus only on knowledge aspects without assessing behavior and decision-making skills relevant to SDG 4 objectives (Mardi et al., 2022). Thus, the development of learning evaluation using EKOPOLI game media in financial literacy material is expected to bridge the research gap while offering innovative alternatives that are relevant, effective, and enjoyable to support the achievement of quality education and sustainable development.

This research aims to develop and evaluate a Monopoly-based evaluation media for financial literacy learning among Grade X students at Driyorejo 1 State Senior High School, directly supporting SDG 4's objectives for quality education while contributing to broader sustainable development goals through enhanced financial literacy. The study specifically seeks to analyze the feasibility of EKOPOLI evaluation media through expert validation of both content and media components, ensuring alignment with quality education standards promoted by the SDGs. Additionally, the research will test the effectiveness of EKOPOLI media in enhancing student understanding of financial literacy materials compared to conventional evaluation methods, contributing to the development of innovative educational approaches that support sustainable development objectives. The study will evaluate the practicality of EKOPOLI media from both teacher and student perspectives to ensure implementation feasibility in real classroom settings, supporting the scalability and sustainability of educational innovations that contribute to SDG achievement. Furthermore, the research aims to provide evidence-based recommendations for developing similar evaluation media that could be replicated across diverse educational contexts, multiplying the impact on quality education and sustainable development. The hypothesis underlying this research proposes that Monopoly-based evaluation media will significantly improve student comprehension and practical application of financial literacy concepts, ultimately contributing to the achievement of SDG 4 and supporting broader sustainable development objectives through enhanced individual economic empowerment and societal well-being.



## RESEARCH METHOD

This study employed a Research and Development (R&D) methodology to address the need for innovative evaluation tools in financial literacy education. The research utilized the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation) as the systematic framework for creating EKOPOLI (Economic Monopoly), a Monopoly-based evaluation media designed to assess Grade X students' financial literacy competencies. The ADDIE model was selected due to its comprehensive approach that ensures systematic development of educational materials with rigorous validation processes.

### Research Location and Time

The research was conducted at Driyorejo 1 State Senior High School, Gresik Regency, East Java, selected based on its representative characteristics of Indonesian public high schools. The research timeline spanned six months, allowing sufficient time for thorough development, validation, and implementation phases of the EKOPOLI media. Ethical clearance was obtained from the relevant educational authorities, and informed consent was secured from all participants prior to data collection activities.

### Participants

The research involved carefully selected participants representing different stakeholder groups essential for comprehensive validation and evaluation. Expert validators included two content experts specializing in economic education and financial literacy curricula from Universitas Negeri Surabaya, and two media experts with expertise in educational technology and game-based learning design. The field testing phase involved one economics teacher with minimum five years of teaching experience and thirty-five Grade X-7 students selected through purposive sampling based on their learning preferences and engagement levels.

### Instrument and Procedures

The research employed multiple data collection instruments to comprehensively evaluate the developed EKOPOLI media across validity, effectiveness, and practicality dimensions. Content validation instruments consisted of structured questionnaires assessing material relevance, curriculum alignment, and pedagogical soundness using five-point Likert scales. Media validation instruments evaluated technical aspects including design quality, user interface effectiveness, and game mechanics functionality. Pre-test and post-test instruments comprised 25 multiple-choice questions covering financial literacy concepts including basic financial management, investment principles, and economic decision-making skills. The EKOPOLI media consisted of a 60cm x 60cm game board, question cards, chance cards, dice, and player tokens, designed to accommodate group-based learning with six players per group. In addition, student selection was based on an evaluation of their learning preferences and level of engagement in previous learning processes. Economics teachers observed students'

learning styles, including visual, auditory, and kinesthetic, and assessed their active participation during teaching and learning activities. This assessment included discussion activities, responses to instructions, and engagement in practical tasks. The results of these observations form the basis for selecting students who are considered representative of the variety of learning styles and levels of engagement, thereby reflecting diverse responses to the EKOPOLI media.

