

Exploring Parental Supervision and Role Modeling in Enhancing Early Childhood Literacy: The Moderating Role of Digital Storytelling

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Abstract

This study investigates the roles of parental supervision, role modeling, and digital storytelling in shaping early childhood literacy. Employing a cross-sectional research design, the study collected self-reported data from parents, role models, and educators to explore the relationships among these factors. The research findings highlight the significance of parental involvement in enhancing children's literacy skills and the inspirational role played by role models. Digital storytelling is a valuable resource for promoting early childhood literacy, with slightly significance. Moreover, the study covers the moderating effects of digital technology on the impact of parental supervision and role modeling. This research contributes a deeper understanding of how these factors interact in early childhood literacy development. The implications of this study guide educational institutions and organizations in designing effective literacy programs. Recommendations include diversifying samples, adopting longitudinal research designs, incorporating objective literacy measures, exploring moderation mechanisms, and balancing digital technology integration. The research's novelty lies in its comprehensive examination of the interplay between parents, role models, and technology in early childhood literacy. The study underscores the need for collaborative approaches that empower all stakeholders in children's education.

Keywords: *Parental supervision, role modeling, early childhood literacy, digital storytelling*

INTRODUCTION

Early childhood literacy has become an increasingly relevant subject in the current digital era (Pangrazio et al., 2020). Children are now exposed to digital technology from a very young age, and their abilities to manage information and interact in the digital world are of utmost importance (Ihmeideh & Alkhawaldeh, 2017). Early childhood digital literacy encompasses understanding digital technology, online safety, and the ability to comprehend, evaluate, and create digital content (Falloon, 2020). Parental supervision and role modeling have a significant impact on the development of early childhood literacy (Cates et al., 2016). Parents who actively engage in their children's education and provide clear guidance on the

use of digital technology often have children who are more skilled and knowledgeable about digital literacy (Kumpulainen et al., 2020). Furthermore, positive behavioral model adults exhibit in the child's environment can influence how children interact with digital technology and manage online information (Domoff et al., 2020).

Meanwhile, digital storytelling, which involves digital technology to convey narratives, has become an increasingly common element in early childhood education (O'Byrne et al., 2018). Digital technology allows children to interact with various media types, such as text, images, audio, and video, through stories (Quah & Ng, 2022). Digital storytelling also creates a more engaging and interactive learning experience (Gil & Sylla, 2022). However, there is still insufficient research specifically explaining the role of digital storytelling as a moderating variable in the relationship between parental supervision, role modeling, and early childhood literacy, particularly in the context of digital literacy. Identifying the role of digital storytelling as a moderating variable in early childhood literacy development can provide valuable insights into how to optimize early childhood digital literacy education.

Currently, a substantial body of research highlights the role of parental supervision and role modeling in enhancing early childhood literacy, especially in the context of digital literacy. However, a significant research gap remains regarding the role of digital storytelling as a moderating variable in this relationship. Previous studies have not adequately explained the extent to which digital storytelling can strengthen or moderate the positive influence of parental supervision and role modeling on early childhood digital literacy (Eroglu & Okur, 2021; Maureen et al., 2018, 2020; Nuroh et al., 2022). It creates an opportunity to address this research gap and gain a deeper understanding of the impact of digital storytelling in early childhood literacy education.

According to Ozturk & Ohi (2018), there is a strong link between children's reading attitudes, the frequency of their involvement in digital literacy activities at home, and their parents' perceptions of their reading attitudes. It implies that parents can boost their children's reading enjoyment by engaging in digital and traditional print experiences. These findings align with other researchers in suggesting that parental supervision positively and significantly influences early childhood literacy (Caesar & Nelson, 2014; Klass et al., 2020; Soyoof et al., 2023). But, the study conducted by Hindman et al. (2014) used a survey method to measure parental supervision. However, the survey only asked parents how often they read books to their children. Parental supervision involves reading books and other aspects, such as helping children with their homework and encouraging them to play educational games. On the other hand, in the research carried out by Wittkowski et al. (2016), an experimental approach was employed to assess the efficacy of a parental supervision program. Nevertheless, there needed to be more clarity regarding the specific content of the parental supervision program provided to the study participants. For instance, the program

primarily offered information on the significance of parental supervision but did not include any training or support for parents.

Furthermore, Stern et al. (2018) underscore the pivotal role of inspirational role models, particularly parents and teachers, in fostering environmental literacy and positive characteristics in students. Having role models who instill a sense of responsibility for the environment and nurture strong character traits contributes to adolescents having a deeper understanding of environmental issues and the capacity to engage in environmental preservation efforts actively. Meanwhile, Birhan's et al. (2021) research highlights that role modeling, or exemplary behavior from adults in the vicinity of young children, significantly influences early childhood literacy. Children with role models who exhibit positive literacy behavior and support literacy tend to develop their literacy skills more effectively. Adults who demonstrate how to use digital technology wisely and ethically, engage with various media, and maintain online privacy provide excellent examples to children managing digital information.

