

'Treasure hunt': Using loose parts media to develop social financial education model for early children

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ABSTRACT

A globalized world demands every country's citizen to proceed to build a creative economy to adapt to the rapid changes that follow. Therefore, promoting social and financial education should be engaged with children early. However, a learning model available to awaken children's socio-financial capabilities is vividly rare, if not none. Furthermore, the Early Childhood Education Institution is the best place for children to experience social and financial education. This research aims to develop a social financial education model for early childhood. This study employed Research and Development (R&D) in the development process of the educational model. The data were collected through questionnaires and focus group discussions. The data analysis used descriptive quantitative and t-tests to explain the results of field studies, FGD, and trials and to measure the effectiveness of models during experimental and operational trials. In the analysis, the researchers found that the Model Script and Financial Social Education Guide for early childhood using loose parts media were very suitable. Further, the *t*-test result between the pretest and post-test was 0.924 (92.4%) at $\alpha = 0.05$. In conclusion, the financial social education model using loose parts of media effectively develops children's social and financial abilities.

1. Introduction

Financial literacy and social financial education are essential life skills that should be introduced early to prepare children to navigate the complex financial landscape they will face in the future. This study aims to develop an innovative social-financial education model for early childhood education, specifically for children aged 5–6 years, using loose parts media as a learning tool. This model addresses the current early childhood education gap, where existing curriculums lack a comprehensive approach to instilling social and financial abilities in young children.

The golden period of child development, which occurs between 0 and 8, is a critical time when children develop 50% of their intelligence and lay the foundation for their future cognitive, social, and emotional abilities [1,2]. Despite the importance of financial literacy and social education during this period, current early childhood education programs in Indonesia do not effectively

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incorporate these topics. The financial literacy index of the Indonesian population in 2016 was only 29.7%, indicating a significant need for improved financial education [3,4].

This study seeks to address this gap by proposing a novel social financial education model that utilizes loose parts of media to engage young children in learning about social finance. Loose parts media provides a flexible and adaptable teaching approach, allowing children to explore and manipulate various materials to solve problems and complete tasks, promoting critical thinking, creativity, and cognitive development [5]. By integrating loose parts of media into early childhood financial education, this study aims to improve financial literacy and social skills among children aged 5–6.

In order to achieve this goal, the study will undertake the following objectives:

1. Examine the current state of social-financial education in early childhood education programs in Indonesia and identify areas needing improvement better to equip children with essential financial and social skills.
2. Develop and implement an innovative social financial education model that incorporates loose parts media, specifically tailored to meet the unique needs and characteristics of children aged 5–6 years.
3. Evaluate the proposed model's effectiveness in enhancing teachers' understanding and abilities in social-financial education, using loose parts media, and its impact on improving children's social, financial, cognitive, and emotional development.

By addressing these objectives, this study will contribute to the growing body of research on early childhood financial education and provide a novel approach to teaching social finance using loose parts media. Furthermore, the results of this study will provide valuable insights for educators, parents, and policymakers seeking to improve financial literacy and social skills among young children in Indonesia and other similar contexts.

2. Literature review

2.1. Financial social education: significance and need

Social education aims to enable children to understand and manage simple daily financial activities. The ability to manage finances is essential in both everyday life and during crises. Financial management capabilities are also crucial for preparing for future needs. Several studies have found evidence linking individuals' attitudes toward finances with their spending habits, financial practices, and behaviors [6].

In Indonesia, many people tend to be consumptive and prioritize short-term spending. They often purchase goods based on preferences, appearances, and status symbols rather than considering long-term benefits or utility [7]. This highlights financial social education's importance in fostering awareness and understanding of wise financial management among the population [8].

