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Digital books, adult mediation, and language and emergent literacy. A literature review

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Abstract

The influence of digital books on adult mediation and emergent literacy has joined the ongoing debate regarding the role of shared reading of print books. However, a systematic evaluation of the enhancements available in digital books, participants' study conditions, and instructional methods in interventions is still lacking. This review analysed studies from the last decade on digital books, language skills, and adult mediation, considering these factors. A total of 32 articles from WOS and Scopus were reviewed. The findings indicated a widespread use of enhancements supporting print knowledge; research focused on interactions promoted by the adult reader and the assessment of children's vocabulary and comprehension. Additionally, a slight superiority of digital books over print books and of enhanced digital books over basic ones was observed for children's lexico-semantic skills and the interactive dimension of adult input. Book distribution and usage instructions were the most common instructional procedures. These findings reveal efforts to support adult mediation and children through digital books. The implications are relevant for families, educators, researchers, and software developers interested in promoting adult mediation and language skills through digital books.

Keywords: Digital literacy; electronic books; shared reading; linguistic competence; adult mediation.

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Libros digitales, mediación adulta, lenguaje y alfabetización emergente. Una revisión de la literatura

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Resumen

La pregunta por la influencia de los libros digitales en la mediación del adulto y el lenguaje y la alfabetización emergente se ha sumado al debate acerca del rol de la lectura compartida de libros impresos. No obstante, aún falta una evaluación sistemática sobre los enriquecimientos disponibles en los libros digitales, las condiciones de estudio de los participantes y los métodos de instrucción de las intervenciones basadas en estos. Esta revisión analizó estudios de la última década sobre libros digitales, habilidades lingüísticas y mediación adulta, considerando estos factores. Se revisaron 32 artículos en WOS y Scopus. Los resultados indicaron un uso generalizado de enriquecimientos que apoyan el conocimiento de lo impreso; investigaciones enfocadas en las interacciones promovidas por el adulto lector y en la evaluación del vocabulario y la comprensión del niño. Además, se observó una ligera superioridad de los libros digitales sobre los libros impresos y de los libros digitales enriquecidos sobre los básicos para las habilidades léxico-semánticas de los niños y la dimensión interactiva del *input* adulto. La entrega de libros y las instrucciones de uso fueron los procedimientos de instrucción más comunes. Estos hallazgos revelan cómo se ha intentado apoyar la mediación adulta y al niño a través de los libros digitales. Las implicaciones son relevantes para familias, educadores, investigadores y desarrolladores de software interesados en fomentar la mediación adulta y las habilidades lingüísticas a través de los libros digitales.

Palabras clave: Alfabetización digital; libros electrónicos; lectura compartida; competencia lingüística; mediación adulta.

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INTRODUCTION

The issue of the influence of digital books on language and emerging literacy in early childhood has added to the debate about the role of shared reading of printed books. A growing industry offering digital books in early childhood language and literacy has joined the debate about their varied characteristics and qualities (Korat & Falk, 2019), and research warning about the risks of using digital media in this population (Hutton et al., 2020) has prompted studies on the effectiveness of these books for children.

With regard to shared reading of printed books, the debate about the effectiveness of early exposure to books remains open. Meta-analyses show benefits for language and emerging literacy in girls and boys (e.g., Dowdall et al., 2020), especially when interventions are compared with passive groups (i.e., no intervention; Noble et al., 2019). Because young children do not decode on their own during their early years, the effect of early shared reading can be explained in large part by adult mediation. This occurs when the adult intervenes between the stimulus (e.g., book) and the child and modifies the order, frequency, intensity, and context of that stimulus to facilitate access to meaning and the internalisation of psychological processes or cognitive modifiability (Tzuriel, 2013). Indeed, it has been shown that during this activity, the child has the adult's full attention and participates in conversations of greater linguistic complexity (Sénéchal et al., 1996), which facilitates the development of quality interactions. Similarly, several studies have shown that dialogic reading (Whitehurst et al., 1988) during shared reading—that is, repeated exposure of the child to the book accompanied by the use of strategies that promote their participation—promotes language and emerging literacy and, in particular, vocabulary (Flack et al., 2018).

