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Enhancing Early Childhood Financial Literacy Through FinSOLEkid Indonesia: A Comparative Study of Digital Platforms

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Abstract
This study investigates the impact of FinSOLEkid Indonesia, a game-based educational application, on financial literacy among early childhood learners aged 5-6 years. Utilizing a quasi-experimental design with two experimental groups, one using a PC version and the other an Android version, the study aims to determine the effectiveness of digital platforms in enhancing financial understanding. Subjects were chosen through purposive sampling based on their interaction with money, comprehension of in-game instructions, and ability to use digital devices. Data collection involved multiple-choice tests tailored with game elements and visual aids to suit the developmental stage of the participants. The analysis, conducted using the Kruskal-Wallis test and N-Gain scores, revealed that the PC version of FinSOLEkid Indonesia was more effective in augmenting financial knowledge than its Android counterpart and conventional methods. However, the suitability of the application for children under the age of 5-6 remains questionable due to the presence of written instructions. The study highlights the importance of selecting appropriate educational media and content for early childhood. It suggests that such technology-enhanced learning tools, while effective, need to be tailored to the developmental needs of the learners. These findings offer insights into the potential of digital learning platforms in early childhood education, emphasizing the need for age-appropriate design and content in educational technology.

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Introduction

Financial literacy is essential for making informed and sustainable financial decisions (Yılmaz & Özçiftçi, 2021). Financial literacy instruction, especially in early childhood, is still neglected in the school system (Yong et al., 2020). Financial literacy is undervalued in schools (Güvenç, 2020). Effective financial management requires financial knowledge (Hapsari et al., 2020). Financial literacy should be taught in schools to improve society (Williams et al., 2022). Financially savvy people may avoid unnecessary risks, manage their resources well, and plan their future (Amagir et al., 2018). Early financial education is vital because it builds a solid knowledge base (Kadoya & Khan, 2020). This foundation helps kids learn money, save, and be financially responsible (Erdem et al., 2023). Herijanto and Rahadi (2020) revealed that early financial education can improve children's financial understanding and conduct, laying the groundwork for their financial intelligence.

Financial literacy remains low in all sample nations (26 countries on three continents, Asia, Europe, and Latin America, including 12 OECD member countries), according to the 2020 OECD/INFE worldwide survey on people. Knowledge scores average 63% of the maximum for all people. Essential financial management and savings questions were answered correctly by 26% of the participants. Only 17% of questioned respondents ranked their financial literacy skills as good, 53% moderate, and 26% low. Despite rising from 2018, the 2019 National Survey of

Financial Literacy and Inclusion was low. Financial education should begin in school as early as feasible, according to the OECD. According to research, most individuals lack financial management expertise, including debt settlement, investing, and planning. Individuals struggle with money, have too much debt, and are unprepared for the future. Although financial decisions are made in maturity, sound financial habits and attitudes should be developed early. Because attitude building attitude-building.

The Indonesian government prioritizes early financial literacy (Lopus et al., 2019). The Financial Services Authority publishes "Growing Financial Literacy Skills in Early Childhood," a book for parents, teachers, and assistants. Unfortunately, little information and awareness have prevented minority members from accepting socialization initiatives. Early childhood financial knowledge research and resolution is necessary because it helps build a solid financial foundation (Swigonski et al., 2021). Young children absorb information as sensitive listeners quickly. In this stage, understanding the elements that affect the advancement of financial knowledge helps lay the groundwork for future progress (Xu et al., 2023). In a globalized era, research on new solutions for early childhood education to promote financial understanding is crucial to building a financially competent society (Tien et al., 2020).

Based on observations at two institutions in Malang City, researchers found that children aged 5-6 had low literacy skills. Teachers simulated children's literacy knowledge using role-play, and the results revealed that 9 out of 15 children used money to purchase cakes and toys. In comparison, six children used their money to purchase gifts/toys, and the remaining children likely struggled with abstract language. Thus, early literacy education is crucial in establishing money habits (Setiawan et al., 2019). Children who recognize the importance of establishing themselves, moviegoing, sharing, and managing as adults (Fadhli et al., 2020). Prioritizing finansounditeracy at an early age enables society to establish a sturdy groundwork for children to manage their finances judiciously (Yafie et al., 2020). By doing so, they can develop the necessary financial skills to thrive in a progressively complex financial world.

Financial behavior programs work, according to several research. Financial management choices can be made by people with extensive financial knowledge and dependable sources (Rai et al., 2019). Choosing requires mental or cognitive processes. There are many more ways to construct effective and long-lasting self-guided learning settings to improve teens' financial literacy (Yafie et al., 2023).

