

## Enhancing Financial Literacy in Malaysian Preschoolers Through A Financial Management Game

Nurhayatul Nira Ramli<sup>1</sup>, Samsilah Roslan<sup>1</sup>, Tajularipin Sulaiman<sup>1</sup>, Suhaida binti Abdul Kadir<sup>1</sup>, Zeinab Zaremohzzabieh<sup>2</sup>, Wong Siew Ping<sup>3</sup>, Zulkifli bin Mohamad<sup>4</sup>

<sup>1</sup>Faculty of Educational Studies, Universiti Putra Malaysia, Serdang, 43400, Selangor, Malaysia, <sup>1</sup>Institute for Social Science Studies, Universiti Putra Malaysia, Serdang, 43400, Selangor, Malaysi, <sup>2</sup> Faculty of Education and Liberal Studies, City University Malaysia, <sup>1</sup>School of Liberal Studies, Universiti Kebangsaan Malaysia, Bangi, 43600, Selangor, Malaysia  
Corresponding Author Email: samsilah@upm.edu.my

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### Abstract

Play-based learning approaches are deemed crucial in early childhood education, particularly in preschool settings where the integration of literacy and cognitive skills significantly impacts learning outcomes. This study explores the impact of a financial management game called "Smart Money Kid" on the financial literacy of preschool students. Both descriptive and inferential analyses were employed to assess preschoolers' financial literacy levels. Results indicate that both experimental and control groups demonstrated increased literacy levels, with the experimental group exhibiting significantly higher proficiency. The findings emphasize the potential of play-based learning, specifically through a designed financial management game, in enhancing preschoolers' financial literacy.

**Keywords:** Play-Based Learning, Financial Literacy, Preschool, Students, Experiment

### Introduction

Martin and Oliva (2001) posit that financial decisions made during childhood can shape one's future financial circumstances. Therefore, children's experiences and learning about finances throughout their lives can influence their financial knowledge and management practices. This aligns with the educational orientation of guiding students to play effective roles in their careers.

The National Preschool Standard Curriculum (NPSC), implemented by preschool teachers since 2010, aims to ensure the holistic development of children through effective, engaging, and meaningful learning experiences, providing fundamental knowledge and skills for lifelong use. Teachers are encouraged to be creative in content selection, materials, and teaching

approaches to make learning more effective. Utilizing playful elements, teachers can imbue meaning into students' interactions with their environment and surroundings (Hurlock, 1987). Teachers must offer students various opportunities for individual or group participation in structured activities and engaging experiences, considering both cognitive and social processes (Brock, 2009; Piaget, 1968). This social process underscores that play is not an individual endeavor but a game comprising interactions with others (Bodrova & Leong, 2006). Children grasp concepts more easily through play, a notion acknowledged by many early childhood education researchers (Wood & Artfield, 1996; Moyles, 1989; Riley, 2003; Bruce, 1991; Broedhead, 2005). According to Brock et al. (2009), play allows restructuring, enrichment, and discovery, enabling children to develop experiences and knowledge through the exploration of new ideas. Therefore, every child's activity should involve play elements, including enjoyment, flexible timing, focus opportunities, exploration, interaction with the environment, self-experimentation of ideas, and both free and structured play. This is done to meet their needs and desires, managed systematically and purposefully, whether individually, in groups, or as a whole class (NPSC, 2003).

In Malaysia, early experiences in mathematics are provided to help children master basic skills applicable to daily life (Ministry of Education, 2010). The ability to master basic mathematical skills in preschool or secondary school determines one's ability to excel in mathematics at subsequent stages (Claessens & Engel, 2013; Sarama et al., 2012).

According to Azizi Yahaya and Savarimuthu (2010), establishing a connection between mathematical concepts and students' daily activities is crucial. Children actively participate and use techniques to compare new information with old information, solving problems and enhancing their understanding of the information. This is because students in the classroom are viewed as carriers of diverse knowledge and experiences. To encourage enjoyable and meaningful mathematics learning in preschool, the play-based learning approach is deemed most effective (McGuire et al., 2011; Stebler et al., 2013). Play is the best teaching and learning experience, as emphasized by Moyles (2010), particularly in early childhood education. This may be associated with children's innate inclination to play, which can enhance their learning experiences.