2.2. Financial literacy education in early childhood

Financial education involves building consumers' or investors' capacity to understand financial products and concepts through information, instruction, and advice [9,10]. Financial literacy encompasses a comprehensive understanding of various risks associated with financial decision-making, enabling individuals to make informed choices [7]. Financial education is a capacity-building process in which consumers or investors improve their understanding of financial products and concepts through information, instruction, and advice to develop skills, confidence, and awareness of financial risks and increase opportunities to make decisions. Financially intelligent, knows where to turn for financial assistance, and can take alternative actions to increase welfare [11,12]. Financial literacy can be said as a comprehensive understanding of the various risks that will occur when a financial decision is taken. So that someone with sound financial knowledge can make wise financial decisions. This aligns with the opinion [13] that financial literacy is a person's ability to obtain, understand, and evaluate relevant information for decision-making by understanding the financial consequences it causes. Therefore, financial literacy education must be taught to someone as early and as well as possible.

Given the importance of financial knowledge, it is crucial to introduce financial literacy education to children as early as possible. Early childhood is an opportune time to teach financial literacy, as children have high curiosity and adaptability [14]. However, financial literacy education is still uncommon in Indonesia, with limited inclusion in primary, secondary, or tertiary curricula [15].

2.3. Loose parts media in early childhood education

Loose Parts media is a learning tool in early childhood education institutions that utilizes movable, combinable, redesignable, and repurposable materials [14]. It encourages creativity and offers unlimited learning possibilities for children [16]. Loose Parts media is beneficial in teaching children to appreciate materials, engage with nature, and participate in environmental conservation by recycling used goods [3].

Loose Parts media can develop children's economic attitudes, enhance creative and imaginative play, improve collaborative and socialization skills, and encourage communication and negotiation [17,18]. This affordable and adaptable approach to learning can inspire children's creativity and increase their engagement in play experiences [19]. Many benefits are obtained by utilizing loose-parts media, and children will be creative with the principle of using loose-parts teaching materials. They can be creative in disassembling teaching materials according to their imagination. Children will learn to appreciate the materials or objects around them, such as nature [13,20,21]. The research results show that, in the school and community environment, it is straightforward to

find used goods that can be used as learning media for early childhood [22–24]. Children will also be able to participate in caring for the environment when they understand that used goods can be recycled and used as material for playing and are active in assembling them into valuable items.

2.4. Loose Parts Play theory

Simon Nicholson, an architect, first introduced the Loose Parts Play theory in the 1970s. He proposed that open spaces in our environment promote creativity. To foster children's creativity, they should have access to various materials that can be manipulated, combined, and redesigned freely [25]. Nicholson's theory suggests that the level of inventiveness in an environment is proportional to the number of variables present, with open spaces like beaches being prime examples of creative play areas.

The following are examples of loose parts that can be used as learning media in Fig. 1.:

3. Methods

This study employs a mixed-methods research design, incorporating quantitative and qualitative data to develop a social-financial education model using loose parts media for children aged 5–6 years. The mixed-methods approach was chosen as it allows for a more comprehensive understanding of the research problem and the effectiveness of the developed model. Research and development (R&D) serve as the basis for the methodology, with the following stages [26]:

1. Data collection and information gathering through literature reviews and observations to identify the needs and issues related to social-financial education for young children. Key informants, such as teachers or tutors, were purposefully selected based on their experience and relevance to the study's objectives.
2. Planning encompasses the formulation of research objectives, determination of activity sequences, and feasibility testing on a small scale.
3. Development of the initial product form involves drafting the model and testing tools. This stage involves conceptual testing (desk tryout) through discussions with experts to assess the designed product and identify its weaknesses and strengths.

The specific procedures for developing the social-financial education model for children aged 5–6 years using loose parts media are:

1. Studies were conducted to gather information from educators/tutors regarding their understanding and implementation of social-financial education for children aged 5–6 years using loose parts media.
2. Focus group discussions (FGDs) were held to formulate the model, guidelines, and learning materials regarding substance and editorial aspects. The FGDs were structured, with invited participants selected based on their expertise and relevance to the study. Data collected during the FGDs were analyzed using thematic analysis.
3. The development team prepared the development design to outline the form and processes to be executed.
4. Trial design preparation to provide an overview of the trial process to be conducted.
5. Test execution of the script to obtain input and corrections from respondents, including both editors and substance experts of the model manuscript.
6. Implementation of a trial run involving educators/tutors as implementers of the social-financial education process for children aged 5–6 years using loose parts media.
7. Evaluation of trial results to assess the effectiveness of social-financial education for children aged 5–6 years using loose parts media. This evaluation involved quantitative and qualitative measures, with specific criteria for determining the model's success based on the research objectives.