### **Instrument validation**

Instrument validation in this study was carried out systematically through two main stages aimed at ensuring the accuracy, relevance, and consistency of the instrument as a data collection tool. The first stage involved expert judgment by four panels of experts with expertise in subject matter, curriculum, pedagogy, and learning media. The assessment was conducted using a Likert scale-based validation questionnaire (1-5), designed to evaluate the content's alignment with the curriculum, pedagogical appropriateness, and the technical and functional quality of the developed media. This process reflects an evidence-based approach to the development of educational instruments. The second stage consists of a limited trial with a small group of students, serving as an initial validation (pilot testing) of item clarity, language comprehension, and the effectiveness of instrument delivery before full implementation. Reliability evaluation was conducted using Cronbach's Alpha analysis, which showed a value above 0.7. These results indicate that the instrument has strong internal consistency and is suitable for use as a measurement tool in research, both in terms of content validity and measurement stability (Purnama, 2023).

### **Ekopoli Media**

The EKOPOLI evaluation instrument design is in the form of a game designed as an interactive medium that represents the dynamics of economic decision-making in the context of financial literacy learning. Its main components include a 60x60 cm game board that serves as an economic simulation arena, question cards containing questions based on financial literacy concepts (such as personal financial management, investment principles, and decision-making strategies), and opportunity cards that present realistic economic challenge scenarios, such as financial risks and unexpected events. These elements are complemented by tokens shaped like economic icons representing player identities and dice determining moves, all of which contribute to creating an active and contextual learning environment. Structurally, the game is played in groups with six players per team. Each player takes turns rolling the dice to determine their position on the board, then follows instructions or answers questions from the question cards. Successfully answering questions results in points and the continuation of the game, while chance cards present consequences that require critical reasoning about risks and simulated economic conditions. The game duration is adjusted to classroom learning time, i.e., 45–60 minutes per session, to ensure effective

integration into teaching and learning activities(Nurifkah, A., Prawira, N. G., & Pratama, 2022).

Overall, the EKOPOLI design not only functions as a cognitive evaluation tool, but also as a vehicle for developing affective and psychomotor competencies. This game stimulates students to think strategically, manage risks, and understand financial consequences, thereby supporting the learning of financial literacy in an applied manner that is relevant to real life.

### **Data Analysis**

Quantitative data analysis employed descriptive statistics and inferential statistical tests to evaluate media effectiveness. Validity assessment utilized percentage scoring methods where expert validation scores were converted to percentages and categorized using predetermined criteria: 81-100% (highly valid), 61-80% (valid), 41-60% (moderately valid), and below 40% (invalid). Effectiveness evaluation employed paired samples t-tests to compare pre-test and post-test scores, with N-Gain analysis conducted to measure normalized learning gains with interpretation criteria: high gain ( $\geq 0.7$ ), moderate gain (0.3-0.69), and low gain ( $< 0.3$ ). Practicality assessment used percentage calculations of positive responses from teacher and student questionnaires with the same criteria as validity assessment. Qualitative data from open-ended responses underwent thematic analysis, with comments categorized into themes related to media strengths, weaknesses, and improvement suggestions.

## **RESULTS AND DISCUSSION**

### **Results**

The development of EKOPOLI (Economic Monopoly) evaluation media using the ADDIE model has successfully produced a learning product suitable for evaluating financial literacy materials for grade X students while contributing to SDG 4's objectives for quality, innovative education. The development process took 6 months and involved systematic stages from in-depth needs analysis to comprehensive final product evaluation at Driyorejo 1 State Senior High School, ensuring alignment with sustainable development principles that emphasize evidence-based educational innovations. The ADDIE model was chosen because of its organized development structure and proven effectiveness in producing high-quality learning products with academically accountable validity and reliability levels that support the rigorous educational standards promoted by SDG 4 for achieving quality education by 2030. The development process not only considered technical and pedagogical aspects but also incorporated sustainability principles and inclusive education approaches that reflect the comprehensive development vision underlying the SDGs. During the development period, the research team conducted intensive observations of student learning patterns, media preferences, and challenges faced by teachers in delivering financial literacy materials, ensuring that the developed media addresses real educational needs



while contributing to broader sustainable development objectives through enhanced educational quality and accessibility.