This research used FinSOLEkid Indonesia media with organized learning and gamification. Preschool financial literacy resources are offered. The media uses gamification in an ordered SOLE style to spark children's interest and information-seeking (Kalwij et al., 2019). Fadhli et al. (2022) found that financial learning games improve children's financial literacy. These games can be more instructive and tailored to a child's age and personality (Zahra & Anoraga, 2021).

Finsolekid provides an optimal self-learning environment for children to understand financial concepts via play and edutainment. The benefits include early financial skills, a better understanding of money, and positive financial habits. Finsolekid's game design matches children's learning styles, and program sustainability, which promotes financial literacy, illustrates its viability as a solution. Thus, Finsolekid was chosen after a thorough assessment of v financial education. Financial literacy ignorance has been studied, notably in schooling. Researchers are studying the importance of early financial literacy socialization (Hong Shan et al., 2023). Not much study has been done on this topic. Financial literacy research in early childhood still focuses on providing instructional resources, including learning media (Haron & Kenayathulla, 2022; Lusardi, 2019; Singh, 2018).

Recent studies in Southeast Asia highlight the importance of early financial literacy. In the Philippines, Desello & Agner (2023) and Jee Balaza et al. (2021) are exploring early childhood education programs and alternative methods like the Smart Money Kit to enhance financial interest and skills among preschoolers. Indonesia prioritizes financial literacy from a young age, with Rizkan et al. (2022) detailing government-led socializing programs. Rahadi et al. (2023) emphasize the role of cognition in financial decision-making. A notable initiative, FinSOLEkid

Indonesia, integrates gamification into a structured learning environment, making financial education engaging and playful for young children.

This research stands out for using the Indonesian Finsolekid technique to enhance early childhood financial literacy. This strategy, distinct from previous studies that relied on separate educational media without curricular integration (Cawyer et al., 2022), is seamlessly woven into early childhood education to foster financial literacy. While most preceding research has concentrated on children's financial literacy (Koskelainen et al., 2023), this study adopts a novel approach by integrating curriculum components that cater to children's interests and talents, concurrently introducing financial concepts at their level. This method combines play and creativity with financial concepts, rendering the learning process engaging and effective. The success of Finsolekid Indonesia in promoting financial literacy at a young age could lay a robust foundation for financial knowledge. This work complements studies that overlooked expertise in presenting fundamental financial concepts to young children.

This study focuses on the efficacy of FinSOLEkid Indonesia, a gamified educational platform, in bolstering financial literacy in early childhood education. It aims to explore two key hypotheses: H1 evaluates the change in financial knowledge among young children before and after engaging with FinSOLEkid Indonesia, aiming to quantify its direct educational impact. H2 investigates the differences in financial literacy advancement when children interact with various versions of FinSOLEkid Indonesia—namely, PC, Android, and traditional teaching methods. This aspect of the study is designed to identify the most effective format for imparting financial education in early childhood. Through this investigation, the research seeks to make a substantial contribution to early childhood educational practices, offering valuable insights into the role of technology-enhanced learning in developing financial literacy skills.

Methods

2.1. Unit Analysis

This research was conducted on early childhood ages 5-6 years. The subject of this research is essential because, at an early age, children can already use digital devices and can understand instructions or rules.

2.2. Research design

This study used a quasi-experimental design with a nonequivalent control group design with two experimental groups to test the effect of FinSOLEkid Indonesia on increasing children's financial knowledge. This design was chosen because there are two treatments in the form of game applications that run on different platforms, namely, PC and Android versions. This model was chosen because the results of testing the effectiveness using this model design will be able to describe the difference in effect between the treatment group and the control group not only from the differences before and after the treatment but also to see the differences between the treatments and the control class. The research design is described as follows:

Table 1. Research Design

Pre-test		Post-test
O1	X1	O2
O3	X2	O4
O5		O6

2.3. Sampling

The subjects in this study were kindergarten students aged between 5-6 years who were selected using a purposive sampling technique with the following criteria: 1) they were familiar with and interacted with money, 2) they were able to understand in-game instructions, 3) they were able to use digital devices which will be used in running the FinSOLEkid Indonesia application.

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2.4. Source and data collection

Data was collected using a written multiple-choice test with three answer choices. This test was designed using game models and paper tests. The use of test techniques is used to measure the level of financial knowledge of early childhood before and after treatment is carried out. Because early childhood is assumed to be unable to read, the tests are structured using a game model and test paper containing pictures.