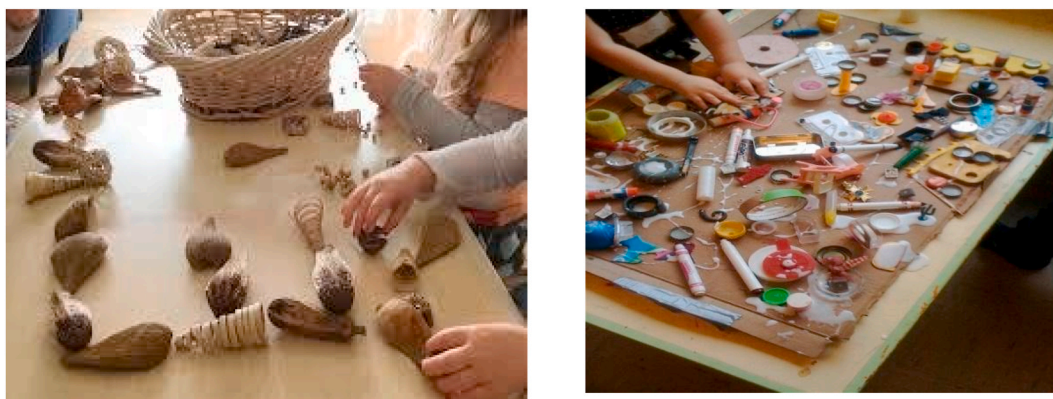


Fig. 1. Examples of Loose Parts that can be used as Learning Media.

The stage chart for the development of a financial social education model for children aged 5–6 years using loose parts media is as follows in Fig. 2:

CV social-financial education development model were analyzed using descriptive quantitative. The percentage formula is very effective in measuring it. Following are the guidelines for categorizing the results of the pretest and post-test data from the application of loose parts media, how to determine the eligibility criteria for the product, then the percentage is made based on the interval as follows: 0%–25% = very not feasible, 25.1%–50% = not feasible, 50.1%–75% = feasible, 75.1%–100% = very feasible. The percentage calculation of the score obtained uses the following formula:

$$\text{Percentage Score} = (\text{x score})/4 \times 100\%$$

Note: $(\text{x score}) = \text{Score Average}$

Data analysis was conducted to test the model's effectiveness using SPSS version 21. This was done to compare pre-and post-implementation outcomes of the social-financial education model in kindergartens. Descriptive statistics were calculated to provide an overview of the data distribution, including mean and standard deviation. Inferential statistics, such as paired-sample t-tests, were conducted to assess the differences between pretest and post-test scores within each group. Independent-sample t-tests were performed to compare the post-test scores between the treatment and control groups. Effect sizes (Cohen's d) were calculated to determine the magnitude of the intervention's impact on the outcomes. Additionally, the study reported 95% confidence intervals (CIs) and p-values for each statistical test, with a significance level set at $\alpha = 0.05$. This provided a clear and robust understanding of the statistical relationships between the variables and the effectiveness of the social-financial education model.