The existing research highlights the importance of parental supervision and role modeling in shaping early childhood literacy and positive characteristics in children. However, there are significant gaps in the literature. Firstly, while studies like Ozturk & Ohi (2018) and others indicate a positive relationship between parental involvement and early childhood literacy, a more comprehensive method of measuring parental supervision is needed. For example, research conducted by Hindman et al. (2014) primarily focuses on book reading and does not encompass other aspects of parental supervision, such as homework assistance and encouragement of educational activities. On the other hand, Wittkowski et al. (2016) employed an experimental approach to assess a parental supervision program. However, the specific content of this program remains to be clarified, as it primarily emphasizes the importance of parental supervision without providing details about the training or support given to parents. In the context of role modeling, while Stern et al. (2018) and Birhan et al. (2021) highlight the positive influence of role models on environmental literacy and early childhood literacy, there is a limited exploration of the nuances and specific mechanisms used by role models to impact literacy development.

Overall, these findings indicate the need for more comprehensive and in-depth research that explores the details of parental supervision programs, the content and implementation of these programs, and a deeper understanding of the mechanisms through which role models influence literacy in various age groups. Additionally, exploring the combined impact of parental supervision and role modeling on early childhood literacy and character development can provide a more comprehensive understanding of how to enhance literacy and character development in young children.

Furthermore, this study will introduce novelty by including the digital storytelling variable as a moderator in the relationship between parental supervision, role modeling, and early

childhood literacy. By incorporating this variable, the research will provide a deeper understanding of how digital stories can strengthen or moderate the positive influence of parental supervision and role modeling on early childhood literacy. Thus, this study will help bridge the existing gap in the current literature and provide valuable insights into more effective educational strategies for young children in the context of digital literacy.

This research holds various significances. Firstly, it will contribute to understanding early childhood literacy education in the digital era. By identifying the role of digital storytelling as a moderating variable, we can develop more effective educational strategies to help children become smart and responsible users in the rapidly evolving digital world.

Moreover, this research can provide practical guidance for parents, educators, and curriculum developers on integrating digital storytelling into early childhood education. It will help enhance the quality of digital literacy education provided to children. The novelty of this research lies in its focus on the role of digital storytelling as a moderating variable in the context of early childhood literacy. Previous research has been more limited to parental supervision and role modeling as singular factors in literacy development. By exploring how digital storytelling can strengthen the positive influence of parental supervision and role modeling, this research brings innovation to the existing literature.

The primary objective of this research is to investigate the extent to which digital storytelling strengthens the positive influence of parental supervision and role modeling in enhancing early childhood digital literacy. With this objective, the research will address the existing research gap, provide a deeper understanding of the role of digital storytelling in early childhood literacy education, and offer insights for developing more effective educational programs.

METHODS

Research design and participants

This study will employ a quantitative research design with an explanatory approach. A quantitative research design with an explanatory approach has profound and multifaceted objectives. Firstly, it aims to elucidate the intricate relationships among the variables under investigation, including parental supervision, role modeling, digital storytelling, and early childhood digital literacy. Employing the explanatory approach, the study endeavors to comprehend the cause-and-effect relationships between these variables, specifically how changes in one variable may influence changes in another (Apuke, 2017). Furthermore, it seeks to explore in-depth insights from the collected data to understand the underlying mechanisms that drive the influence of these factors on early childhood digital literacy. The study also intends to empirically test the formulated hypotheses, assessing the strength and significance of the relationships between the variables (Benitez et al., 2020).

Additionally, the research aims to provide valuable, data-driven insights that can inform educational policies and practices related to early childhood digital literacy, potentially leading to improvements in educational approaches and interventions (Manfren et al., 2022). It also contributes to expanding the existing knowledge in early childhood education and digital literacy, offering evidence-based findings to address research gaps. Ultimately, this research is designed to support informed decision-making by parents, educators, and policymakers in the context of early childhood digital literacy. By achieving these objectives, it aspires to provide a comprehensive understanding of the factors influencing early childhood digital literacy, ultimately benefiting children's educational development and well-being. The research involves 250 participants, consisting of parents and guardians of early childhood children in 100 kindergarten schools within Serang Regency of Banten Province. The participants selected using random sampling methods to ensure a balanced and representative sample.

