

Storybook validation: Essential practices for student's financial literacy

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Abstract

Purpose: To develop and validate a financial literacy storybook for Junior High School students using the 4D (Define, Design, Develop, Disseminate) method.

Research Methodology: This study employs a development research approach, specifically utilizing the 4D (Define, Design, Develop, Disseminate) method to create and validate a financial literacy storybook for Junior High School students.

Results: High feasibility scores from both material (72 points) and media (77 points) experts validated the storybook's content accuracy, relevance, and overall design quality. These results suggest that the approach of using digital storytelling, specifically through Storyjumper, can effectively bridge the gap between abstract financial concepts and relatable age-appropriate narratives for adolescents.

Conclusions: The validated storybook enhances students' financial literacy by combining pedagogical accuracy with engaging design, and digital storytelling innovatively boosts understanding and interest in financial education.

Limitations: First, the validation process relied primarily on expert opinions, which, although valuable, may not fully capture the perspectives of the target audience, Junior High School students. The study did not include a pilot test with actual students, which could provide insights into the storybook's real-world effectiveness and engagement levels. Additionally, the research is limited to a specific geographical and cultural context, potentially affecting the generalizability of the findings to other regions or educational systems.

Contribution: This research contributes a validated financial literacy storybook for Junior High School students, advancing educational tools in this crucial field and demonstrating the 4D method's effectiveness in educational material development.

Keywords: *Financial Literacy, Local Wisdom, Storybook*

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1. Introduction

Financial literacy has become an increasingly critical skill in today's complex economic environment (Lusardi & Messy, 2023). The rapid evolution of financial products, digital payment systems, and global economic interconnectedness has created a landscape in which even basic financial decisions require a solid foundation of knowledge (Dafri & Al-Qaruty, 2023; Musau, 2022). Developing this foundation is crucial for future financial well-being and economic participation for young people, particularly those in their formative teenage years (Alshebami & Al Marri, 2022; Güngör Göksu, 2023). Junior High School students represent a key demographic for financial literacy education (Lusardi, 2019). At this

stage, many adolescents engage more actively with money, whether through part-time jobs, allowances, or nascent consumer behavior. They stand at the cusp of important financial milestones, such as opening bank accounts, considering savings strategies, and even contemplating future educational expenses (Ostaev, Zlobina, Gogolev, & Kislickiy, 2023). However, research consistently shows that financial literacy levels among this age group remain low in many countries (Faulkner, 2022; Van Nguyen, Ha, Nguyen, Doan, & Phan, 2022).

Traditional financial education methods often struggle to resonate with young audiences. Textbooks and lectures, while informative, frequently fail to capture the imagination of adolescents or provide relatable contexts for abstract financial concepts (Thompson, Pawson, & Evans, 2021). This disconnect highlights the need for innovative, age-appropriate educational tools to bridge the gap between financial theory and real-world applications. Storybooks have long been recognized as powerful vehicles for education in various disciplines (Laksmi, 2020). They offer a unique ability to contextualize complex ideas within narrative frameworks, making abstract concepts tangible and memorable. In the realm of financial literacy, storybooks can provide relatable scenarios that demonstrate the practical applications of financial principles, potentially increasing engagement and retention among young learners.

The digital age has further transformed the educational landscape, with students becoming increasingly accustomed to interactive and visually stimulating learning materials (Gotov & Korkmazev, 2022). This shift presents challenges and opportunities for financial literacy education. While competing for attention in a media-rich environment is difficult, it opens avenues for creating more engaging and accessible educational resources. Moreover, the economic fallout from recent global events, such as the COVID-19 pandemic, has underscored the importance of financial resilience and literacy (Lusardi, Hasler, & Yakoboski, 2021). Many families have faced unprecedented financial challenges, highlighting the need for young people to develop a robust understanding of financial concepts early in life (Kurniasari & Ratnawati, 2023; Tang & Peter, 2015). In this context, our research seeks to address these converging factors by developing a financial literacy storybook specifically tailored for Junior High School students. By leveraging the narrative power of storytelling and aligning it with rigorous educational standards through the 4D method, we aim to create a resource that informs, inspires, and engages young learners in their financial education journey.

The significance of this research extends beyond the development of a single educational tool, encompassing broader implications for financial literacy education and for youth empowerment. By creating and validating a financial literacy storybook for Junior High School students, this study addresses a critical gap in age-appropriate, engaging financial education resources. The innovative approach of combining storytelling with financial concepts has the potential to transform how financial literacy is taught to adolescents, making abstract financial principles more accessible and relatable (Pramitasari, Syarah, Risnawati, & Tanjung, 2023). The rigorous validation process of this study, involving both material and media experts, ensured the creation of a high-quality resource that balances educational value with appeal to its target audience. The 4D method demonstrates a systematic approach to educational material development, potentially serving as a model for future efforts in this field.