In order to ensure the validity and reliability of the study, several controls were implemented. The sampling mechanism involved a stratified random sampling approach, with kindergartens selected based on their location, size, and socio-economic background to ensure a representative sample. Furthermore, the study employed standardized measures for assessing the children's social-financial skills to minimize potential bias and maintain consistency in the evaluation process. Qualitative data from focus group discussions, interviews, and observations were triangulated to corroborate the findings and provide a comprehensive understanding of the effectiveness of the social-financial education model using loose parts media. Thematic analysis was conducted on the qualitative data to identify key themes and patterns that emerged from the participants' experiences and perceptions. In summary, the statistical analyses, controls, sampling mechanisms, and statistical reporting in this study were designed to be appropriate and well-described, ensuring the validity and reliability of the findings. The study provides a comprehensive understanding of the social-financial education model using loose parts media for children aged 5–6 years, its effectiveness, and its potential for further development and implementation.

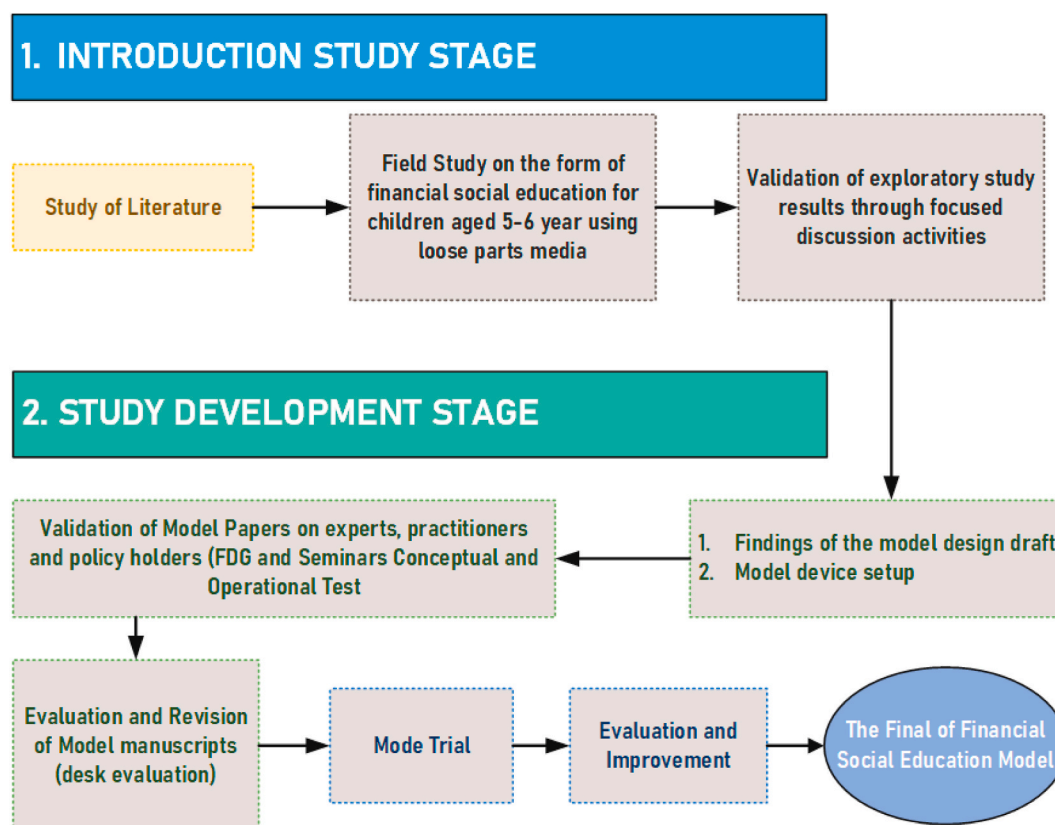


Fig. 2. Stages of the model development process.

4. Results and discussion

The trial results of the social financial education development model for children aged 5–6 years using loose part media in Pekanbaru City, Riau Province. The trial participants were managers of early childhood education institutions and students. Before the researcher, administrators, and teachers implemented the training model that had been prepared, the teacher was observed regarding the teacher's understanding of social finance and loose parts media and the teacher in implementing social, financial learning with loose parts media. Then social-financial learning is carried out with loose parts media using the teacher's learning module. During the trial, the researchers conducted observations and monitoring to obtain data that could be used to improve the model.