However, the quality of interactions facilitated by digital books and, therefore, the results for language and emerging literacy could be less consistent if we consider both findings related to lower language development in children exposed to screens at an early age (Madigan et al., 2020) as those showing greater adult focus on the device and regulation of the child's behaviour than on the content of digital books (Parish-Morris et al., 2013). On the other hand, the joint involvement of adults and children during the use of digital media has been shown to mitigate its negative effect on the early literacy skills of children in kindergarten and first grade (Dore et al., 2020). Therefore, in order to gain an up-to-date understanding of the influence of digital books on language and emerging literacy, it is necessary to simultaneously systematise their influence on the role of adult mediation.

On the other hand, research on the role of digital books in mediation, as well as in language development and emerging literacy, has focused on comparing their effects with those of printed books. However, it has recently been suggested that this analysis should focus on the design characteristics of books in relation to their purpose rather than on the possible superiority of one or the other (Kucirkova, 2019).

Furthermore, two important issues that should be addressed when evaluating the effectiveness of digital books are the study conditions and instructional procedures used in the interventions (Haring-Biel et al., 2020). The former refer to the specific circumstances experienced by participants in an intervention, which may influence the observed results (Biesta, 2010). Existing reviews (Furenes et al., 2021; Takacs et al., 2014; 2015) have focused on systematising the effects of digital books compared to printed books, under the assumption that digital books could produce different effects than printed books. They have also explored the results generated in children from reading digital books with adult support and without adult support using audio narration. However, the rapid advancement of the digital book industry in recent years and the growing interest of researchers suggests that new conditions may be emerging that are important to systematise.

Furthermore, it is essential to examine what type of support is being provided to users. The literature on shared reading of printed books shows that the type of instruction provided to adults in interventions has benefits for children (Dowdall et al., 2020). However, we do not know the type of instruction given to adults in the context of shared reading of digital books or what is given to children in the independent reading condition to understand how digital books might influence children's language

outcomes and emerging literacy and to project improvements that increase fidelity and user adoption in future interventions (Haring-Biel et al., 2020).

The role of enhancements

Digital books —also known as e-books or book apps— are books accessible through screen-based technologies (Kucirkova, 2019) and are characterised by enhancements that "improve" the reading experience, making it different from that of printed books. These are multimedia or interactive resources that complement or expand the content of the text, or that support the reading experience. These include background sounds, animations, hotspots (e.g., when touched, they activate sounds or animations) and games that motivate the reader (Bus et al., 2020).

These enhancements have been an important part of the debate on the influence of reading digital books in early childhood. According to Labbo and Kuhn (2000), enhancements that are consistent with the story support comprehension and retelling, while those that are not related to children's passive viewing and the production of non-cohesive retellings. Fifteen years later, a meta-analysis (Takacs et al., 2015) proposes a finer distinction: multimedia and interactive features. It concludes that the former (e.g., animated images and sound effects) are beneficial for children's comprehension and vocabulary, while the latter (e.g., games and dictionaries) are distracting because children must simultaneously listen to the narration of the story while interacting with an element on the screen, which may not be directly related to the content of the story. A subsequent review conducted by Reich et al. (2016) agrees that animations and games can be distracting elements that hinder learning, as can sound effects. Nevertheless, Kucirkova (2017) points out that the distinction between multimedia and interactive items is problematic because in some cases it can be blurred (e.g., an animation can be activated by touching the hotspot), which tests the scope of the results of Takacs et al. (2015).

A subsequent meta-analysis (Furenes et al., 2021) distinguishes between two types of enhancement: those that promote interest and enjoyment in reading for aesthetic purposes; and those that focus on the narrative plot for learning purposes. It concludes that enhancements are fundamental to understanding the text, since studies in which the digital book differs from the printed book only in terms of digitisation show lower scores for the digital version; on the other hand, those that use enhancements for learning purposes are more beneficial than the printed book. Additionally, it determines that dictionaries do not contribute to comprehension, but they do have an effect on vocabulary acquisition.

The classifications indicated appear to be based on different criteria: design (e.g., auditory/visual); the degree of interactivity of the enhancements (multimedia/interactive); and the objectives for which they were designed (aesthetic/learning). Therefore, the enhancement of digital books should be systematised from a broader perspective, allowing us to recognise what resources exist; what skills they could be impacting; and under what study conditions and instructional procedures they have been observed, in order to guide decision-making for the development of digital books aimed at early childhood.