2.5. Data analysis

Data analysis was performed using the Kruskall-Wallis test. This analysis tests the effectiveness of using financial literacy learning media. Test data analysis for the control and experimental groups was collected using the pretest (pretest) and posttest (posttest).

Test data analysis for the control and experimental groups was collected using the pretest (pretest) and posttest (posttest). The data analysis process begins with 1) collecting data from the initial and final test results, 2) determining the N-gain to find out the difference between the pretest and posttest results, 3) conducting a comparative analysis using the Kruskall Wallis test to find out differences in the effectiveness of using financial literacy learning media both in groups that use the PC version of FinSOLEkid Indonesia media, the Android version of FinSOLEkid Indonesia media and classes that do not use FinSOLEkid Indonesia media.

Table 2. N-Gain Category

N_Gain	Category
$g > 0.7$	High
$0.3 \leq g \leq 0.7$	Medium
$g < 0.3$	Low

Source: Hake in Guntara (On Rosen et al., 2015)

Result

3.1. Financial knowledge of Children using FinSOLEkid Indonesia

Financial knowledge for early childhood is a component of financial literacy that shows children's knowledge related to money, income, savings, needs and wants, financial institutions, and charity. The first step is to give a test before and after treatment to obtain information about the student's financial knowledge level. The test results are shown in Table 2.

Table 3. Pretest and Posttest Descriptive Analysis

Group	N	Pre-test	Post-test
PC	44	64.09	89.31
Android	38	68.68	81,84
Control	44	67.27	80.90

After conducting the test, the next step is calculating the N-gain to assess the difference between the pre-test and post-test results. This difference is then utilized as an evaluation tool to determine the effectiveness of the intervention or treatment, FinSOLEkid Indonesia, in improving financial knowledge during a child's early years. In the study, the control group did not receive treatment with FinseloKid Indonesia, while the experimental group was given treatment using both the PC and Android versions of FinSOLEkid. Table 2 illustrates that children in the Android class demonstrated the highest average initial financial knowledge scores, followed by the control and PC classes. However, this condition becomes inversely proportional after treatment is given. The group using the PC version of FinSOLEkid Indonesia obtained the highest mean score compared to those using the Android version and the control group. The sample comprised the PC version, Android version, and control groups.

Data analysis showed differences in the average score of financial knowledge in the posttest treatment group (PC 89.311 and Android 81.84) and the control group (80.90). The mean difference between the three groups was markedly different in the PC version of the treatment group. Meanwhile, the average difference between the Android version of the

treatment group and the control group was minimal. This shows that preschoolers' financial knowledge of learning using the PC version of FinSOLEkid Indonesia media increases much more than learning using the Android version of FinSOLEkid Indonesia media and conventional methods.

3.2. Increasing Students' Financial Knowledge Based on the N-Gain Score

The increase in students' financial knowledge can also be seen by analyzing students' N-Gain Scores based on the pretest and post-test data obtained. After analyzing the pretest and post-test scores using the N-Gain Score, the difference in the frequency of increasing students' financial knowledge scores between the treatment class (PC and Android) and the control class can be seen. N-gain is used as an evaluation tool to assess the extent to which the intervention or treatment (FinSOLEkid Indonesia) successfully increases financial knowledge in early childhood.

Table 3 shows that in the experimental class using the PC version of FinSOLEkid Indonesia media, 27 students, or 61.36% of students using the PC-based FinSOLEkid Indonesia learning media, experienced increased financial literacy knowledge in the high category. Whereas nine students, or 20.45%, in the medium category and eight students, or 18.18%, in the low category

Meanwhile, as many as 15 students, or 39.47% of students, who used learning media using the Android version of FinSOLEkid Indonesia experienced increased financial literacy knowledge in the high category. Six students, or 15.78%, were in the medium category, and 17 students, or 44.73%, were in the low category. In the control group, it was found that six students, or 13.36% of students, experienced an increase in financial literacy knowledge in the high category. Sixteen students, or 36.36%, were in the medium category, and 12 students, or 27.27%, were in the low category.