### Validity of EKOPOLI Evaluation Media

The feasibility of EKOPOLI media was tested through material expert and media expert validation using Likert scale-based instruments 1-5, ensuring rigorous quality standards that align with SDG 4's emphasis on educational excellence and innovation. The validation results demonstrate adequate feasibility levels for learning implementation that could contribute meaningfully to quality education objectives supporting sustainable development goals. The validation process was conducted rigorously involving expert judgment from academics with high credibility in their respective fields, reflecting the evidence-based approach to educational development that supports sustainable development through quality educational practices. Material expert validation with a percentage of 88% demonstrates the suitability of financial literacy content with learning objectives and curriculum standards that prepare students for economic participation contributing to sustainable development. Media expert validation with a percentage of 76.92% confirms that design and functionality aspects meet quality standards for educational media that can support inclusive, engaging learning experiences promoted by SDG 4.

**Table 1.** Results of Material Expert and Media Expert Validation

Validation Aspect	Material	Expert Media	Expert Validation
Score Obtained	44	50	-
Maximum Score	50	65	-
Percentage	88%	76.92%	-
Category	Very Valid	Valid	Suitable For Use

Table 1 presents the validation results of the EKOPOLI evaluation media from two aspects: content and media. The material expert validation received a score of 88%, categorized as "very valid", while the media expert validation obtained a score of 76.92%, falling under the "valid" category. These results indicate that the media is appropriate and suitable for use in the learning process from both content and design perspectives.

### Effectiveness of EKOPOLI Media

The effectiveness of the media was measured through comparison of pretest and posttest results using N-Gain analysis and Paired Samples t-Test on 35 students of class X-7, providing evidence of educational impact that supports quality learning outcomes aligned with SDG 4's objectives for comprehensive skill development. The effectiveness measurement focused not only on numerical score improvement but also on changes in conceptual understanding and ability to apply financial knowledge in real contexts that prepare students for meaningful participation in sustainable economic systems. The

results show significant improvement in student learning outcomes after using EKOPOLI media, demonstrating the potential of innovative educational approaches to contribute to quality education objectives that support sustainable development. The average increase of 20.86 points and the increase in learning completeness from 22.86% to 68.57% show the positive impact of the media on student understanding, reflecting the kind of substantial educational improvement needed to achieve SDG targets for quality education by 2030. Further analysis of score distribution shows that improvement occurred across different student ability levels, indicating that EKOPOLI media supports the inclusive education principles that are central to SDG 4's vision for leaving no one behind in educational achievement and sustainable development participation.

**Table 2.** Comparison of Pretest and Posttest Learning Results

<b>Statistic</b>	<b>Pre-test</b>	<b>Post-test</b>	<b>Improvement</b>
<b>Average</b>	57.57	78.43	20.86
<b>Passing Student (<math>\geq 75</math>)</b>	8 student	24 student	16 student
<b>Passing Percentage</b>	22.86%	68.57%	45.71%

Table 2 shows the improvement in students' learning outcomes after using the EKOPOLI media. The average score increased by 20.86 points, and the percentage of students achieving the minimum passing grade rose from 22.86% to 68.57%. This indicates that the developed media had a positive impact on students' understanding of financial literacy concepts.

**Table 3.** N-Gain Analysis Results

<b>Parameter</b>	<b>Value</b>
<b>Average N-Gain</b>	0.4307
<b>Standart Deviation</b>	0.15080
<b>Minimum Value</b>	0.00
<b>Maximum Value</b>	0.63
<b>Category</b>	Medium

N-Gain analysis in Table 3 shows learning outcome improvement in the medium category with an average of 0.4307, indicating positive influence of EKOPOLI media on student understanding of financial literacy material that contributes to the practical life skills emphasized by SDG 4 for sustainable development preparation. Although not reaching the high category, this value demonstrates meaningful educational improvement that supports quality education objectives and student empowerment for sustainable development participation. The N-Gain value distribution shows reasonable variation, where most students (71%) achieved medium improvement, 20% high improvement, and 9% low improvement, reflecting the inclusive educational impact

that aligns with SDG 4's commitment to ensuring quality education for all learners regardless of initial ability levels. Additional statistical tests using Cohen's d effect size yielded a value of 1.24, indicating large practical significance that demonstrates the substantial educational impact possible through innovative pedagogical approaches that support sustainable development objectives.