Data collection instruments

1. Parental Supervision: Parents will be asked to complete a survey containing questions about their level of supervision over their children's online activities, their opinions on their children's digital literacy, and the practices and rules they apply regarding their children's use of digital technology adopted by Caesar & Nelson (2014); Klass et al. (2020); Ozturk & Ohi (2018); Soyoof et al. (2023).
2. Role Modeling: Positive behaviors exhibited by adults around children that support literacy and responsible use of digital technology adopted by Stern et al. (2018); Birhan et al. (2021).
3. Child Digital Literacy: Surveys will be administered to the children to measure their level of digital literacy. These will include questions about their understanding of digital technology, online safety practices, and their ability to evaluate and create digital content adopted by Caesar & Nelson (2014); Klass et al. (2020); Ozturk & Ohi (2018); Soyoof et al. (2023).
4. Digital Storytelling: This questionnaire will explore the extent to which digital storytelling is used in the early childhood education environment. It includes questions about the frequency, types of digital stories used, and their impact on the children adopted by Gil & Sylla (2022).

The details of the measurement instrument can be found in Table 1.

Data analysis

The collected data will be analyzed using statistical methods, including SEM analysis. This analysis will help identify the relationships between parental supervision, role modeling, digital storytelling, and early childhood digital literacy variables. Digital storytelling will be tested as a moderating variable affecting the relationship between parental supervision and role modeling and early childhood digital literacy.

Research ethics and impact

This research will adhere to ethical standards for research involving child participants. All participants will be asked to consent before they are involved in the research, and the data collected will be kept confidential. The results of this research are expected to provide a deeper understanding of the impact of digital storytelling on early childhood digital literacy and offer practical guidance for parents, educators, and curriculum developers. The research may also aid in developing more effective educational strategies for maximizing the influence of parental supervision and role modeling in early childhood digital literacy education.

Table 1. Instrument Measurement

Variable	Indicators	Source
Parental Supervision	PS1- I regularly monitors my child's online activities, such as the websites and apps they visit	Caesar & Nelson (2014); Klass et al. (2020); Ozturk & Ohi (2018); Soyooof et al. (2023)
	P2- I provide guidelines to my child about screen time and limits on digitaltechnology usage	
	PS3- I have conversations with my child about being safe and ethical when interacting online	
	PS4- I monitor the content my child accesses or watches on their digital devices	
	PS5- I use parental control tools, such as internet filters, to ensure my child's online safety	
	PS6- engage in online activities with my child to better understand how they use digital technology	
Role Modeling	RM1- Adults around my child frequently demonstrate how to use digital technology wisely and ethically	Stern et al. (2018); Birhan et al. (2021)
	RM2- I observe adults around my child maintaining their privacy while online and setting a good example of social media use	
	RM3- Adults around my child openly and honestly discuss the risks and benefits of digital technology	

	RM4- I often see adults around my child interacting with digital technology for educational or learning purposes	
	RM5- Adults around my child promote digital technology for educational and creative purposes, such as reading digital books with children	
Early Childhood Literacy	ECL1- Children can identify individual sounds within words	Caesar & Nelson (2014); Klass et al. (2020); Ozturk & Ohi (2018); Soyoof et al. (2023)
	ECL2- Children understand the relationship between letters and sounds	
	ECL3- Children have a rich vocabulary and understand word meanings	
	ECL4- Children can comprehend stories and information they read or hear	
	ECL5- Children do not struggle with reading basic texts	
	ECL6- Children can express their ideas in simple writing	
	ECL7- Children know how to handle a book properly	
	ECL8- Children have good listening skills and can follow instructions well	
Digital Storytelling	DST1- Digital stories are used routinely in early childhood education	Gil & Sylla (2022)
	DST2- Digital stories incorporate multimedia elements to enrich the storytelling experience	
	DST3- Children can actively participate in digital stories by clicking, expressing opinions, or making choices within the story	
	DST4- Digital stories are used for educational purposes, such as teaching specific concepts or values	
	DST5- Children have adequate access to devices and resources to access digital stories	

DST6- The use of digital stories is associated with improved understanding and literacy skills in children

Research model and hypothesis

Based on the previously discussed research, we can develop the research model and hypotheses as follows:

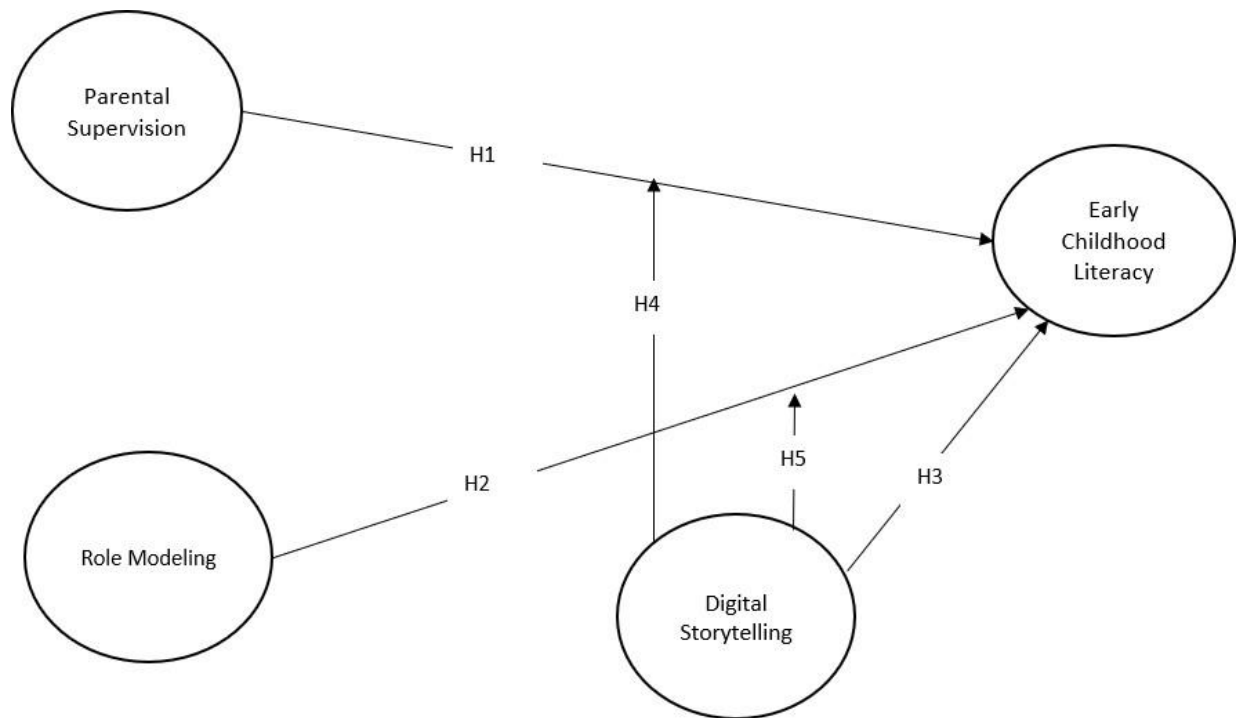


Figure 1. Research Model

1. There is a positive relationship between parental supervision and early childhood literacy.
2. There is a positive relationship between role modeling that supports literacy and early childhood literacy.
3. There is a positive relationship between Digital storytelling and early childhood literacy.
4. Digital storytelling is a moderating variable that strengthens the relationship between parental supervision and early childhood literacy.
5. Digital storytelling is a moderating variable that strengthens the relationship between role modeling supporting literacy and early childhood literacy.

These hypotheses will be tested through data analysis that combines parental supervision, role modeling, digital storytelling, and early childhood literacy. Thus, the study aims to identify the role of digital storytelling as a moderator in the relationship between parental supervision, role modeling, and early childhood literacy.

RESULTS AND DISCUSSION

Description data

The questionnaire commenced with sections to gather data on the respondents' demographic characteristics. It encompassed three primary elements: gender, age, and educational background.

Table 2. Descriptive statistics

Measurement	Latent construct/value	f	(%)
Gender	Male	142	56.80
	Female	108	43.20
Age	< 30	69	27.60
	30 - 40	88	35.20
	41 - 50	50	20.00
	> 50	43	17.20
Education	High school	55	22.00
	D3	43	17.20
	S1	127	50.80
	S2	25	10.00

The provided data offers insights into a sample of respondents across three main categories: Gender, Age, and Education. From the data, it is evident that the majority of respondents are male (56.80%) compared to female respondents (43.20%). In terms of age, most respondents fall within the 30-40 age group (35.20%), with those under 30 years old comprising 27.60%, followed by those aged 41-50 (20.00%), and those over 50 (17.20%). Regarding education levels, the sample primarily consists of individuals with a Bachelor's degree (50.80%), a High School education at 22.00%, a Diploma (D3) at 17.20%, and a Master's degree (S2) at 10.00%. This data analysis provides an initial glimpse into the sample composition. It can serve as a foundation for further research or decision-making related to the gender, age, and education of the respondents.

Outer model analysis

By employing the convergent technique, we were able to assess the validity of the indicators, subsequently quantified as the value of the external loading factor. A loading factor within the range of 0.50 to 0.70 is considered adequate for preliminary exploratory investigations, which constitute the initial stages of constructing a measurement scale. Notably, in this specific study, each indicator exhibited an outer loading value surpassing 0.70, affirming its adherence to the criteria of convergent validity (refer to Table 3).

The subsequent step involved an evaluation of a variable's discriminant validity, achieved by comparing the square root of the coefficient of variance (AVE) extracted from each latent

factor to the correlation coefficients between the other elements in the model. This analysis aimed to ascertain whether the variable in question could effectively differentiate between distinct groups. The AVE value, which exceeded 0.5, serves as an indicator of its significant discriminant validity. Table 3 demonstrates that the constructs under investigation in this research exhibited a discriminant validity exceeding 0.50, in line with Fornell & Larcker (1981) guidelines. Determining variable indicators was carried out during the final phase through composite reliability. Results were considered reliable when both composite reliability and Cronbach's alpha significantly exceeded 0.70, as outlined by Chin (2010) (see Table 4).