Implement the conceptual trial of the financial, social learning model with loose parts media. Using the criterion-based selection method, the selection of locations in this development is based on specific criteria with the aim that certain backgrounds and events are sought to be selected to achieve completeness of information [27]. This development was carried out in Pekanbaru City. The development implementation time was in September 2021.

Based on instrument data processing, conceptual trials were carried out at Pembina 5 Kindergarten, Pekanbaru City, in September 2021. The results obtained in Fig. 3.:

From the results of the data analysis, it was concluded that there were significant changes and improvements in teacher understanding before and after the implementation of the model. Based on Fig. 3 above, all indicators/learning materials increased from before giving treatment to after implementing social-financial learning with loose parts media. That means that loose parts of the media effectively improve children's social and financial skills following the research results, which explains that loose parts of media are very economical in the use of learning media.

The results of operational trials obtained through questionnaires filled in by children are described as follows:

1. Tunas Taruna Kindergarten, Pekanbaru City

To see a comparison of the results of the pretest and post-test, please see the following Fig. 4:

From the results of the data analysis, it was concluded that there were significant changes and improvements in teacher understanding before and after the implementation of the model. Based on Fig. 4 above, all indicators/learning materials increased from before giving treatment to after implementing social and financial education for early childhood using loose parts media in early childhood. The average for all indicators increased up to 50% from the pretest.

2. Mutiara Pertiwi Kindergarten, Pekanbaru City

The conceptual trial was conducted at Mutiara Pertiwi Kindergarten in Pekanbaru City, the second Early Childhood Education Program, on October 1st–23rd, 2021. To see a comparison of the results of the pretest and post-test, please see the following Fig. 5.:

From the results of the data analysis, the average for all indicators increased up to 65% from the pretest. It was concluded that there were significant changes and improvements in teacher understanding before and after implementing the model. Based on Fig. 5 above, all indicators/learning materials increased from before giving treatment to after implementing social and financial education for early childhood using loose parts media.

3. Family Welfare Development (*Pembinaan Kesejahteraan Keluarga – PKK*) Assisted Kindergarten in Pekanbaru City Village (Control Group that was not given treatment)

Operational trials were carried out at the 3rd Early Childhood on October 1st–23rd, 2021. Based on instrument data processing, the following results were obtained:

To see a comparison of the results of the pretest and post-test, please see the following Fig. 6.:

From the results of the data analysis, it was concluded that there was no significant change or increase in teachers' understanding of

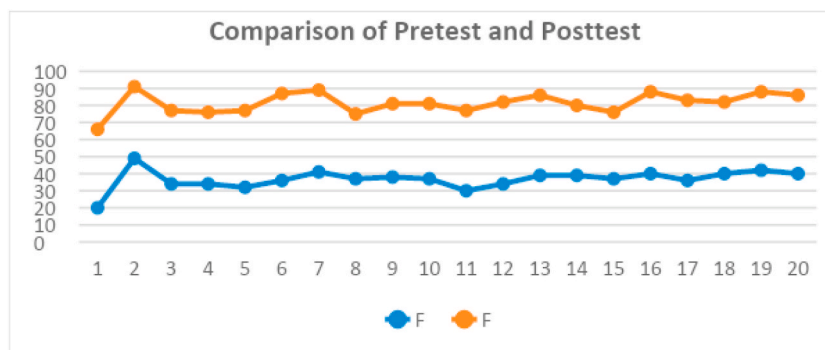


Fig. 3. Result of the conceptual trial of the financial, social learning model with loose parts media at Pembina 5 Kindergarten, Pekanbaru City.