Furthermore, by focusing on Junior High School students, the research targets a crucial developmental stage where early financial habits and attitudes are formed, potentially influencing lifelong financial behaviors (Murugiah, Ismail, Taib, Applanaidu, & Long, 2023; Syafiqah & Diana, 2024). The storybook format also offers a versatile tool that can be integrated into various educational settings, from formal classroom instruction to informal learning at home, thereby expanding the reach of financial education. Ultimately, this study contributes to the broader goal of fostering a more financially literate society by equipping young people with the knowledge and skills needed to navigate an increasingly complex economic landscape. The potential long-term impacts include improved financial decision-making, reduced financial stress, and enhanced economic well-being for future generations, underscoring the significant societal value of this research.

2. Literature review

Financial literacy refers to the knowledge, skills, and confidence necessary to make informed and effective decisions regarding money management (Lusardi et al., 2021; Tang & Peter, 2015). It encompasses a range of competencies, including budgeting, saving, investing, understanding credit and debt, and planning long-term financial goals (Ostaev et al., 2023). At its core, financial literacy empowers individuals to navigate the complex world of personal finance and make sound financial choices that impact their overall well-being (Dafri & Al-Qaruty, 2023).

For young people, particularly those in their formative teenage years, developing financial literacy is crucial for several reasons. First, it lays the foundation for lifelong financial health. As adolescents begin to engage with money through part-time jobs, allowances, or early consumer experiences, understanding financial concepts helps them to form positive habits early on (Otto, 2013). Second, in an increasingly complex economic landscape, young people face a multitude of financial decisions at an earlier age than previous generations. From student loans to credit cards, and from online shopping to digital payment systems, teenagers need the skills to navigate these challenges responsibly (Moreno-Herrero, Salas-Velasco, & Sánchez-Campillo, 2018). Moreover, financial literacy contributes to overall life skills, fostering independence, critical thinking, and long-term planning. It also serves as a safeguard against financial pitfalls and predatory practices that often target inexperienced investors. Lusardi and Messy (2023) indicate that individuals who develop financial literacy early are more likely to plan for retirement, accumulate wealth, and make better financial decisions throughout their lives. In essence, equipping young people with financial literacy is not just about managing money; it is about providing them with the tools to achieve financial well-being, make informed life choices, and contribute positively to the broader economy.

Attracting students to learn about financial literacy requires innovative and engaging approaches that resonate with their interests and experiences (Funeka, Govender, & Govender, 2022; Nurwulandari, 2022). One effective strategy is to make financial concepts relevant to students' lives by using real-world examples and scenarios that they can relate to, such as saving for a desired item or budgeting for a school event. Gamification of financial concepts through interactive simulations, challenges, and reward systems can significantly increase student engagement (Hellín et al., 2023; Smiderle, Rigo, Marques, Peçanha de Miranda Coelho, & Jaques, 2020). Peer-to-peer learning, where students teach and learn from each other, has also shown promise in making financial literacy more appealing and accessible. Additionally, incorporating financial literacy into existing subjects such as mathematics or social studies can help students see its practical applications across different areas of their education (Darmayanti & Khairunnisa, 2024).

The use of Information and Communication Technology (ICT) tools also has shown significant positive effects on financial literacy education (Alshubiri, Jamil, & Elheddad, 2019). Digital platforms, mobile apps, and online resources provide interactive and personalized learning experiences that can adapt to individual student needs and learning pace (Menberu, 2024). A study by Bosshardt and Walstad (2014) found that ICT tools in financial education led to improved knowledge retention and higher levels of engagement among students (Haleem, Javaid, Qadri, & Suman, 2022; Pandita & Kiran, 2023). These tools often incorporate multimedia elements, such as videos, animations, and infographics, which can simplify complex financial concepts and make them more digestible for young learners. Furthermore, ICT tools enable students to practice financial decision-making in safe simulated environments before facing real-world financial choices. The accessibility of these digital resources also allows continuous learning beyond the classroom, reinforcing financial literacy concepts through repeated exposure and practice. Importantly, the use of ICT in financial education aligns with digital natives' preferences for technology-enhanced learning, making the subject more appealing and relevant to their daily lives (Alshubiri et al., 2019; Niebel, 2018). However, it is crucial to note that while ICT tools are highly effective, they should be used as part of a balanced approach that includes traditional teaching methods and practical, hands-on experiences to ensure comprehensive financial literacy education (Okoye et al., 2023).