Table 3. Factor loading and cross loading

Variable	Item	Parental Supervision	Role Modeling	Early Childhood Literacy	Digital Storytelling
Parental Supervision	PS1	0.937	0.354	0.405	0.514
	PS2	0.950	0.365	0.425	0.547
	PS3	0.947	0.374	0.458	0.539
	PS4	0.950	0.391	0.438	0.553
	PS5	0.909	0.369	0.454	0.549
	PS6	0.952	0.358	0.444	0.558
Role Modeling	RM1	0.440	0.894	0.396	0.573
	RM2	0.301	0.934	0.269	0.396
	RM3	0.368	0.952	0.347	0.515
	RM4	0.355	0.894	0.294	0.437
	RM5	0.316	0.953	0.296	0.451
Early Childhood Literacy	ECL1	0.420	0.385	0.853	0.354
	ECL2	0.414	0.417	0.905	0.408
	ECL3	0.431	0.328	0.948	0.498
	ECL4	0.451	0.304	0.916	0.480
	ECL5	0.443	0.302	0.929	0.534
	ECL6	0.409	0.330	0.867	0.400
	ECL7	0.373	0.201	0.869	0.459
	ECL8	0.393	0.276	0.877	0.511
Digital Storytelling	DST1	0.488	0.394	0.413	0.908
	DST2	0.520	0.460	0.514	0.902
	DST3	0.559	0.469	0.495	0.937
	DST4	0.545	0.498	0.492	0.900
	DST5	0.394	0.567	0.328	0.722
	DST6	0.511	0.396	0.411	0.876

Table 4. Construct reliability and validity test

Construct*)	Cronbach's Alpha	rho_A	CR	AVE	AVE	PS	RM	ECL	DST
PS	0.974	0.975	0.979	0.886	0.941	0.941	1.000	0.466	0.578
RM	0.958	0.972	0.968	0.857	0.926	0.392	0.926	0.354	0.523
ECL	0.965	0.967	0.970	0.803	0.896	1.000	1.000	0.896	0.512
DST	0.939	0.952	0.952	0.769	0.877	1.000	1.000	1.000	0.877

*) PS=Parental Supervision; RM=Role Modeling; ECL= Early Childhood Literacy DST=Digital Storytelling

The computation of composite reliability resulted in a range of 0.952 to 0.979, surpassing the 0.70 threshold. It serves as robust evidence of the dependability of the variable's indicators. Furthermore, the Cronbach's alpha scores, ranging from 0.939 to 0.974, also exceeded the 0.70 benchmark, signifying that the measurements were reliable and free from significant errors (Chin, 2010).