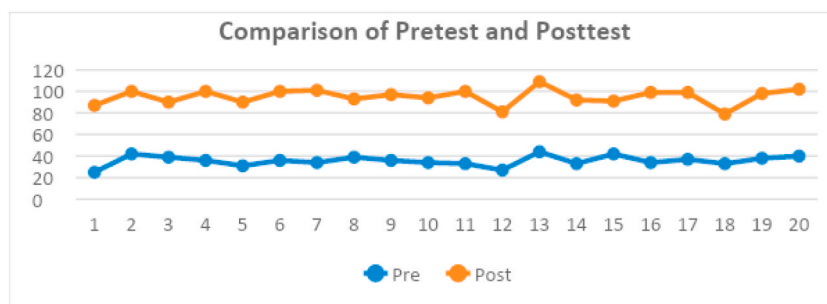


Fig. 4. Result of the conceptual trial of the financial, social learning model with loose parts media at Tunas Taruna Kindergarten, Pekanbaru City.

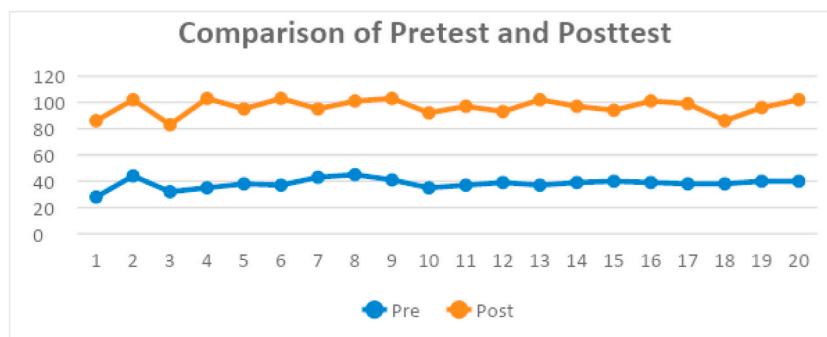


Fig. 5. Result of the conceptual trial of the financial, social learning model with loose parts media at Mutiara Pertiwi Kindergarten, Pekanbaru City.

the pretest and post-test of the application of the model. Based on Fig. 6 above, all indicators/learning materials experienced a low increase from the pretest and post-test models of early childhood financial and social education using loose parts media.

As for the study of documentation on several core activities carried out during model development using the social, financial education module using loose parts shown in Fig. 7:

In Table 1 above, it can be concluded that there is a significant difference in knowledge and social and financial education using loose parts media between before and after participating in social and financial education using loose parts media 0.924 (92.4%) at $\alpha = 0.05$. This proves that in early childhood education institutions, financial and social education has proven effective and positively impacts their financial habits. Of course, if every early childhood education institution applies this model, people's financial intelligence will increase. Childhood education involves efforts to equip them with adequate growth and development and strengthen their character from an early age. Financial intelligence is an effort to enable children and teach children to understand simple daily financial management activities or activities.

Financial education has a comprehensive meaning, not just introducing the value of money. More than that, financial education also means educating children on how to use it well and wisely. This includes character building and literacy recognition. The ability to manage finances is not only possible through financial education and financial access but also requires a change in the financial behavior of each individual [28]. Financial education does not necessarily change a person's financial behavior. Therefore, financial education must be integrated with social education. Through this model, social and financial education is sought to be integrated into the Early Childhood Education Programs' learning curriculum. Based on the results of the pretest, it can be concluded that the average

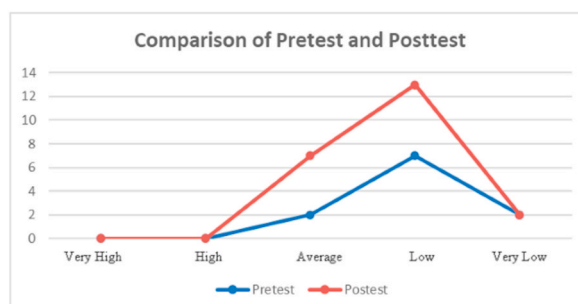


Fig. 6. Result of the conceptual trial of the financial, social learning model with loose parts media at Pembinaan Kesejahteraan Keluarga.



Fig. 7. Sharing with friends, activities using loose parts, and saving.

Table 1
Paired samples correlations.

