

FROM STORYTIME TO SCREEN TIME: HOW DIFFERENT READING ENVIRONMENTS PREDICT READING COMPREHENSION

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Abstract

This study examined the predictive relationships between different types of home literacy environments and students' reading comprehension one year later. The Home Literacy Model suggests that outcomes vary according to the types of formal and informal literacy activities undertaken at home. However, it does not explicitly consider how the medium of these activities—whether print or digital—may influence performance. Given the growing role of technology in children's reading experiences, it is essential to also examine the impact of the digital literacy environment on literacy development. This study considered three literacy contexts: formal literacy environments (e.g., how often parents teach children to read or write letters and short words, or work with them on book-based learning activities), informal literacy environments (e.g., how often parents play language games, visit the library, or read to their children), and digital literacy environments (e.g., how frequently parents use digital devices to teach reading and writing, read together, or listen to audio stories). The study was conducted at two time points. It involved 220 children aged 6 to 8 years and one of their parents. Parents provided insights into formal, informal, and digital literacy activities they engage in with their children. Reading comprehension was measured one year later using a validated assessment tool. Multiple regression analysis was conducted to determine the predictive power of each environment. Findings revealed distinct patterns across literacy environments. The formal literacy environment was not a significant predictor of later reading comprehension, while the informal literacy environment showed a significant positive relationship, indicating that rich, engaging literacy experiences outside formal teaching practices foster stronger comprehension skills over time. Finally, the digital literacy environment emerged as a significant negative predictor, suggesting that higher engagement with digital reading and screen-based content may be associated with lower gains in reading comprehension. The suggested model explained 5.3% of the variance of reading comprehension ($F=4.04$, $p<.008$). These results highlight the nuanced roles of different literacy environments in shaping reading development. While traditional formal instruction alone may not account for growth in comprehension, informal literacy practices appear to provide meaningful support for literacy skills. Conversely, the negative association with digital literacy exposure underscores the need to better understand the quality and cognitive demands of digital reading experiences. The findings emphasize the importance of promoting rich, authentic literacy experiences at home, as well as developing strategies to guide productive digital reading practices in an increasingly online world.

Keywords: *Reading comprehension, digital literacy environment, middle childhood.*

1. Introduction

This study investigated how different types of home literacy environments predict students' reading comprehension one year later. According to the Home Literacy Model, children's literacy outcomes vary depending on the kinds of literacy activities they experience at home (Sénéchal & LeFevre, 2002; Sénéchal, 2006). In particular, the model distinguishes between formal literacy activities, which focus on direct instruction (e.g., parents teaching letters, words, or writing skills), and informal literacy activities, which emphasize meaning-based exposure to language, such as shared book reading and language play (Sénéchal & LeFevre, 2002). Although the Home Literacy Model has been widely used to explain individual differences in children's reading development, it does not explicitly account for the medium through which literacy activities occur. Specifically, it does not differentiate between print-based and digital literacy experiences, despite evidence that the medium of reading may influence comprehension processes and learning outcomes (Delgado et al., 2018). Given the increasing integration of digital technologies into children's everyday literacy practices, it is important to examine the role of the digital literacy environment

alongside traditional home literacy activities. Research suggests that digital literacy experiences may involve distinct interactive and cognitive processes compared to print-based activities and may therefore have unique implications for literacy development (Neumann, 2018; Neumann & Neumann, 2017).

To address this gap, the present study examined three types of home literacy contexts. First, formal literacy environments included parent-led instructional activities such as teaching children to read or write letters and short words and engaging in book-based learning tasks (Sénéchal & LeFevre, 2002). Second, informal literacy environments encompassed shared and play-oriented activities, including reading aloud, playing language games, and visiting libraries, which have been shown to support later reading comprehension (Bus et al., 1995; Sénéchal, 2006). Third, digital literacy environments referred to literacy-related activities involving digital media, such as parents using digital devices to support reading and writing, engaging in shared digital reading, or listening to audio stories together (Neumann, 2018).