Table 4. Summary of N Gain Score Experiment Group with PC

Category	Group	Frequency	%
High	PC	27	61,36
	Android	15	39,47
	Control	6	13,36
Medium	PC	10	22,72
	Android	6	15,78
	Control	16	36,36
Low	PC	7	15,90
	Android	17	44,73
	Control	12	27,27

3.3. The significance of increasing financial knowledge using FinSOLEkid Indonesia.

FinSOLEkid Indonesia is an application developed to improve early childhood knowledge literacy. This media is available in 2 versions: the PC/computer and Android. This research aims to determine whether this media can increase the financial knowledge of preschool students. Treatment was carried out in 2 experimental and 1 class as a control class. To determine the effectiveness of this study, the experimental group was given treatment using a PC/computer and the Android version. In contrast, the control group did not use the FinSOLEkid Indonesia application. The Kruskall-Wallis test was used for comparative analysis by comparing N-gain between groups to determine this effectiveness. Table 4 shows the results of the analysis of differences in financial knowledge between students in the experimental and control groups.

Tabel 5. The Kruskal-Wallis Test

Data	Kruskal-Wallis Test	df	Asymp.Sig	α	Decision
Pre-test	0.934	2	0.627	0.05	no effect
Posttest	13.349	2	0.001	0.05	effect
N-Gain	19.008	2	0.000	0.05	effect

Table 4 shows no significant difference between the two. The data shows that students' initial abilities are the same. After the treatment, it was found that there was a significant effect

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of using FinSOLEkid Indonesia learning media on students' financial knowledge ($p = 0.000 < 0.05$). The results of the analysis show that FinSOLEkid Indonesia) can be used to introduce financial literacy to early childhood. FinSOLEkid Indonesia's financial literacy learning media effectively increases early childhood knowledge. However, if we look at it partially, the increase in children's knowledge based on the type of treatment given does show a significant difference between each group, as seen from the gain score.

Discussion

This research finds that the use of FinSOLEkid Indonesia media in increasing the financial knowledge of preschool students, in general, increases both those using the PC/laptop version and the Android version. Likewise, the control class students who used the worksheet method also experienced an increase. Nevertheless, there are significant differences from the increase that occurred. Students in the experimental class who used PCs/laptops experienced a significant increase beyond the experimental class using Android and the control class. As Liverpool et al. (2020) stated, children with appropriate access and connectivity can learn and operate computers with minimal adult intervention.

Al-Rajhi and Basheri (2019) explore a collaborative learning environment facilitated by a multi-touch table supported by a computer, collaboration, and problem-solving among children. In addition, (2022) discussed how the design of interactive learning media applications for early childhood can increase their interest and concentration in learning. Overall, stable connectivity in computer learning allows children to operate learning media independently, with varying levels of parental involvement and interactive features.

FinSOLEkid Indonesia, run by students using a PC or Android, has a structured learning stage adopting the SOLE model and is gamification-based. With the learning stages of the SOLE model, preschool students can independently manage their learning according to their wishes through gamification menus. The teacher acts as a facilitator in this process. The menu in the media has been completed with the content and the stage of the SOLE model.

Gamification provides a fun and interactive learning experience. By self-selecting learning menus, children can feel in control of their learning process, which can increase their motivation and engagement (Alam, 2022). For example, through educational games presented in gamification, they can learn basic concepts about money, savings, and financial management in a fun way (Platz & Jüttler, 2022). In this way, learning becomes more effective as it matches their interests and level of understanding, creating a solid foundation for future financial literacy. Research on gamification in children's finance conducted by Alamin et al. (2022) found that game-based learning (GBL) can simulate financial decisions and engage students with limited real-life finance experience. Kurniasari (2021) implemented a gamification system called GASING to improve financial literacy among high school students, aiming to provide them with safe financial investment knowledge.

In this study, FinSOLEkid was developed in three stages. The first stage is questions. Students were presented with ten multiple-choice questions on financial literacy at this stage. Students can choose one of the three options available. However, they do not have to be correct to answer the questions. The questions appear to increase students' curiosity. The teacher facilitates by providing challenging questions (Zhou et al., 2023). After completing the question, students can move on to the next stage. This is the opinion of Kaiser-Menkhoff, who states that giving challenging questions to students can increase their curiosity.

Stage two: Investigation. In this stage, students can choose any game they want to play on the menu independently or collaboratively with friends. The games in this stage contain the content of financial literacy. This stage allowed students to explore the knowledge of financial literacy with fun because the content was displayed as a game. can motivate and engage; then, they can share the information they reach with their friend in groups or work together to finish the game. This is supported by research by Partovi and Razavi (2019), which states that game-based learning effectively increases children's motivation and engagement in the learning

process. The use of this approach can create a fun and interactive learning environment. Children are not only actively involved in the game but can also share the information they gain with their friends in the group or work together to complete the game (Ardiansyah et al., 2023).