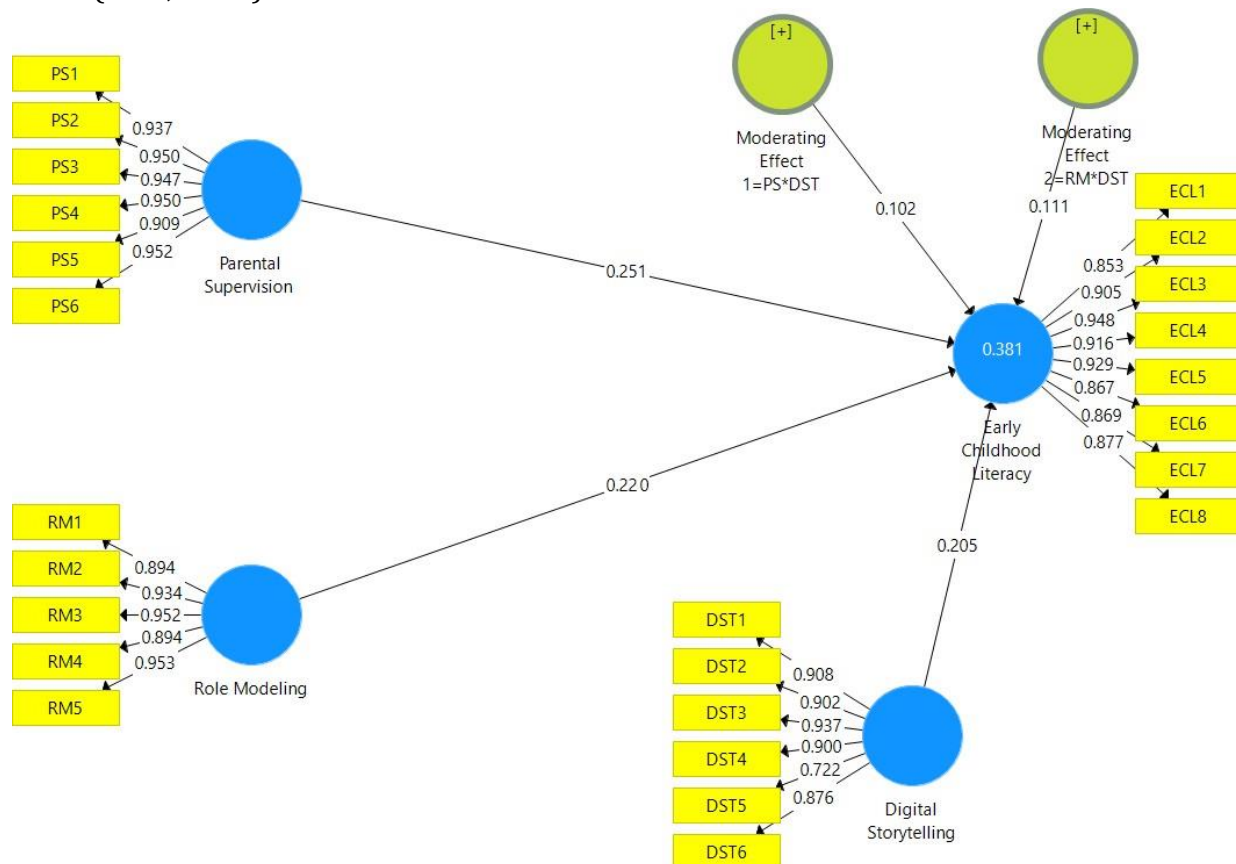


Figure 2. Run PLS Algorithm

Figure 2 showcases the outcomes of the data processing carried out using SmartPLS. These results demonstrate that all manifest variables examined in this study possess loading values that exceed the threshold of 0.70. It unequivocally establishes that manifest variables with

loading values surpassing 0.70 successfully fulfill the requirements for convergent validity, affirming their high level of validity.

Inner model analysis

In this study, every relationship within the sample is rigorously assessed through a simulation based on the bootstrap approach. This method is employed to mitigate the potential impact of outlier data points and enhance the reliability of the research findings. The test results, conducted using the bootstrap approach, are presented in Figure 3, shedding light on the robustness of the relationships under scrutiny.