2. Methods

2.1. Procedure

The study was conducted at two time points, at the beginning of school year (September 2024) and at the end of the school year (May 2025). Parents of children attending first grade of primary school were invited to participate in the study conducted as a part of the project DigiLitA: The effect of environment on child development, funded by NextGenerationEU. Those who agreed to participate signed the written consent form and filled out a questionnaire providing information about the home literacy environment at Time 1. Approximately 8 months later, at Time 2, their children were approached at school during regular school hours and completed a reading comprehension test administered in group.

2.2. Participants

The study involved 220 children aged 6 to 8 years ($M=7.06$, $SD=.331$). A total of 117, 52.9% were girls. Additionally, it involved one of the children's parents.

2.3. Measures

Home literacy environment was assessed using items that describe different literacy-related activities that children engage in with their parents. Parents estimated how often they engaged in these activities with their child in the last month, using a response scale from 1 ("Never") to 5 ("Very often"). The factor analyses showed that the items show three factors, which can be described as formal and informal home literacy activities, and digital literacy environment.

Reading comprehension was assessed by a Swedish Reading Comprehension Test (Lundberg, 2001), which was translated into Croatian (Keresteš et al., 2019). The final results are the sum of correctly answered tasks with the higher number indicating higher reading comprehension achievement.

3. Results

A multiple regression analysis was conducted to examine whether different types of home literacy environments (HLE)—formal, informal, and digital—predicted the reading comprehension. The overall regression model was statistically significant, explaining approximately 5.3% of the variance (Table 1). Although the explained variance was modest, this indicates that the set of HLE predictors made a statistically meaningful contribution.

Table 1. Hierarchical Regression Results.

Predictor	B	β	t	p	R ²	Adj.R ²	p
					.053	.040	.008
Formal HLE	-.395	-.070	-.988	.324			
Informal HLE	.836	.141	2.045	.042			
Digital HLE	-1.157	-.190	-2.688	.008			

Note. HLE=home literacy environment, Adj. R²= Adjusted R²

The formal HLE was not a significant predictor of the reading comprehension, suggesting that the frequency of parent-led instructional activities, such as teaching letters or words, was not significantly associated with the children's reading comprehension when informal and digital literacy environments were taken into account. The informal HLE emerged as a significant positive predictor of reading

comprehension. This indicates that higher engagement in informal literacy activities (e.g., shared reading, language games, library visits) was associated with better performance in reading comprehension 8 months later. In contrast, the digital HLE was a significant negative predictor of reading comprehension, indicating that more frequent engagement in digital literacy activities was associated with lower scores on the reading comprehension. The standardized beta suggests that digital HLE had the strongest association among the three predictors, albeit in a negative direction.

4. Discussion

Taken together, the results suggest that not all home literacy activities contribute equally to literacy outcomes. Informal, meaning-based literacy experiences appear to be beneficial, whereas digital literacy activities—at least as measured in this study—may be associated with less favourable outcomes. Formal instructional activities did not show a significant unique contribution once other forms of HLE were considered. Previous studies show conflicting findings. In an iPad-based randomized controlled trial with children aged 2 to 5, Neuman (2008) showed that literacy apps improved preschoolers' alphabet knowledge, print concepts, and name writing, but not letter writing, suggesting that additional scaffolding is needed when using tablets for emergent literacy development. In a study with children aged 6 to 7, Janez et al. (2023) found that formal HLE using traditional materials predicted reading comprehension, whereas informal practices and the digital HLE showed no significant association with reading performance. Future studies should further explore the level of parental engagement in the digital HLE practices. For example, Dore et al. (2018) showed that preschoolers recalled the more content when e-books were read together with a parent compared to independent reading of e-books using audio narration, highlighting the continued importance of adult involvement. Additionally, in a study of 28 kindergarten children, repeated shared reading of both print books and e-books showed that while all learning outcomes were related to letter knowledge, emergent literacy was higher with e-books, suggesting that well-designed e-books can enhance adult-supported emergent literacy development (Rvachew et al., 2017). While there is clearly need for further research on this topic, taken together these findings highlight the importance of distinguishing between types and contexts of home literacy experiences, particularly considering the growing role of digital media in children's literacy development.

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