In financial literacy, educational games can be designed to teach basic concepts such as money, savings, and financial management in a fun and easy-to-understand way (Platz & Jüttler, 2022). Children can experience success and better understand financial aspects through active participation in the game. In addition, group collaboration can enrich their learning experience, as they can support each other and exchange ideas on complex financial concepts. Thus, a game-based learning approach increases children's motivation and engagement and can enrich their financial literacy from an early age.

Stage three: Review. In FinSOLEkid Indonesia, a review menu is available. This menu is provided to motivate students and facilitate them in expressing their financial knowledge. Games incorporating engaging features create an immersive learning environment that encourages active participation. Students are not just recipients of information; they become active contributors to their learning experience. In the context of financial literacy, games with engaging elements can effectively convey complex concepts related to financial management, savings, and financial decision-making (Rizkiwati et al., 2022). The interactive nature of these games allows students to apply theoretical knowledge in practical scenarios, improving understanding and retention of financial concepts (Gerasimova et al., 2022). In addition, the game-based approach provides a platform for students to express their financial insights, share strategies, and collaborate with peers in problem-solving.

From the aspect of the technology platform used, the PC version of FinSOLEkid Indonesia media has advantages over the Android version of FinSOLEkid Indonesia. The increase of financial knowledge students use the PC version is more than the Android version in the experimental class students. According to research on the use of Android and computer-based educational games in early childhood, the use of Android in educational games is more dominant than the use of PCs (Candra Sari et al., 2022). However, in the context of this study, using the gamification system and SOLE stages in FinSOLEkid Indonesia, the media directs students to group activities. So, students with PC versions can enjoy learning collaboratively without being bored.

Some studies that use media to improve children's financial literacy conducted by Ingale & Paluri (2022) found that financial literacy in early childhood in the United States is still low, and the number of economics/finance courses taken in financial literacy levels. Meanwhile, Amagir et al. (2020) reviewed financial literacy education programs. They found that school-based programs can improve children's financial knowledge and attitudes, but little evidence shows their impact on actual financial behavior. Providing financial literacy to young children has tremendous significance in shaping positive financial behavior and understanding from an early age. Financial education at an early stage helps raise children's awareness of critical aspects such as money management and wise financial decision-making (Kaiser et al., 2022). In addition, financial literacy involves the development of critical thinking skills, which can provide an edge in responding to future financial dynamics (Widyastuti et al., 2020).

Implementing financial literacy through engaging media, such as apps, increases children's engagement in the learning process. Financial literacy apps also facilitate safe, practical simulations, allowing children to apply financial concepts in everyday life (Aisa Amagir, 2018). In addition, the individualized progress monitoring, flexibility of access, and adaptability of learning offered by apps complement a holistic and practical approach to financial literacy learning at the child's developmental stage (Kalwij et al., 2019). Thus, integrating financial literacy early, primarily through engaging media, is a wise educational investment and a solid foundation for sustainable financial expertise.

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Conclusion

This study aimed to enhance financial literacy in early childhood through FinSOLEkid Indonesia, a game-based learning application. The research findings on FinSOLEkid Indonesia, particularly its PC/laptop version, underscore its superior efficacy in boosting children's financial knowledge compared to its Android and traditional formats. This highlights how different technological platforms can significantly influence educational outcomes. Combining the SOLEs Model with gamification in FinSOLEkid Indonesia exemplifies the effectiveness of integrating learning models to create engaging educational experiences. However, the application's suitability for children under 5 to 6 years old is uncertain due to the presence of written instructions, which may not be appropriate for their developmental stage. This points to the necessity of careful media and content analysis in developing educational programs, especially for early childhood, to ensure that learning is appropriately tailored to the learners' developmental needs. While the study indicates promising results, applying this approach across various age groups and settings remains an area for further exploration. Thus, our research highlights the necessity of age-appropriate, engaging, and technologically adaptive methods in the early stages of financial literacy education.

References

Abdullah, N., Fazli, S. M., & Arif, A. M. M. (2019). The Relationship between attitude towards money, financial literacy, and debt management with young worker's financial well-being. *Pertanika Journal of Social Sciences and Humanities*.

Aisa Amagir, A. W. and W. G. (2018). The relation between financial knowledge, attitudes towards money, financial self-efficacy, and financial behavior among high school students in the Netherlands. In *Empirische Padagogik*.