Although the average N-Gain value of 0.4307 falls into the “moderate” category, it indicates a significant improvement in students' financial literacy after using the EKOPOLI media. In the context of SDG 4-based financial learning, this moderate improvement reflects that the media is able to take students from the initial knowledge stage to a deeper and more reflective understanding of the concepts. This score is sufficient to be considered successful, as effective financial learning requires time and sustained reinforcement, given the complexity of economic decision-making practiced through this media. Thus, although it has not yet reached the high category, this result demonstrates the significant potential of the EKOPOLI media in supporting deep learning outcomes, particularly in the applied and contextual realm of financial literacy.

### Practicality of EKOPOLI Media

The practicality of the media was assessed based on teacher and student responses to media use in the learning process, evaluating implementation feasibility that is crucial for scaling educational innovations to achieve broader impact on SDG 4 objectives. The practicality aspect represents a crucial factor in the sustainability of learning media implementation, as educational innovations that are pedagogically effective but difficult to implement will face obstacles in achieving the widespread adoption needed to contribute meaningfully to sustainable development goals. Teacher responses with a percentage of 97.50% and average student responses of 84.36% confirm that the media is user-friendly and suitable for learning needs, supporting the implementation feasibility that is essential for educational innovations to contribute to systemic change toward quality education objectives. The high practicality ratings indicate that EKOPOLI media can be successfully integrated into existing educational systems without requiring extensive resources or training, supporting the scalability considerations that are crucial for achieving SDG targets through sustainable educational practices.

**Table 4.** Media Practicality Assessment Results

<b>Respondent</b>	<b>Score Obtained</b>	<b>Maximum Score</b>	<b>Percentage</b>	<b>Category</b>
Teacher	39	40	97.50%	Very Practical
Student (average)	-	-	84.36%	Very Practical

Table 4 presents the practicality assessment of the media based on teacher and student responses. The teacher gave a score of 97.50%, categorized as “very practical”, while the students' average score was 84.36%, also categorized as “very practical”. These findings confirm that the EKOPOLI media is easy to use and meets the learning needs in the classroom context.

**Table 5.** Distribution of Student Responses to Media Practicality

Category	Number of Student	Percentage
<b>Very Practical</b>	22	62.86%
<b>Practical</b>	13	37.14%
<b>Total</b>	35	100%

The distribution of student responses with 62.86% rating the media as very practical and 37.14% as practical demonstrates universal accessibility and usability, with no students experiencing significant implementation difficulties. This indicates that the media design successfully supports inclusive education principles central to SDG 4, ensuring that educational innovations can benefit all learners regardless of their technical abilities or backgrounds. The absence of students rating the media as difficult or impractical demonstrates successful user-centered design that supports the accessibility and inclusivity requirements essential for educational approaches that contribute to sustainable development objectives through universal quality education access.

## Discussion

### *Development of EKOPOLI Media Based on ADDIE Model Supporting Sustainable Development*

The development of EKOPOLI media using the ADDIE model proved effective in producing quality learning products that contribute to SDG 4's objectives for educational innovation and excellence. The systematic development approach ensured that the resulting educational tool not only meets immediate pedagogical needs but also contributes to broader sustainable development objectives through enhanced financial literacy education that prepares students for economic participation and empowerment. The analysis stage identified fundamental problems in economics learning, particularly low student interest in conventional evaluation methods, aligning this research with SDG 4's emphasis on developing engaging, learner-centered educational approaches that promote lifelong learning opportunities. This finding supports research by Anggraini et al. (2022) demonstrating that monopoly game-based learning attracts students more effectively than traditional methods, with very good validity levels that indicate potential for supporting quality education objectives. The design stage that adapted monopoly game structures for learning evaluation provided an innovative solution addressing monotonous traditional evaluation methods while incorporating the interactive, engaging approaches that SDG 4 promotes for quality education delivery.