Each student possesses unique knowledge, interests, motivations, learning styles, and readiness levels, presenting a challenge for educators to maintain student engagement and motivation (Ainun et al., 2017). To enhance students' ability to master essential knowledge and skills, effective teaching approaches are deemed crucial. Previous research has highlighted the importance of teaching approaches and strategies in capturing students' interest in specific fields, potentially altering their perceptions of challenging subjects (Nurul Nashrah et al., 2015).

Studies indicate a correlation between literacy skills, cognitive skill enhancement, and foundational mathematical skills influencing preschoolers' learning mastery (Abdul Halim, 2014). Environments that incorporate playful elements into literacy experiences have been found to enhance children's knowledge. According to Christie and Roskos (2009), a literacy-rich play environment can improve children's reading and writing skills. Indeed, it can enhance children's knowledge and skills in functions such as written word recognition, written word discrimination, and the ability to use comprehension strategies, such as reviewing and correcting written words they encounter. Neuman and Copple (2004) also found that play skills and literacy are related to symbols, sound structure, and printed material. Games utilizing symbols and printed ideas can enhance literacy skills.

Studies by Lusardi et al. (2010), and Bucciol and Veronesi (2014) have found that financial literacy experiences during childhood significantly correlate with an individual's economic status. This is supported by financial socialization studies indicating the role of childhood experiences in shaping an individual's financial knowledge and behavior (Webley & Nyhus, 2006, 2013; Shim et al., 2010; Shim et al., 2009). Therefore, in the current scenario, financial education is crucial and plays a significant role in building a generation with financial competence, starting from an early age. However, there is still a lack of sufficient examples of the effects of game-based educational approaches in enhancing effective financial management behaviors to serve as experiences and subsequently shape efficient knowledge and behavior in children.

Given the scarcity of research on financial education among preschool children in Malaysia, this study is deemed crucial as it aims to investigate the effects of financial management learning on financial management interest, literacy, prosocial behavior, and behavior at the preschool level, utilizing an appropriate play-based methodology.

### **Literature Review**

According to Carr's (1967) theory, play is essential for children as it allows them to express their opinions (Kraus, 1990). Carr (1967) asserts that play enables children to express their negative emotions. Froebel (1802) views play as a natural way for children to learn and develop. Besides enhancing knowledge, experiences, and skills, enjoyable activities also help children satisfy their curiosity. In addition, Vygotsky (1962) states that games chosen by children, with the support of teachers or adults through discussions and Q&A sessions, enhance their cognitive performance.

Every activity should incorporate enjoyable elements that fulfill children's instincts. Playing, as emphasized by Brock et al. (2009), enables enrichment, restructuring, and discovery processes, allowing children to develop experiences and knowledge through the observation of new ideas. Game-based learning activities can be planned and focused on individually, in groups, or as a whole class (NPSC, 2003).

The importance of financial management knowledge among children should not be neglected; instead, it should be instilled from early preschool years. Financial education should commence as early as four years old, as children begin to gain exposure and understanding of the role and influence of money in life. According to Lusardi and Mitchell (2011) and Rubayah et al. (2015), sufficient financial knowledge makes an individual competent and effective in managing personal and family finances, including budget planning, savings, retirement planning, product and financial comparison, debt management, and making better purchasing decisions.

Children today are exposed to knowledge about money and its usage through examples and personal experiences from various sources in their environment, such as family in managing expenses, engaging in socio-drama supermarket activities, playing with money, and more. Various studies indicate an improvement in financial management skills as children mature if exposed to financial education from an early age (De Clercq, 2009; Lundby, 2013; Roedder & Whitney, 1986). As they grow older, children begin to grasp the importance of saving and the relationship between saving opportunities and the future. In adolescence, they tend to engage in more complex savings and spending strategies (Sherraden et al., 2011).

According to Sonuga-Barke and Webley (1993), the development of frugal behavior is influenced by the ability to understand the concept of "temptation" and the cause-and-effect of daily spending affecting future opportunities. Studies have shown that more mature

children can save more money than younger children (Furnham & Thomas, 1984; Mischel & Mischel, 1983; Tysoe, 1983).