Al-Rajhi, M., & Basheri, M. (2019). Investigating Children's Learning of Programming Using Multi-Touch Table. *2nd International Conference on Computer Applications and Information Security, ICCAIS 2019*. https://doi.org/10.1109/CAIS.2019.8769493

Alam, A. (2022). A Digital Game-based Learning Approach for Effective Curriculum Transaction for Teaching-Learning of Artificial Intelligence and Machine Learning. *International Conference on Sustainable Computing and Data Communication Systems, ICSCDS 2022 - Proceedings*. https://doi.org/10.1109/ICSCDS53736.2022.9760932

Alamin, R. Y., Zulaikha, E., & Gunarta, I. K. (2022). Board Game as Financial Literacy Education Media for Indonesian High School Students. *IEEE International Conference on Industrial Engineering and Engineering Management*. https://doi.org/10.1109/IEEM55944.2022.9989646

Amagir, A., Groot, W., Maassen van den Brink, H., & Wilschut, A. (2018). A review of financial-literacy education programs for children and adolescents. In *Citizenship, Social and Economics Education*. https://doi.org/10.1177/2047173417719555

Amagir, A., Groot, W., van den Brink, H. M., & Wilschut, A. (2020). Financial literacy of high school students in the Netherlands: knowledge, attitudes, self-efficacy, and behavior. *International Review of Economics Education*. https://doi.org/10.1016/j.iree.2020.100185

Ardiansyah, A., Witono, H., & Jaelani, A. K. (2023). The Effect of Parental Support on the Learning Motivation of Grade IV Elementary School Cluster 3 Students of Kempo District for the 2022/2023 Academic Year. *International Journal of Social Service and Research*. https://doi.org/10.46799/ijssr.v3i7.463

Candra Sari, R., Rika Fatimah, P. L., Ilyana, S., & Dwi Hermawan, H. (2022). Augmented reality (AR)-based Sharia financial literacy system (AR-SFLS): a new approach to virtual Sharia financial socialization for young learners. *International Journal of Islamic and Middle Eastern Finance and Management*. https://doi.org/10.1108/IMEFM-11-2019-0484

Cawyer, C. R., Blanchard, C., & Kim, K. H. (2022). Financial Literacy and Physician Wellness: Can a Financial Curriculum Improve an Obstetrician/Gynecologist Resident and Fellow's Well-Being? *AJP Reports*. https://doi.org/10.1055/s-0041-1742268

Desello, J. M. U., & Agner, M. G. R. (2023). Financial Inclusion and the Role of Financial Literacy in the Philippines. *International Journal of Economics and Finance*. https://doi.org/10.5539/ijef.v15n6p27

Erdem, O., Erdem, S., & Monson, K. (2023). Children, vaccines, and financial incentives. *International Journal of Health Economics and Management*. https://doi.org/10.1007/s10754-023-09343-2

Fadhli, M., Brick, B., Setyosari, P., Ulfa, S., & Kuswandi, D. (2020). A meta-analysis of selected studies on the effectiveness of gamification method for children. *International Journal of Instruction*. https://doi.org/10.29333/iji.2020.13154a

Fadhli, M., Utami, D. D., Hastuti, B. N., Purnomo, R. A., Mahon, D., & Masters, A. (2022). The Effectiveness of Playful Augmented Reality Media for Teaching Early-Primary Students. *Proceedings of the European Conference on Games-Based Learning*. https://doi.org/10.34190/ecgbl.16.1.632

Gerasimova, E. N., Krasova, T. D., Chuikova, Z. V., & Sushkova, I. V. (2022). Relationship between financial literacy of preschool children and their parents. *Perspektivy Nauki i Obrazovania*. https://doi.org/10.32744/pse.2022.5.19

Güvenç, H. (2020). Financial Literacy in Turkish Formal Education Curriculum. *Elementary Education Online*.

Hapsari, D. T., Suryono, Y., & Amiliya, R. (2020). 21st Century Skills; The Effect of Project Based Learning to Financial Literacy on Children Aged 5-6 Years. *Educational Administration Research and Review*. https://doi.org/10.17509/earr.v3i2.22370

Haron, N. H., & Kenayathulla, H. B. (2022). Financial literacy of school leaders in national secondary schools in kuala lumpur, malaysia. *Malaysian Online Journal of Educational Management*.

Head, A. J., Fister, B., & MacMillan, M. (2020). Information Literacy in the Age of Algorithms: Student experiences with news and information, and the need for change. In *Project Information Literacy*.

Herijanto, N. K. K., & Rahadi, R. A. (2020). A Conceptual Study on The Implications of Financial Literacy Rate on The Company Profitability of MSMEs. *International Journal of Accounting, Finance and Business (IJAFB)*, *5*(27), 133–142.