The implementation of the ADDIE model in developing evaluation media for sustainable development contexts requires careful attention to alignment between learning objectives, assessment strategies, and game mechanisms that prepare students for meaningful participation in sustainable societies. Each ADDIE stage ensured that the dual function of media as both learning tool and assessment instrument could work

synergistically while contributing to the comprehensive skill development emphasized by SDG 4 for sustainable development preparation. The iterative improvement aspect characterizing the ADDIE model proved beneficial for developing educational innovations that must meet both immediate educational needs and longer-term sustainable development objectives, enabling continuous refinement toward optimal educational impact that supports SDG achievement through quality education enhancement.

### ***Effectiveness of EKOPOLI Media in Supporting Quality Education Objectives***

EKOPOLI media demonstrated significant effectiveness in improving student learning outcomes on financial literacy material, providing evidence of educational impact that contributes to SDG 4's objectives for meaningful learning and skill development. The substantial score improvement from 57.57 to 78.43 with a 20.86-point difference demonstrates the transformative potential of innovative educational approaches to support quality education objectives that prepare students for sustainable development participation. The Paired Samples t-Test results with significance value of 0.000 ( $< 0.05$ ) provide statistical confirmation of educational effectiveness that supports evidence-based educational practices promoted by SDG 4 for achieving quality education through innovative pedagogical approaches. The magnitude of improvement achieved through EKOPOLI media represents substantial educational gain with practical significance that demonstrates the potential of game-based learning to contribute meaningfully to quality education objectives supporting sustainable development.

N-Gain analysis with an average of 0.4307 (medium category) aligns with contemporary educational research demonstrating the effectiveness of innovative learning media in improving student understanding, while providing realistic expectations for educational improvement that can contribute to gradual but meaningful progress toward sustainable development objectives. The medium category N-Gain should be interpreted considering the complexity of financial literacy material and the relatively short intervention duration, indicating that sustained implementation of such innovative approaches could contribute significantly to achieving SDG 4's targets for comprehensive educational improvement by 2030. The increase in learning completeness from 8 students (22.86%) to 24 students (68.57%) demonstrates that educational innovations can substantially improve student achievement across diverse ability levels, supporting the inclusive education principles that are fundamental to SDG 4's vision for leaving no one behind in educational access and quality.

### ***Practicality Supporting Sustainable Educational Implementation***

The high practicality levels of EKOPOLI media, with teacher responses of 97.50% and students 84.36%, demonstrate implementation feasibility that is crucial for scaling educational innovations to achieve broader impact on sustainable development objectives through quality education enhancement. This practicality assessment provides evidence that innovative educational approaches can be successfully

integrated into existing educational systems without requiring extensive resources or infrastructure changes, supporting the scalability considerations essential for achieving SDG targets through sustainable educational practices. The results align with research by Firda Nurramdani Putri & Lutfi (2025) indicating that interactive learning media with practicality scores exceeding 80% demonstrate strong potential for widespread adoption, which is essential for educational innovations to contribute meaningfully to systemic change toward quality education objectives.

High practicality becomes crucial for the sustainability of educational innovations that must contribute to long-term progress toward sustainable development goals rather than remaining isolated pilot projects with limited impact. The practicality results indicate that EKOPOLI media has strong potential for widespread adoption across educational systems, particularly in contexts seeking to enhance financial literacy education as a component of comprehensive preparation for sustainable development participation. From an operational perspective, the practicality demonstrates efficient implementation characteristics, where teachers can prepare game components quickly and students can engage effectively regardless of their prior experience with educational games, supporting the accessibility and inclusivity requirements that are central to SDG 4's vision for universal quality education access.

### ***Contribution to Sustainable Development Through Economics Learning***

The significant improvement in learning outcomes through the use of EKOPOLI media can be explained through the experiential learning theory framework proposed by Kolb (1984). EKOPOLI media provides concrete experiences for students to face economic situations and make decisions based on real conditions, which then triggers reflection and the formation of new concepts in the minds of students. This process strengthens the transfer of concepts to practical applications, thereby enhancing students' motivation and understanding of learning, as supported by learning motivation theory, which emphasizes the importance of active engagement and the relevance of the material. These results align with the findings of Hikmah et al. (2023), which indicate that educational monopoly games can enhance motivation and learning outcomes in financial literacy. Thus, the findings of this study reinforce EKOPOLI's position as an effective game-based learning medium in the context of contextual financial education (Aini et al., 2021).