Story jumper presents a compelling opportunity as an effective digital platform for teaching financial literacy, particularly to younger audiences, such as Junior High School students. This interactive storytelling tool allows educators to create engaging, visually rich narratives seamlessly incorporating financial concepts into relatable storylines (Hariyani, Soemarmi, Nurhidayah, Prameswari, & Fitri, 2023). The platform's user-friendly interface enables teachers to develop customized content that aligns precisely with their curriculum objectives and students' learning needs. Storyjumper offers the unique benefit of contextualizing abstract financial principles within narrative frameworks for financial literacy education, making complex ideas more accessible and memorable (Nurlaela, Ilham, & Lisabe, 2022).

The benefits of using Storyjumper for financial literacy education are multifaceted (Rojas, Fajardo, Cajamarca, Abrigo, & Cabrera, 2023). First, it leverages the power of storytelling, which has been shown to enhance information retention and emotional engagement. Students are more likely to connect with and remember financial concepts when they are presented through characters and plots with which they can relate. Second, the platform's interactive features, such as clickable elements and multimedia integration, cater to diverse learning styles and maintain student interest. This interactivity can simulate real-world financial scenarios, allowing students to explore the consequences of financial decisions in a safe, virtual environment. Additionally, Storyjumper's collaborative features enable peer-to-peer learning and group projects, fostering discussion and collective problem-solving around financial topics.

For students, Storyjumper is valuable because it transforms financial literacy from a potentially dry subject into an engaging and interactive experience. This allows them to learn at their own pace, revisit concepts as needed, and even create their own financial literacy stories, deepening their understanding through the process of content creation. The digital format aligns with the preferences of tech-savvy students, making learning more appealing and accessible outside traditional classroom settings (Listia et al., 2022). For teachers, Storyjumper offers a flexible tool to create customized and visually appealing educational resources without requiring advanced technical skills. This enables educators to easily update and adapt content to reflect current financial trends or specific class needs. The platform also provides opportunities for formative assessment through story creation exercises, allowing teachers to gauge student understanding more dynamically and creatively than traditional tests (Fitriyani, Ahsanu, Kariadi, & Riyadi, 2023). Moreover, the shareable nature of Storyjumper creations facilitates collaboration among educators, enabling the exchange of best practices and resources within the teaching community (Sari & Arini, 2021). By bridging entertainment and education, Storyjumper has the potential to significantly enhance the effectiveness of financial literacy programs, making it a valuable asset for both students and teachers in the quest to improve financial knowledge and skills among young learners.

The integration of financial literacy education with digital storytelling platforms, such as Storyjumper, also aligns with broader pedagogical frameworks, particularly those grounded in constructivist learning theories. Constructivism emphasizes that learners actively construct their understanding and knowledge of the world through experiences and reflection. When students engage with financial literacy concepts through storytelling, they do not simply absorb facts; they construct meaning by connecting these concepts to the lives of characters in a narrative. This process helps bridge the gap between abstract financial principles and students' lived experiences. For example, a story about a young character saving money for a bicycle can reflect a teenager's own goals and decisions, making learning both personal and meaningful. In this sense, Storyjumper operates as a mediating tool that supports active learning and knowledge-building.

Another critical dimension of using storytelling in financial education is its cultural adaptability. Stories are universal; however, the themes, symbols, and values embedded in them can be tailored to reflect local cultural contexts. For instance, in Indonesia, stories can include culturally familiar settings such as traditional markets, community savings groups, or local entrepreneurial practices. Embedding financial lessons in such familiar contexts increases relatability and strengthens student engagement. Storyjumper's flexibility in allowing teachers and students to create their own narratives ensures that financial literacy education does not adopt a one-size-fits-all model but instead adapts to the socio-cultural realities of its audience. This localized approach is particularly important in diverse societies,

where students' financial experiences and exposure vary significantly across socioeconomic backgrounds.

In addition to cultural relevance, the psychological dimension of storytelling cannot be ignored. Research in educational psychology has shown that narratives elicit emotional engagement, which enhances memory retention and learning motivation. Financial topics, often perceived as technical or intimidating, can be made approachable through stories that humanize financial decision making. By embedding emotions such as excitement, disappointment, or satisfaction in financial narratives, students experience the psychological consequences of financial decisions in a safe and controlled environment. For example, a story in which a character impulsively spends money and later regrets missing an opportunity to buy something important highlights the emotional dimensions of financial responsibility more effectively than abstract lectures. Moreover, digital storytelling platforms, such as Storyjumper, enable collaborative learning environments that reflect the principles of social constructivism. When students co-create financial stories in groups, they engage in dialogue, negotiate meaning, and collaboratively solve financial scenarios. This peer-to-peer interaction fosters critical thinking, creativity, and communication skills, in addition to enhancing financial knowledge. Such collaborative activities not only enhance understanding but also prepare students with the broader competencies necessary for the 21st century, including teamwork and digital literacy. The collaborative aspect also democratizes learning by valuing multiple perspectives, allowing students from different backgrounds to share their financial experiences and learn from each other.