Hong Shan, L., Cheah, K. S. L., & Leong, S. (2023). Leading Generation Z's Financial Literacy Through Financial Education: Contemporary Bibliometric and Content Analysis in China. *SAGE Open*. https://doi.org/10.1177/21582440231188308

Ingale, K. K., & Paluri, R. A. (2022). Financial literacy and financial behaviour: a bibliometric analysis. In *Review of Behavioral Finance*. https://doi.org/10.1108/RBF-06-2020-0141

Jee Balaza, E. M., Diama, K. C., Lloyd Torrenueva, J. A., Alicaya, A., Ortiz, M. N., & Inocian, R. B. (2021). Financial Literacy Integration in the K to 12 Social Studies Curricula in the Philippines: Basis for a Contextualized COVID-19 Teaching Model. *PSYCHOLOGY AND EDUCATION*.

Kadoya, Y., & Khan, M. S. R. (2020). What determines financial literacy in Japan. *Journal of Pension Economics and Finance*. https://doi.org/10.1017/S1474747218000379

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*. https://doi.org/10.1016/j.jfineco.2021.09.022

Kaiser, T., & Menkhoff, L. (2020). Financial education in schools: A meta-analysis of experimental studies. *Economics of Education Review*. https://doi.org/10.1016/j.econedurev.2019.101930

Kalwij, A., Alessie, R., Dinkova, M., Schonewille, G., van der Schors, A., & van der Werf, M. (2019). The Effects of Financial Education on Financial Literacy and Savings Behavior: Evidence from a Controlled Field Experiment in Dutch Primary Schools. *Journal of Consumer Affairs*. https://doi.org/10.1111/joca.12241

Koskelainen, T., Kalmi, P., Scornavacca, E., & Vartiainen, T. (2023). Financial literacy in the digital age—A research agenda. *Journal of Consumer Affairs*. https://doi.org/10.1111/joca.12510

Kurniasari, F. (2021). Implementation of GASING Stock Gamification to Increase Financial Literacy for High School Students. *International Journal of Finance Research*. https://doi.org/10.47747/ijfr.v2i4.507

Liverpool, S., Mota, C. P., Sales, C. M. D., Čuš, A., Carletto, S., Hancheva, C., Sousa, S., Cerón, S. C., Moreno-Peral, P., Pietrabissa, G., Moltrecht, B., Ulberg, R., Ferreira, N., & Edbrooke-Childs, J. (2020). Engaging children and young people in digital mental health interventions: Systematic review of modes of delivery, facilitators, and barriers. In *Journal of Medical Internet Research*. https://doi.org/10.2196/16317

Lopus, J. S., Amidjono, D. S., & Grimes, P. W. (2019). Improving financial literacy of the poor and vulnerable in Indonesia: An empirical analysis. *International Review of Economics Education*. https://doi.org/10.1016/j.iree.2019.100168

Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics*. https://doi.org/10.1186/s41937-019-0027-5

Partovi, T., & Razavi, M. R. (2019). The effect of game-based learning on academic achievement motivation of elementary school students. *Learning and Motivation*. https://doi.org/10.1016/j.lmot.2019.101592

Platz, L., & Jüttler, M. (2022). Game-based learning as a gateway for promoting financial literacy – how games in economics influence students' financial interest. *Citizenship, Social and Economics Education*. https://doi.org/10.1177/14788047221135343

Qureshi, M., Mahdiyyah, D., Mohamed, Y., & Ardchir, M. (2022). Scale For Measuring Arabic Speaking Skills In Early Children's Education. *Journal International of Lingua and Technology*. https://doi.org/10.55849/jiltech.v1i2.81

Rahadi, R. A., Putri, G. N., Nugraha, B. A., Faturohman, T., Boediman, A., Afgani, K. F., & Saputra, J. (2023). Does parental socialization affect financial literacy in Indonesia? *International Journal of Advanced and Applied Sciences*. https://doi.org/10.21833/ijaas.2023.05.008

Rai, K., Dua, S., & Yadav, M. (2019). Association of Financial Attitude, Financial Behaviour and Financial Knowledge Towards Financial Literacy: A Structural Equation Modeling Approach. *FIIB Business Review*. https://doi.org/10.1177/2319714519826651

Rizkan, M., Hartarto, R. B., Supiandi, S., & Hou, C.-T. (2022). The Role of Technology Information on Financial Literacy in Indonesia. *Jurnal Ekonomi & Studi Pembangunan*. https://doi.org/10.18196/jesp.v23i1.14148