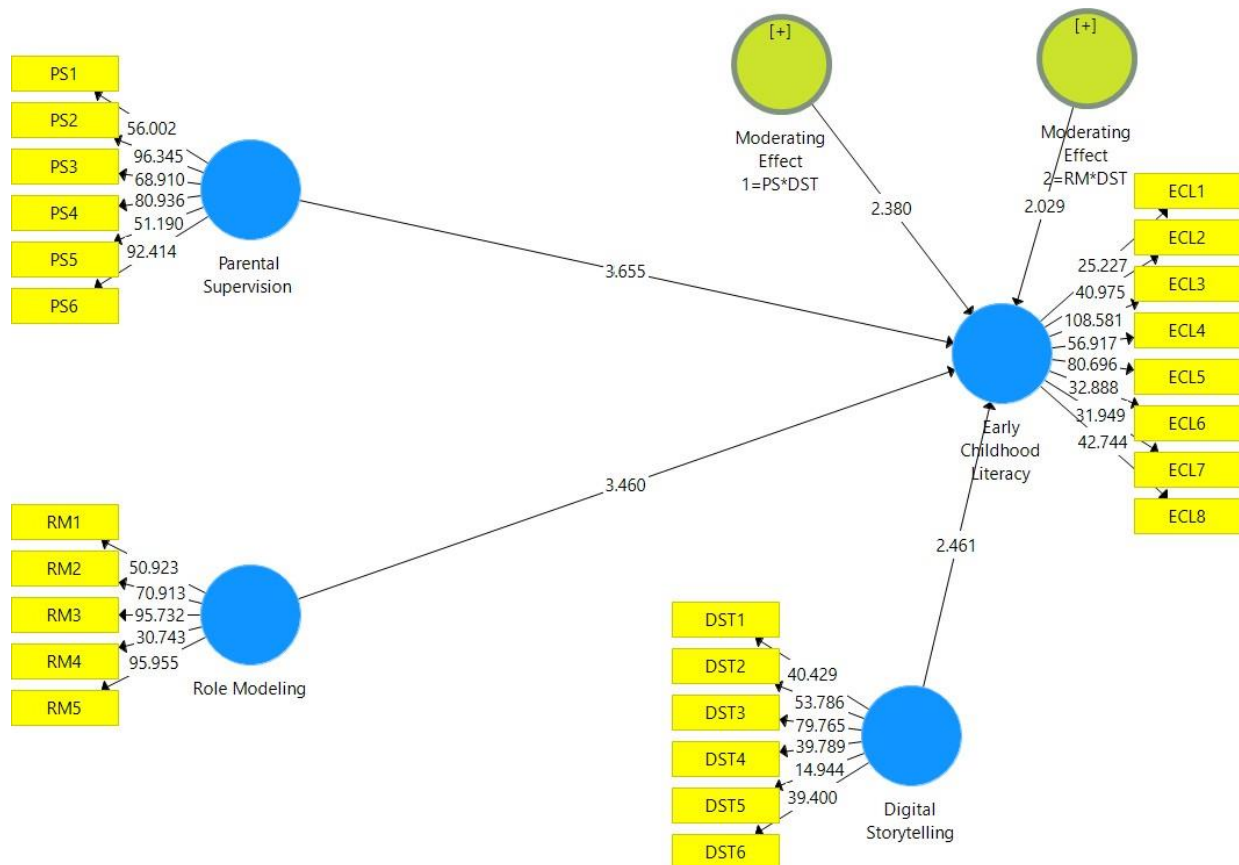


Figure 3. Bootstrapping Inner Model

Path coefficient evaluation is a valuable tool to quantify the strength of the influence exerted by an independent variable on a dependent variable. As evident in Figure 3, the analysis reveals that Parental Supervision exerts the most substantial effect on Early Childhood Literacy, with a path coefficient value of 3.655. Following closely is the impact of Role Modeling, with a path coefficient of 3.460, while Digital Storytelling has a final effect of 2.461 on Early Childhood Literacy. Notably, all variables in this model exhibit positive path coefficients, signifying that the influence of an independent variable on a dependent variable is directly proportional to its path coefficient value. Examining P-Values is instrumental in

determining the significance level of accepting a hypothesis. The validation of the study hypothesis is plausible when the P-values fall below the threshold of 0.05. Smart PLS software employs a bootstrapping procedure on a model that meets the criteria of validity, trustworthiness, and feasibility to derive the P-value of the model. The outcomes of the bootstrapping process are presented in the subsequent table (see Table 5).

Table 5. Path Coefficient Result

Hypothesis	Construct*)	Original Sample	STDEV	T Statistics	P Values	Result
H1	PS -> ECL	0.251	0.078	3.655	0.000	Accepted
H2	RM -> ECL	0.220	0.047	3.460	0.000	Accepted
H3	DST -> ECL	0.205	0.083	2.461	0.014	Accepted

*) PS=Parental Supervision; RM=Role Modeling; ECL= Early Childhood Literacy DST=Digital Storytelling

The data analysis in this study examines the relationships between several constructs, namely Parental Supervision, Role Modeling, Digital Storytelling, and Early Childhood Literacy. Each hypothesis is centered around how these constructs influence Early Childhood Literacy. The results reveal that all three hypotheses (H1, H2, and H3) are supported. H1 suggests that Parental Supervision significantly and positively impacts Early Childhood Literacy, with a path coefficient of 0.251 and a P-value of 0.000. H2, which focuses on the role of Role Modeling, also shows a significant positive effect on Early Childhood Literacy, with a path coefficient of 0.220 and a P-value of 0.000. Similarly, H3 indicates that Digital Storytelling significantly impacts Early Childhood Literacy, with a path coefficient of 0.205 and a P-value of 0.014. These findings underscore the importance of parental involvement, positive role models, and digital storytelling in enhancing early childhood literacy.

Furthermore, the subsequent route coefficients are analyzed to assess whether digital storytelling amplifies or diminishes the connection between Parental Supervision and Role Modeling concerning Early Childhood Literacy (see Table 6).

Table 6. Moderation test

Hypothesis	Construct*)	Original Sample	STDEV	T Statistics	P Values	Result
H4	Moderating Effect 1=PS*DST -> ECL	0.102	0.043	2.380	0.018	Accepted
H5	Moderating Effect 2=RM*DST -> ECL	0.111	0.055	2.029	0.043	Accepted

*) PS=Parental Supervision; RM=Role Model; ECL= Early Childhood Literacy DST=Digital Storytelling

The analysis indicates that digital storytelling positively moderates the influence of Parental Supervision and Role Modeling on Early Childhood Literacy. In this context, a "positive moderating effect" means that using digital storytelling strengthens the positive impact of

Parental Supervision and Role Modeling on early childhood literacy. Regarding Parental Supervision, the results of H4 suggest that while Parental Supervision naturally has a positive impact on early childhood literacy, the use of digital storytelling can enhance this impact. This may imply that even though parents are actively involved in their children's education, the use of digital storytelling can optimize the effectiveness of this approach.

Similarly, in the case of Role Modeling, H5 indicates that when digital storytelling is employed, the positive influence of role models on early childhood literacy may also increase. This suggests that while positive role modeling plays a crucial role in children's literacy development, its impact may become stronger when digital storytelling is integrated into the educational experience. Therefore, in the context of this study, digital storytelling strengthens the positive influence of Parental Supervision and Role Modeling on the development of early childhood literacy. This impact could be attributed to changes in how children interact with stories and information presented through digital media, which may positively affect the influence of parents and role models.