The practical applications of Storyjumper in financial literacy education are diverse. Teachers may design projects in which students create storybooks illustrating financial decision-making processes, such as budgeting for a class trip, managing allowances, or simulating entrepreneurial ventures. Students can also be tasked with producing digital narratives that explore long-term financial goals, such as saving for higher education or starting a business. By integrating real-world financial challenges into storytelling, students not only gain technical knowledge but also develop the foresight and planning skills essential for future financial independence. Furthermore, these projects can serve as formative assessments, offering educators valuable insights into students' understanding of and misconceptions about financial concepts. Despite its advantages, the use of digital storytelling platforms for financial literacy education is not without challenges. One challenge is ensuring equitable access to digital tools and the Internet, particularly in regions with limited technological infrastructure. If financial literacy education relies heavily on digital platforms without addressing access issues, it risks widening educational disparities. Another challenge is teacher readiness; educators may need training not only in financial literacy content but also in digital pedagogy to maximize the potential of tools such as Storyjumper. Therefore, professional development programs should focus on equipping teachers with both subject matter expertise and technical skills required to design effective digital narratives. Additionally, while storytelling is engaging, it must be complemented with practical financial exercises and real-life applications to ensure that students can transfer the lessons learned into actual behavior.

Measuring the impact of digital storytelling on financial literacy outcomes requires robust assessment methods. Traditional tests may not fully capture the depth of learning achieved through narrative-based approaches. Alternative assessment strategies, such as evaluating student-created stories for the accuracy of financial concepts, creativity, and application of problem-solving, can provide more nuanced insights. Longitudinal studies are necessary to examine whether storytelling-based financial education leads to sustained changes in financial attitudes and behaviors over time. Without such evidence, it remains difficult to conclusively establish the effectiveness of digital storytelling compared with other instructional methods. Nevertheless, early applications have shown promising results. Analyses of storybook-based financial education have shown increased comprehension and engagement among junior high school students. Other classroom implementations have highlighted the value of interactive story creation as a tool for formative assessment. These examples suggest that when implemented thoughtfully, Storyjumper and similar platforms can serve as powerful complements to traditional financial literacy programs.

On a broader scale, the integration of financial literacy with digital storytelling supports national and global educational goals. Financial literacy is recognized as a life skill essential for economic participation and resilience, while international education agendas emphasize inclusive and equitable quality education that fosters employment, decent work and entrepreneurship. By leveraging accessible digital tools such as Storyjumper, schools can contribute to these global agendas while simultaneously addressing local educational needs. This dual alignment reinforces the strategic importance of adopting innovative pedagogical approaches to financial literacy education.

Finally, it is worth noting that the role of parents and communities should not be underestimated. Storyjumper projects can be shared beyond the classroom, engaging parents in conversations about financial literacy at home. When families read and discuss financial storybooks created by students, financial education extends into the household, creating a holistic learning environment for children. Family involvement reinforces concepts learned in school and models positive financial behaviors, amplifying the overall impact. Moreover, partnerships with community organizations, financial institutions, and nonprofits can provide additional resources, mentorship, and real-world perspectives to enrich the storytelling process. Such collaborations highlight that financial literacy is not only an educational endeavor but also a communal responsibility that benefits society.

3. Research methodology

This study employs a development research approach, utilizing the 4D (Define, Design, Develop, Disseminate) method to create and validate a financial literacy storybook for Junior High School students. In the Define phase, we conducted a needs analysis to identify key financial literacy concepts relevant to the target audience. The Design phase involved crafting engaging storylines that incorporated these concepts, using Storyjumper as the primary platform for storybook creation. During the development phase, we produced the storybook and subjected it to rigorous validation. Two types of expert validators were engaged: material validators assessed the accuracy and appropriateness of the financial literacy content, while media validators evaluated the storybook's design, readability, and overall appeal. The validation process employed both quantitative scoring using Likert scales and qualitative feedback to ensure a comprehensive assessment (Betaubun, 2020). Based on the validators' input, we made the necessary revisions to improve the storybook.