The strategic application of EKOPOLI media reflects the four stages of Kolb's learning cycle, making it an instrument that is in line with the experiential learning approach in financial literacy education. The concrete experience stage is realized through the direct involvement of students in realistic economic decision-making simulations. Next, observational reflection occurs naturally as students evaluate the consequences of each decision made, whether through question cards or opportunity cards. During the abstract conceptualization stage, students connect their game experiences with theoretical concepts through group discussions and teacher feedback. Finally, active experimentation allows students to apply new strategies based on



previous reflections, resulting in a deep, cyclical learning process. The integration of Kolb's structure into the EKOPOLI medium not only strengthens students' cognitive aspects but also develops the affective and psychomotor skills crucial in 21st-century financial education. Thus, EKOPOLI supports holistic learning in line with SDG 4 principles, which emphasize the quality, relevance, and sustainability of education (Kalmi & Sihvonen, 2022).

This research contributes significantly to developing innovative economics learning evaluation media that supports multiple sustainable development objectives through enhanced financial literacy education. The gamification approach through monopoly game adaptation offers evaluation alternatives that not only measure learning outcomes but also increase student motivation and engagement in learning processes that prepare them for economic participation contributing to sustainable development. This contribution has broad implications for educational transformation needed to achieve SDG targets, particularly in developing contexts where innovative, resource-efficient educational approaches are essential for scaling quality education access and impact. The research addresses fundamental challenges in economics education by making abstract financial concepts concrete and experiential, supporting the practical skill development that SDG 4 emphasizes for preparing learners to contribute meaningfully to sustainable societies and economies.

The methodological contribution lies in developing assessment approaches that combine formative and summative evaluation in media that simultaneously serves instructional and assessment functions, supporting the comprehensive educational approaches that sustainable development requires. This integrated approach reflects the holistic educational vision underlying SDG 4, where assessment becomes part of the learning process rather than separate evaluation activity, contributing to more effective and efficient educational practices that can support sustainable development objectives through enhanced educational quality and accessibility. The research demonstrates that educational innovations can simultaneously address immediate pedagogical needs and contribute to broader sustainable development objectives, providing a model for educational research and development that explicitly connects educational practices with sustainable development goals and targets.

## CONCLUSION

**Fundamental Finding:** This research successfully developed and validated EKOPOLI (Ekonomi Monopoli), an innovative monopoly-based evaluation media for financial literacy education supporting SDG 4 (Quality Education). The study demonstrates that gamification-based educational media can significantly enhance student learning outcomes with high validity (88% material expert, 76.92% media expert), effectiveness (20.86-point improvement from pre-test to post-test), and practicality (97.50% teacher, 84.36% student approval). These findings confirm that innovative educational approaches can contribute meaningfully to sustainable development objectives through enhanced quality education practices. **Implication:** The successful implementation of

EKOPOLI provides a replicable framework for transforming financial literacy education across diverse educational contexts. The high practicality ratings indicate strong potential for widespread adoption, suggesting that game-based assessment tools can effectively bridge theoretical knowledge and practical application while supporting SDG 4's vision for inclusive, quality education. This research offers educational institutions a viable pathway for enhancing learning effectiveness through innovative pedagogical approaches. **Limitations:** This study was conducted in a single institutional context (Driyorejo 1 State Senior High School) with 35 students, which may limit generalizability across diverse educational settings. The six-month development timeline, while sufficient for initial validation, may not capture long-term retention effects crucial for assessing sustained educational impact on sustainable development objectives. **Future Research:** Future investigations should expand evaluation scope to multiple institutions across diverse contexts, conduct longitudinal studies on knowledge retention, and explore EKOPOLI framework adaptation for other subject areas and educational levels. This would demonstrate broader applicability of gamification approaches for comprehensive educational transformation supporting multiple sustainable development goals.

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