Rizkiwati, B. Y., Widjaja, S. U. M., Haryono, A., Wahyono, H., & Majdi, M. Z. (2022). Financial Literacy Education Models for 7–12 Years Old Based on the Local Wisdom of Sasak Tribe Lombok Indonesia. *Pegem Egitim ve Ogretim Dergisi*. https://doi.org/10.47750/pegegog.12.02.05

Rosen, A., Trauer, T., Hadzi-Pavlovic, D., Parker, G., Patton, J. R., Cronin, M. E., Bassett, D. S., Koppel, A. E., Zimpher, N. L., Thurlings, M., Evers, A. T., Vermeulen, M., Obanya, P., Avsec, S., Nurzarina Amran, Liu, S. H., Petko, D., Aesaert, K., Van Braak, J., … Brown, N. (2015). WHAT IS THE BEST WAY TO ANALYZE PRE–POST DATA? *Teaching and Teacher Education*.

Setiawan, A., Praherdhiono, H., & Suthoni, S. (2019). PENGGUNAAN GAME EDUKASI DIGITAL SEBAGAI SARANA PEMBELAJARAN ANAK USIA DINI. *JINOTEP (Jurnal Inovasi Dan Teknologi Pembelajaran) Kajian Dan Riset Dalam Teknologi Pembelajaran*. https://doi.org/10.17977/um031v6i12019p039

Singh, K. (2018). Financial Literacy of African American College Students: Evidence and Implications from One Historically Black Institution. *International Journal of Economics and Finance*. https://doi.org/10.5539/ijef.v10n8p204

Swigonski, N. L., James, B., Wynns, W., & Casavan, K. (2021). Physical, Mental, and Financial Stress Impacts of COVID-19 on Early Childhood Educators. *Early Childhood Education Journal*. https://doi.org/10.1007/s10643-021-01223-z

Tien, N. H., Anh, D. B. H., & Ngoc, N. M. (2020). Corporate financial performance due to sustainable development in Vietnam. *Corporate Social Responsibility and Environmental Management*. https://doi.org/10.1002/csr.1836

Widyastuti, U., Sumiati, A., Herlitah, & Melati, I. S. (2020). Financial education, financial literacy, and financial Behaviour: What does really matter? *Management Science Letters*. https://doi.org/10.5267/j.msl.2020.4.039

Williams, P., Morton, J. K., & Christian, B. J. (2022). Enhancing financial literacy in children 5–12 years old using authentic learning within a school market garden programme. *Education 3-13*. https://doi.org/10.1080/03004279.2020.1851741

Xu, S., Yang, Z., Tong, Z., & Li, Y. (2023). Knowledge changes fate: Can financial literacy advance poverty reduction in rural households? *Singapore Economic Review*. https://doi.org/10.1142/S0217590821440057

Yafie, E., Ashari, Z. M., Samah, N. A., Widiyawati, R., Setyaningsih, D., & Haqqi, Y. A. (2023). The Effectiveness of Seamless Mobile Assisted Real Training for Parents (SMART-P) Usage to Improve Parenting Knowledge and Children's Cognitive Development. *International Journal of Interactive Mobile Technologies*. https://doi.org/10.3991/ijim.v17i10.37883

Yafie, E., Nirmala, B., Kurniawaty, L., Sugiarti, T., Bakri, M., Hani, A. B., Setyaningsih, D., Kurniawati, L., & Rachmat, I. F. (2020). Supporting Cognitive Development through Multimedia Learning and Scientific Approach: An Experimental Study in Preschool. *Universal Journal of Educational Research*, *8*(11C), 113–123. https://doi.org/10.13189/ujer.2020.082313

Yılmaz, S., & Özçiftçi, H. (2021). Financial Literacy in Children. *Proceedings of 12 Th SCF International ….*

Yong, S. H., Mon, C. S., & Shibghatullah, A. S. (2020). Impacting financial literacy for children using mobile application: A requirement analysis. *Proceedings of Mechanical Engineering Research Day 2020 (Merd'20)*.

Zahra, D. R., & Anoraga, P. (2021). The Influence of Lifestyle, Financial Literacy, and Social Demographics on Consumptive Behavior. *Journal of Asian Finance, Economics and Business*. https://doi.org/10.13106/jafeb.2021.vol8.no2.1033

Zhou, J., Feng, S., Wu, L., & Wang, S. (2023). The Impact of Financial Education for Children: Evidence from an Experiment in China. *Asia-Pacific Education Researcher*. https://doi.org/10.1007/s40299-023-00716-2