This study used a mixed-methods approach, combining quantitative data from validation scores with qualitative insights from expert feedback and researcher observations. Data analysis involved calculating validity percentages from expert evaluations and thematic analysis of qualitative feedback (Asmaningrum, Khoe, & Sukirno, 2018).

The calculations used to convert quantitative data into qualitative data are presented in Table 1.

Table 1. The conversion of validation questionnaire scores

Score range	Category
$X > 63$	Very feasible
$51 < X < 63$	Feasible
$39 < X < 51$	Feasible enough
$27 < X < 39$	Less feasible
$X < 27$	Very less feasible

4. Results and discussions

This study yielded positive results across the Define, Design, and Develop phases of the 4D model. In the Define phase, a needs analysis was conducted by identifying the curriculum used for learning, student characteristics, and the extent of students' understanding of financial literacy. Based on the results of the observations and interviews, key financial literacy concepts that are important for junior high school students were compiled, including the origins of money, saving, managing expenses, investing, understanding debt and credit, being a smart consumer, giving wisely, and planning for future finances.

These findings became the basis for the design phase, where an engaging storyline was created by combining these concepts using Storyjumper. The resulting animated audio teaching materials featured characters relevant to age-appropriate financial situations and included interactive elements to increase engagement. In the development phase, the storybook underwent expert validation. The results of the expert validation are presented in Table 2.

Table 2. The result of material expert validation

No	Item	Score
<i>A</i>	<i>Learning objectives</i>	
1	Learning objectives are displayed in the animated audio teaching materials	5
2	Learning objectives are following the material presented	4
<i>B</i>	<i>Learning materials</i>	
3	The material is delivered clearly	5
4	The material is delivered coherently	4
5	The choice of words is in accordance with the material delivered	5
6	The material delivered in the learning video is important for students	5
7	The material is delivered in an interesting manner	5
8	The title and discussion of the contents of the material are appropriate	5
9	The presentation of the material attracts students' interest in learning	5
10	The presentation of the material fosters students' interest in learning	5
11	The presentation of the material increases students' activeness	5
<i>C</i>	<i>Learning Method</i>	
12	The chosen learning method is appropriate	5
13	Students can practice the material in the audio animation teaching materials	4
<i>D</i>	<i>Learning Resources</i>	
14	Audio animation teaching materials make it easier for students to learn the material	5
15	Audio animation teaching materials can be used as learning enrichment materials	5
Total:		72
Category:		Very feasible

Source: Processed data (2024)

The material expert evaluation resulted in 72 points, indicating that the content was "very feasible" in terms of accuracy, relevance, and suitability for the target audience. This score indicates that financial literacy concepts were effectively integrated into the narrative and aligned with educational objectives. The results of media expert validation are presented in Table 3.

Table 3. The result of media expert validation

No	Item	Score
<i>A</i>	<i>Software Engineering</i>	
1	The use of audio animation teaching materials is effective for independent learning	4
2	Audio animation teaching materials are efficient for independent learning	4
3	Audio animation teaching materials can be relied on to make it easier for students to learn	5
4	Audio animation teaching materials can be used repeatedly	5
5	Audio animation teaching materials can be used easily	5
6	Audio animation teaching materials can be run on various hardware and software	5

7	The selection of Storyjumper software for the development of audio animation teaching materials is appropriate	4
<i>B Learning Design Aspect</i>		
8	The use of learning strategies in audio animation teaching materials is appropriate	4
9	Delivery of audio animation teaching materials increases students' learning appeal	4
<i>C Visual Communication</i>		
10	The material in the audio animation teaching materials is conveyed well	4
11	Audio animation teaching materials are creative in conveying the contents of the material with images	5
12	The appearance of images in audio animation teaching materials is interesting	4
13	The appearance of animations in audio animation teaching materials is interesting	4
14	The suitability of dubbing and visualization is appropriate	4
15	The combination of text colors with the background in audio animation teaching materials is clearly visible	4
Total:		77
Category:		Very feasible

Source: Processed data (2024)

The media expert evaluation resulted in 77 points, which also fell in the "very feasible" category. This score positively reflects the storybook design, readability, visual appeal, and overall effectiveness of the digital learning tool. The high scores from the material and media experts validate the potential of the storybook as an effective resource for teaching financial literacy to Junior High School students, supporting the feasibility of using Storyjumper as a platform for creating engaging educational content in this area. The teaching material entitled "Kisah Koin Ajaib" can be found at the link <https://www.storyjumper.com/book/read/174616941/66b943492516e#>. Figures 1 to 6 below show a snapshot of the final product of the animated audio teaching material "Kisah Koin Ajaib" which is ready to be tested.