Following the family financial socialization theory (Gudmunson & Danes, 2011), children's financial literacy is highly influenced by the family, which plays a crucial role in introducing basic financial concepts and serving as a model for cultivating saving habits (Beutler & Dickson, 2008; Jorgensen & Savla, 2010). Additionally, financial knowledge and skills are acquired from other factors such as cultural influence, media, and peer influence (Beutler & Dickson, 2008; Rajasekhara et al., 2010); controlled sources of money by children (Dosset al., 2005), and the education provided to children about basic financial concepts (Sherraden et al., 2011). Children learn basic financial concepts through the use of money in their daily lives, such as pocket money, gift savings, and more, as well as through financial literacy programs and encouragement (Harter & Harter, 2007). Grohman and Menkhoff (2015) state that an individual's financial literacy level can be influenced by several key factors such as socio-demographics. If an individual has higher education, is older, and has higher income, they are more likely to have better financial literacy levels. Most financial knowledge and skills are acquired by an individual depending on exposure and experiences formed during childhood (Lusardi et al., 2010).

This is supported by several findings from other studies using various childhood-related variables as instruments to test financial knowledge and skills (Behrman et al. 2010, 2012; Van Rooij et al., 2011b; Fazli et al., 2010) or those examining the influence of childhood experiences on financial behavior (Webley & Nyhus, 2013; Bucciol & Veronesi, 2014). These studies indicate that five main factors shape an individual's financial literacy: family background, family financial socialization, school economics, education quality, and financial socialization based on money and work.

### **Methodology**

Among various research methodologies, experimental research is considered the most structured type with controlled and supervised procedures (Noraini Idris, 2010; Othan & Ariffin, 2010). It is conducted in an environment where it is observed and exists due to behavior in a controlled situation (Kerlinger, 1973). This study aims to determine the effects of financial management games on the financial literacy of preschool students, with financial literacy as the dependent variable and financial management games as the independent variable.

For the data collection process related to financial literacy, this study employs a true experimental design in the form of a pre-test-posttest controlled group design. This method is chosen because the study's objective is to measure whether the financial management game intervention influences the dependent variable, i.e., financial literacy, interest, financial management behavior, and prosocial behavior of preschool students. The experimental method involves the random assignment of participants to both groups, ensuring equal chances and characteristics for each respondent to enter any group without selection bias by the researcher (Chua, 2010). This helps avoid issues of character bias and control extraneous variables that may affect the study results.

The experimental research design is conducted to determine the relationship, cause, and effect between variables. This means that changes (effects) occurring in the dependent variable (financial literacy) are caused by changes given to the independent variable, which is the financial management educational approach. Besides psychological theories, the researcher also refers to the KSPK Curriculum (2017), Financial Learning Standards under the

Science and Technology Strand - Early Science and Early Mathematics, KSPK (Review 2017), and the developmental level of children in financial aspects (Danes & Dunderud, 1993) in constructing this study. Through the selection of this research design, the researcher aims to determine the extent of the difference before and after the designated financial management educational approaches on the financial literacy of preschool students. Additionally, the researcher can identify the extent of these differences between the treatment and control groups.

The sample for this study is preschool children enrolled in the Ministry of Education's early childhood education program. 98 national primary schools have a preschool education program in the Petaling Perdana district, which will be the sampling frame. The researcher randomly selected two schools using the fishbowl method (Nachmias & Nachmias, 1996). Each school has 25 preschool students aged 5 to 6 years in their preschool education program. The determination of the experiment and control groups was done randomly using a coin toss. The front side of the coin represents the group using conventional methods, and the back side represents the group using intervention methods. The sample size for this study is a total of 50 preschool children. All participating students are Malay preschool students. These characteristics align with the study's requirements and are considered suitable because Malay students were found to have the most problems in financial management (Mokhtar, 2013).