Implementing Parental Supervision and Early Childhood Literacy underscores the importance of parents' role in early childhood education. The active involvement of parents in supervising children has a significant positive impact on the development of early childhood literacy. The managerial implication is that educational institutions and organizations related to child development should develop programs that actively involve parents in supporting children's literacy. For example, schools can conduct training sessions for parents on how to help their children learn to read and write. Furthermore, managers in these institutions must ensure that education staff are well-trained in communication and collaboration with parents to achieve the best results in children's literacy development.

The excellent role models provide positive examples for children in literacy education. The presence of inspirational figures plays a crucial role in promoting literacy in early childhood. The managerial implication of this finding is that educational institutions and community organizations working with children can find ways to involve role models in their education programs. It may include inviting prominent figures or successful community members to share their experiences with children. These institutions' stakeholders must ensure that collaborations with role models proceed smoothly and align with educational goals.

Digital storytelling contributes to early childhood literacy development, albeit with a slightly lower significance level. It highlights the potential of digital technology in supporting children's literacy. The implication is that educational institutions and stakeholders in children's education need to consider the use of technology in teaching. They can develop literacy programs that integrate digital storytelling as a learning tool. Managers in these

institutions need to ensure that technology resources are available and well-managed and that technology-based learning approaches align with the needs of children.

They were using digital storytelling to strengthen the positive influence of Parental Supervision on children's literacy. It emphasizes the importance of carefully considering how technology is used in the context of children's education. The managerial implication is that organizations using technology in children's education should carefully consider how to integrate the role of parents. Managers should create a framework that facilitates collaboration between parents and technology users, ensuring parents' messages and approaches align with educational goals.

Digital storytelling strengthens the positive influence of Role Modeling on children's literacy. It emphasizes the importance of maintaining the positive impact of role models in children's literacy development while using digital technology. The implication is that when using digital technology, there is a need to carefully maintain the role of positive role models in children's education. Managers in educational organizations and stakeholders involving role models must work together to ensure that digital storytelling complements and enriches the educational approach without replacing the positive influence of role models. In order to achieve the best outcomes in early childhood education, it is crucial to understand the roles of parents, role models, and digital technology and how they can complement each other. These managerial implications assist organizations and educational institutions design effective and holistic programs to support children's literacy.

CONCLUSION

The study highlights the significant roles of parents, role models, and digital technology in early childhood literacy. It underscores that active parental involvement is crucial in enhancing children's literacy skills, emphasizing the need for educational institutions and organizations to develop programs that empower parents in guiding their children's literacy journey. Furthermore, the presence of inspirational role models has a profound impact on motivating young learners to engage with literacy. Collaboration between educational institutions and role models can enrich the educational experience for children.

The study also recognizes the potential of digital storytelling as a valuable resource in promoting early childhood literacy, even though the significance of this impact is slightly lower. It underscores the importance of incorporating technology into literacy programs that cater to the specific needs of young learners. Additionally, the findings reveal that digital technology can moderate the influence of parental supervision and role modeling on early childhood literacy. It highlights the need for a balanced and well-considered integration of technology into educational settings, ensuring it complements rather than supplants the essential roles of parents and role models in a child's education.

The study suggests that a comprehensive approach to early childhood education acknowledges the interconnected roles of parents, role models, and technology. Understanding how these components interact is essential for designing effective educational programs that support children's literacy development. The managerial implications derived from this research provide valuable guidance for educational organizations and institutions striving to create well-rounded and successful literacy programs for young learners. By harnessing the strengths of each component and addressing potential challenges, we can work towards nurturing a generation of confident and literate young readers and writers.

Limitation and recommendation

This study provides significant insights into the roles of parents, role models, and digital technology in shaping early childhood literacy. However, it is essential to acknowledge the limitations inherent in the research, including sample characteristics, research design, self-reported data, and the need for a deeper understanding of the moderation effects of digital technology. To address these limitations, future research should encompass diverse samples, employ longitudinal designs, incorporate objective literacy measures, delve into moderation mechanisms, and explore the specific ways technology complements or hinders parental and role model influences. These recommendations aim to enhance the robustness and applicability of findings. Additionally, these findings hold practical implications for educational institutions, emphasizing the importance of designing comprehensive literacy programs that empower parents, leverage the influence of role models, and thoughtfully integrate digital technology. Teacher training programs should also incorporate modules that prepare educators to collaborate effectively with parents and role models. Moreover, responsible and balanced technological integration into the curriculum is crucial to maximize the benefits of both traditional and digital teaching methods. In summary, this study lays the foundation for further research and provides practical guidance for institutions and organizations dedicated to holistically fostering early childhood literacy.

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