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	80	0,924	0,000

teacher needs to participate in social-financial learning with loose parts of the media. Because of the indicators measured, most teachers still do not know how to apply and are skilled in implementing social and financial learning using loose media parts.

A child needs to have basic knowledge and skills to make important personal decisions for themselves [29,30]. Unfortunately, they rarely get this basic knowledge and skills from family or school. This makes children grow up without sufficient financial management knowledge, so later can impact their personal or family's financial health. Every human has a life cycle, so what he does will determine his/her future welfare [31]. In other words, future well-being is a function of the past. One form of prosperity is succeeding in achieving financial freedom in life. To succeed in making it happen requires financial education so that later as adults, children will be intelligent and adept at managing money for the accumulation of financial assets [32].

This research is limited only to studies from an economic and literacy point of view. This study can reach the discussion of curriculum changes. Further research must be conducted to develop a curriculum for early childhood learning based on loose parts of media. After the implementation of the conceptual test, satisfactory results were obtained. This is shown from the post-test results, which show that 80% of teachers have high ability and understanding in financial and social learning and lose parts of the media. Only 5% of them are still in the medium category. In order to instill the values of financial literacy education in children, parental intervention is crucial. Parents' ignorance of financial literacy education will only make children learn and understand financial literacy education incorrectly and meaninglessly. It will make children grow and develop to face an increasingly complex world without sufficient financial knowledge. We recommend that social and financial education, apart from being taught at school at home by the family [33]. The family is the first community with children to interact. The role of parents in providing educational values of financial literacy is vital. Several studies show that children learn about finances from parents through intentional instruction, participation, and practice (explicitly) as well as through observation (implicitly) [34]. Thus, the intervention of parents to their children in instilling the values of financial literacy education is essential. Parents' ignorance of financial literacy education will only make children learn and understand financial literacy education incorrectly and meaninglessly. It will make children grow and develop to face an increasingly complex world without sufficient knowledge about financial literacy.

In the end, we must acknowledge our limitations in this study, and this research is limited only to studies from an economic and literacy of early childhood education point of view. This study can discuss elementary school, high school, or university curriculum changes. Several other aspects have not been studied, so it is hoped that other researchers can conduct further research, especially regarding the Metaverse era as it is nowadays [35–39]. We have marked the parts we revised at the end of the manuscript. This research is limited to early childhood social-financial education using only loose parts of media. We have not studied other media that may greatly determine a child's success in the economic field, such as used media, leftover materials, and so on [40].

5. Conclusion

This research concludes that developing a socio-financial education model using loose parts is beneficial, as demonstrated by the increased value of later contextual and operational trials. Data processing using SPSS 20.00 shows significant differences in social-financial knowledge and education using loose parts media between before and after attending education. Finance and social media use a freelance share of 0.924 (92.4%) at $= 0.05$.

This financial social education model can be applied in the long term in early childhood education institutions by integrating it into the school curriculum. Early childhood education institutions can start with the principal's leadership program referring to the guidelines in developing this model and then incorporate it into the daily, weekly, semester, and annual learning plans. Because all the people in the world produce a lot of loose parts every day and why not? We use this for children's social and financial education from an early age.

Production notes

Author contribution statement

Sri Wahyuni: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Ledy Oktavia Liza and Dominikus David Biondi Situmorang: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Syahdan Syahdan and M. Arli Rusandi: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Additional information

No additional information is available for this paper.

Ethics statement

This study has been reviewed by the Ethics Committee of Lancang Kuning University. They decided that the study has been in accordance with ethical standards of the Research Ethics Code of Lancang Kuning University. Furthermore, informed consent was obtained from all participants and their parents for this study.

Declaration of competing interest

Dominikus David Biondi Situmorang has the position to declare himself as one of Associate Editors in this journal. However, this article has been handled by another unidentified Associate Editor and reviewed by the Reviewers in an objective and double blind manner, according to applicable regulations from Elsevier, Heliyon, and Cell Press.

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