There are two instruments or research tools used to obtain data, namely the Preschool Financial Literacy Test and the Interest, Financial Management Behavior, and Prosocial Level Questionnaire. The content validity of the pre and post-measurements was assessed by experts in the relevant field. The researcher selected five (5) expert referees who are highly experienced in the related field to obtain expert consensus on the content validity, in line with the usual practice to determine the content validity of newly developed instruments (Palaniappan, 2007).

The duration of the intervention was three weeks, from November 4 to November 22, 2019. Before experimenting, the study sample was given a pre-test to measure knowledge and skills before the study. The allocated time for this test is 30 minutes. Since preschoolers are still weak in reading and comprehension skills, the researcher conducted the test through interviews. In general, 3 weeks with a rate of 4 days per week and 30 minutes for each learning session is sufficient to obtain data on the effects of an intervention (Siegler & Ramani; 2008). The teaching and learning session for the experimental group of preschoolers used the financial management game, Smart Money Kit. The classroom teaching took place in small groups (4-5 students in each group) or pairs. In the experimental group, there were five teaching steps: introduction, step 1, step 2, step 3, and conclusion. The teacher started the lesson by showing students specific materials or videos as an introduction to capture their attention. In step 1, the teacher provided the students with reference materials and helped them generate initial ideas. In step 2, the teacher used teaching materials and emphasized the use of key terms and concepts. In step 3, the teacher explained the game, and the preschool students were divided into groups. All students played the Smart Money Kit game and were encouraged to discuss it within their groups. Finally, the teacher concluded and provided feedback on the learning that took place that day.

Teaching and learning for students in the control group used conventional methods. Teaching in the classroom did not require breaking up into small groups of students; instead, it was more related to the teacher's task of delivering information and providing individual problem-solving elements. The teaching content consisted of a Set Induction, Step 1, Step 2, Step 3,

and Conclusion. In the set induction, the teacher asked students about previous lessons and used the whiteboard, marker pen, and song singing to convey information about the upcoming lesson. In step 1, the teacher used teaching aids in the classroom to reinforce students' understanding. The teacher selected and called on several students to ask questions related to the discussed ideas. In step 2, the teacher conducted basic activities with students to reinforce their understanding of concepts related to the subject. Some students tried the activity while other students only observed and corrected the mistakes made by the students doing the activity. In step 3, the teacher assessed the students' understanding of the skills learned throughout the day by giving worksheets to the students to complete individually. Finally, the teacher summarized the day's learning. After completing the scheduled teaching and learning process, all the preschool students from both groups were given a post-test by the researcher. The collected data were analyzed using SPSS software. Descriptive analysis and inferential analysis were conducted to examine the effectiveness of this play-based learning on preschool students' financial literacy.

### Findings

In terms of demographic makeup, out of a total of 50 samples, the number of male students in the control group was 13 (52.0%), and females were 12 (48.0%). In the experimental group, there were 14 male students (56.0%) and 11 female students (44.0%). All students involved in this study belonged to the Malay ethnic group.

Table 1 presents the analysis of the independent sample t-test scores for the pre-and post-literacy test levels between the experimental and control groups. The pre-test indicated no significant difference in financial literacy levels between the two groups of preschool students before the experiment, confirming that the groups were equivalent. After the experiment, a significant difference in scores was observed between the two groups of preschool students ( $p < .01$ ,  $t(48) = -7.143$ ), with the experimental group obtaining higher mean scores ( $M = 29.44$ ,  $SD = 1.53$ ) compared to the control group ( $M = 25.48$ ,  $SD = 2.31$ ).

Table 1

*Independent Sample T-Test Mean Scores for Pre and Post-Financial Literacy Test Levels among Experimental and Control Groups.*

	Groups	N	Mean	SD	t	Df	Sig. (2-tailed)
Pre Test	Control	25	13.3600	2.17715	1.352	48	.183
	Experiment	25	12.4400	2.61534			
Post Test	Control	25	25.4800	2.31157	-7.143	48	.000
	Experiment	25	29.4400	1.52971			

Furthermore, the study findings indicate that both groups of students showed a significant increase in the pre-test and post-test mean scores of financial literacy. For the control group,

the financial literacy scores increased by 12.12 units ( $p < .01$ ,  $t(24) = -17.354$ ), while the experimental group experienced a 17 units increase ( $p < .01$ ,  $t(24) = -31.937$ ) after the experiment. Table 2 illustrates the analysis of the paired sample t-test for the pre-test and post-test of literacy levels among the control and experimental groups.