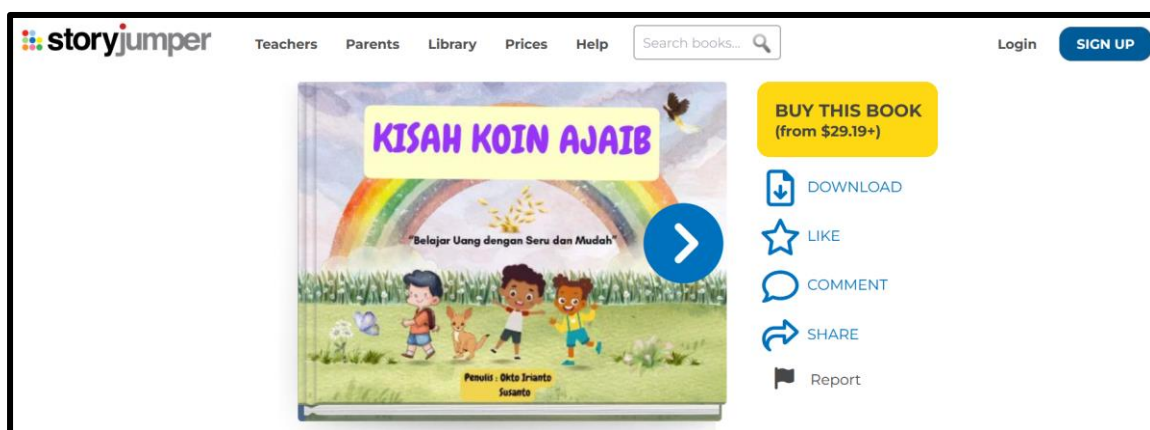


Figure 1. Front cover page

Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#>

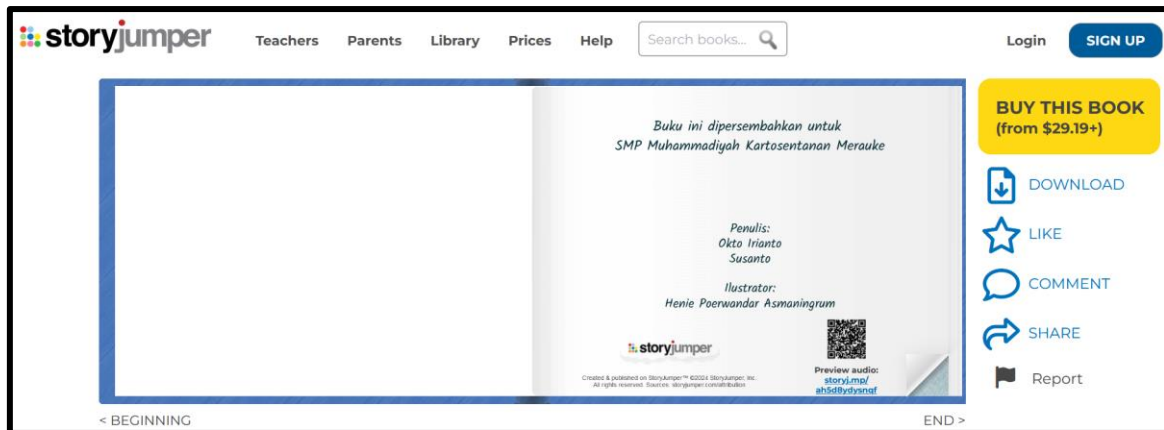


Figure 2. Authors page

Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#page/1>

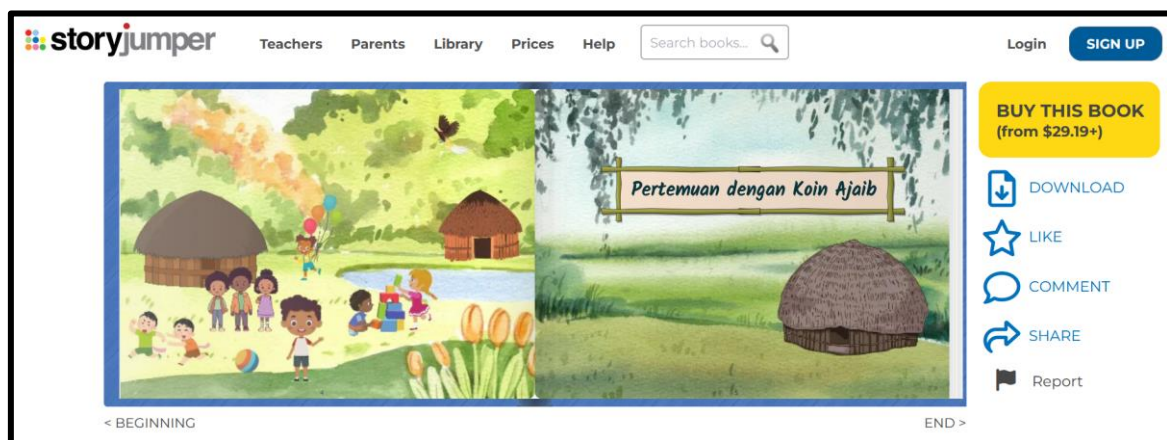


Figure 3. Subtopic page

Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#page/4>

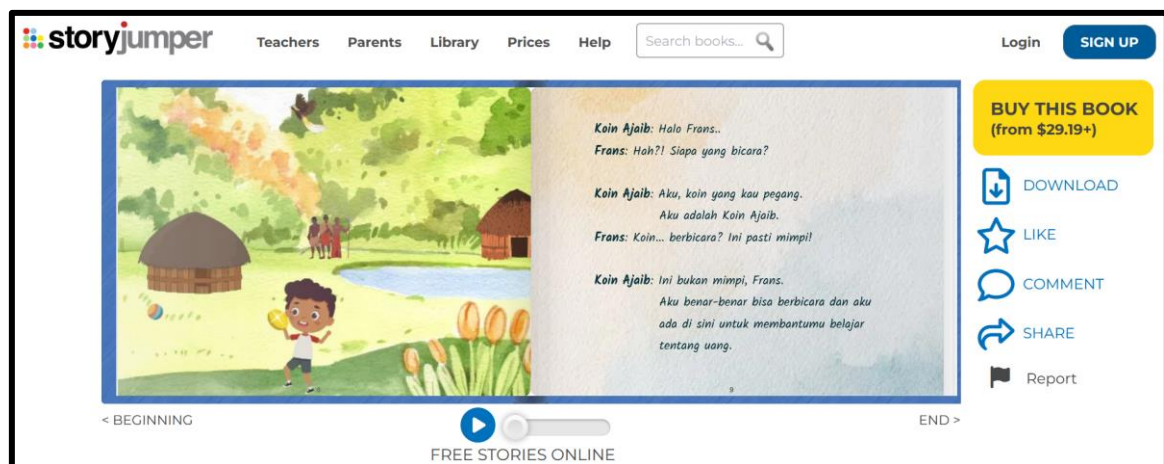


Figure 4. Audio animation learning material content

Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#page/8>

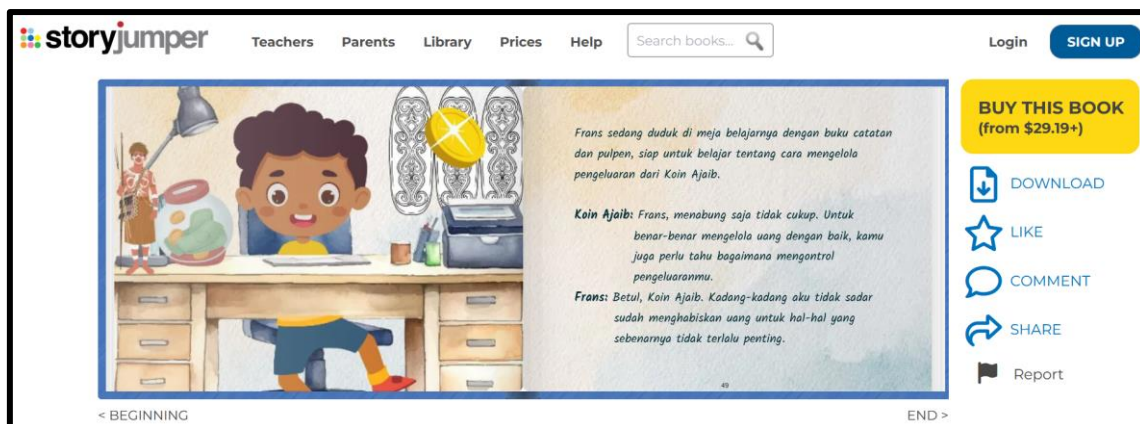


Figure 5. Audio animation learning material content showed Papuan local arts
Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#page/48>



Figure 6. Back cover page
Source: <https://www.storyjumper.com/book/read/174616941/66b943492516e#page/150>