Table 2

*Paired Sample T-Test Pre and Post-Financial Literacy Levels for Control and Experimental Groups.*

Groups	Test	N	Men	SD	t	Df	Sig. (2-tailed)
Control	Pre	25	13.3600	2.17715	-17.354	24	.000
	Post	25	25.4800	2.31157			
Experiment	Pre	25	12.4400	2.61534	-31.937	24	.000
	Post	25	29.4400	1.52971			

### Discussion And Conclusion

Before the implementation of the experiment, a pre-test was conducted to compare the financial literacy of students in the experimental and control groups. No significant difference was found in the pre-test scores between students in the experimental and control groups. This implies that all students involved in this study had similar levels of financial literacy before the intervention. According to Othman Talib (2013), students must have the same level of knowledge before treatment to ensure the research results are not compromised.

After the experiment, both groups of students showed a significant improvement in their levels of financial literacy. This indicates that both teaching methods, financial management games, and conventional learning, were effective in enhancing the performance of preschool students. However, it was observed that the increase in scores for the experimental group was *higher* compared to the control group, and this difference in scores was significant. This suggests that learning through play is more effective than conventional methods in improving the financial literacy of preschool students. These findings align with the results of studies by Chin (2015), Chen and Ramani (2011), Ziegler and Ramani (2011), as well as the perspectives of Wang and Hung (2010), White and Bull (2008), Yong (2008), and Zakia Mohammad Ashari et al. (2013), emphasizing that game-based learning approaches are more effective in improving the financial literacy and mathematically related performance of preschool students. In conclusion, this study's design affirms that learning through play is more effective than conventional methods in enhancing the financial literacy of preschool students.

**Implication And Recommendations**

The study employed the Cognitive Constructivist Theory of Piaget to conduct the research, and the results indicate that the use of this theory aligns with the main goals of the study. The study's results demonstrate that learning through play can assist children in *acquiring* more knowledge. Knowledge development can be achieved through interaction with the environment and manipulation of provided materials. The Cognitive Constructivist Theory of Piaget posits that learning has two main principles: active and authentic, and this study adheres to these principles.

Cognitive conflict leads to learning and understanding, achievable only through interaction with the environment (Elliott et al., 2000). Children are active in learning through exploration and hands-on activities. Furthermore, when individuals share ideas with others, there may be differences in ideas or concepts. This perspective argues that peers with different views can interact with cognitive conflict, leading to imbalance and prompting processes of reflection and self-assessment (Zakaria, 2003). In group activities, children use discussion and compromise processes to collaborate and accommodate until they reach a balance. Therefore, group activities are a crucial way to aid cognitive development (Chin, 2015).

The results of this study impact teacher education programs in preschool and early childhood education. It indicates that educators need to be exposed to each technique offered in the Standard Preschool Education Curriculum (KSPK). This research demonstrates the effects of the play-based learning approach, which is one of the available approaches in the KSPK. As shown by this study, the play-based learning approach in preschool classes provides opportunities for students to learn independently while receiving guidance from teachers. Preschool teachers require support and exposure in training and guidance to implement this approach effectively and optimize the benefits for their students' learning.

This experimental study was conducted in a national school under the Malaysian Ministry of Education categorized as an urban school, involving only two preschool classes as the study sample. Future research could involve public preschools in rural areas, as well as private preschools. Additionally, a comparative study between public and private preschools is needed to determine the strengths and weaknesses of the learning methods used in both education systems. Furthermore, the sample size used in the study is limited. To enhance statistical power, the sample size for future studies should be increased for a larger-scale investigation. Lastly, only preschool students of Malay ethnicity were involved in this study. To improve research outcomes, the researcher suggests that future studies involve preschool students from various ethnicities, such as Chinese, Indian, or other ethnic groups in Malaysia, to utilize the potential of the play-based learning approach and expand the study's findings.

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