5. Conclusion

5.1 Conclusion

The development and validation of a financial literacy storybook using Storyjumper for Junior High School students yielded promising results, demonstrating the potential of innovative digital platforms in enhancing financial education. Guided by the 4D method, this research successfully created an engaging educational tool that effectively integrates key financial literacy concepts into an interactive narrative format. The high feasibility scores from both material (72 points) and media (77 points) experts validated the storybook's content accuracy, relevance, and overall design quality. These results suggest that the approach of using digital storytelling, specifically through Storyjumper, can effectively bridge the gap between abstract financial concepts and relatable age-appropriate narratives for adolescents. In conclusion, this study contributes a valuable tool to the field of financial literacy education by offering a model for creating engaging, digitally enhanced learning materials. As financial systems become increasingly complex, innovative approaches to educating young people about finance are crucial. This research takes a significant step towards equipping the next generation with the financial knowledge and skills necessary for their future economic well-being.

5.2 Suggestion

Based on the results and conclusions of this study, several recommendations can be made for future research, educators, and policymakers. First, the financial literacy storybook developed through the 4D method and implemented using the Storyjumper platform should be tested directly on Junior High School students as the target audience. Conducting pilot trials in classrooms will provide valuable insights into the level of engagement, comprehension, and usability from the perspective of students. This step is important to complement expert validation with authentic user feedback, ensuring that the

storybook is both theoretically feasible and practically effective. Second, educators are encouraged to integrate storybooks into their learning practices as a supplementary teaching tool. By doing so, they can create a more interactive and enjoyable learning experience that bridges abstract financial concepts with real-life examples that students can relate to. Teachers may also adapt storybooks to local cultural and economic contexts, thereby enhancing their relevance and applicability.

Third, researchers should expand this development to cover broader topics of financial literacy, such as saving, investing, responsible spending, and digital financial services (DFS). Exploring different formats, such as gamification, augmented reality, and mobile applications, could further enrich students' learning experiences. Comparative studies between traditional teaching methods and digital storytelling-based methods would also provide strong empirical evidence of the effectiveness of such innovations. Finally, policymakers and school administrators should support the dissemination and scaling of innovative digital learning materials. By encouraging collaboration between educators, developers, and government institutions, financial literacy education can be enhanced more widely and systematically. As financial challenges in society continue to evolve, early education using engaging digital tools is essential for equipping future generations with the knowledge and skills necessary to achieve financial well-being in the long term.

5.3 Limitation and study forward

This research, while comprehensive in its approach to developing and validating a financial literacy storybook using Storyjumper, has several notable limitations. First, the validation process relies primarily on expert opinions, which, although valuable, may not fully capture the perspectives and experiences of the target audience, Junior High School students. The absence of a pilot test or direct feedback from students limits our understanding of the storybook's real-world effectiveness and engagement levels. Second, the study is confined to a specific geographical and cultural context, potentially affecting the generalizability of the findings to other regions or educational systems with different financial literacy needs or technological access. The research also does not assess the long-term impact of the storybook on students' financial literacy skills, as it focuses on the development and initial validation stages rather than longitudinal effects. Additionally, while Storyjumper offers numerous benefits, the study's reliance on this single platform may overlook the potential advantages or limitations of other digital storytelling tools. Although the 4D method is structured, it may not account for all aspects of educational material development, particularly in the rapidly evolving field of financial technology and education. Finally, this study did not compare the effectiveness of the Storyjumper-based storybook with traditional teaching methods or other digital platforms, limiting our ability to definitively state its comparative advantages in financial literacy education.

Future research stemming from this study could explore several promising directions. A longitudinal study assessing the long-term impact of the Storyjumper-based financial literacy storybook on students' financial knowledge, attitudes, and behaviors would provide valuable insights into its effectiveness over time. Researchers could also conduct comparative studies evaluating the Storyjumper approach against traditional teaching methods and other digital platforms to determine its relative efficacy in financial literacy education. Expanding the geographical and cultural scope of the study would help assess the adaptability and universality of this approach across diverse educational contexts in the future. Future work may also involve developing and testing a series of storybooks covering a broader range of financial literacy topics and creating a comprehensive curriculum. Investigating the potential of integrating more interactive elements, such as mini-games or simulations, within the Storyjumper platform could further enhance engagement and learning outcomes. Additionally, exploring the use of artificial intelligence to personalize story content based on individual student needs and learning styles presents an exciting avenue for future research. Studies focusing on the role of peer-to-peer learning through collaborative story creation on Storyjumper could offer insights into the social learning aspects of financial literacy. Finally, research on effective implementation strategies for teachers and schools is crucial to bridge the gap between the development and widespread adoption of this innovative approach to financial literacy education.

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