Adult mediation

Another relevant dimension in the discussion has been the role of the adult mediator, who supports the child during shared reading (Grolig, 2020). The review by Reich et al. (2016) concludes that adults tend to talk more about the device than the content during shared reading of digital books and that the presence of an adult improves comprehension, language development and print awareness. A meta-analysis by Takacs et al. (2014) compared children's word learning and comprehension with digital books versus printed books with and without adult assistance. It determined that there were no differences between digital and printed books in terms of children's comprehension and vocabulary when an adult was present; likewise, when digital books incorporated multimedia features consistent with the narrative, they were more beneficial than printed books. Therefore, it concludes that some of these features provide scaffolding similar to that provided by an adult.

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The meta-analysis by Furenes et al. (2021) recognises that adult mediation during the reading of printed books was more effective than the enhancements included in digital books for children's independent reading. As for this discussion, a meta-analysis by Kucirkova (2019) points out that the superiority of parental mediation during the reading of printed books and the quality of the linguistic results obtained by children could be influenced by parents' preference for this type of book and their resistance to digital books.

In the studies mentioned, the mediating role of the adult seems to be based on the assumption that it is replaceable in the child's independent reading skill. However, it is necessary to analyse whether the research conducted in recent years is operating on this assumption. Therefore, it is necessary to systematise how their role in reading digital books is being assessed and what support they are being offered in the interventions. The type and quality of instruction provided to adults during the intervention may impact their performance as mediators.

Consequently, although previous reviews have addressed the impact of digital books on children's comprehension and vocabulary, as well as the role of adult mediation in these skills, there has been insufficient exploration of which dimensions of mediation have been studied and what other language and emerging literacy skills these books might contribute to. Similarly, other factors that could influence the results have not been studied in detail, such as the enhancement included in digital books, the study conditions in which the subjects participated, and the instructional procedures of the interventions. Therefore, a scoping review (Munn et al., 2018) was conducted, guided by the following questions:

1. What do studies conducted over the last decade report about adult mediation in digital book reading, considering enhancement, study conditions, and instructional procedures?
2. What do these studies report about the influence of reading digital books on language and emerging literacy, considering enhancement, study conditions, and instructional procedures?

METHOD

Item search and selection

Between September and December 2022, items were searched for in the Web of Science (WOS) and Scopus databases that had been published between 2012 and December 2021. A search range of ten years was established from the start of the search, considering the years of greatest research development in the field according to WOS. Different combinations of the following words were used: digital literacy, digital practices, digital book, e-book, electronic book, young children, toddlers, preschoolers, preschool education, kindergarten, language.

The results yielded 121 articles in WOS and 100 in Scopus. At this stage, 86 articles from WOS and 7 from Scopus were withdrawn because, although they addressed issues related to digital literacy, they did not develop interventions based on digital books that would allow for the observation of effects on mediation or on children's language skills and emerging literacy.

More specific filters were then applied to analyse the 128 articles obtained in the previous step, and the following records were excluded: duplicates (=1); theoretical and literature reviews (=10); those involving children in grades higher than or equal to first grade (=13); unrelated to language and emerging literacy (=22); from populations with atypical linguistic-communicative profiles (=21); involving bilingual, multilingual subjects and those oriented towards second language teaching (=10); focused on educator performance and classroom interventions (=18); on literacy games that are not in book format (=3); observational studies on home literacy environments that did not involve interventions based on digital books (=4); that did not use books available in tablet, smartphone, iPad or computer format (=1). It should be noted that research on atypical children (e.g., autistic children) and bilingual children was not included in order to exclude variability related to their linguistic or communicative performance. In total, we got 25 items.

To expand the search, the snowball strategy was used. Papers published by the most cited authors in the field were reviewed. Next, the bibliographic references of the 25 filtered articles were examined to find studies that may not have been identified using the keywords. Seven articles were collected using this strategy. A total of 32 articles were analysed; 50% were conducted in the United States; 13% in Canada and Israel respectively, and 24% in Europe (table 1).

Analysis of the articles

All analyses were performed by the first author and then reviewed and agreed upon by the second author at all stages of the process. Thematic regularities were discovered through categorical analysis to answer the questions. Fourteen articles answered question 1; 31 answered question 2; and 13 answered both questions 1 and 2 (table 1).

Table 1

Articles analysed

Authors	Question 1	Question 2	Country
Arslan-Ari I. and Ari F., 2021		+	United States
Courage, 2021		+	Canada
Deasley et al., 2016		+	Canada
Dore et al., 2018		+	United States
Eggleston et al., 2021	+		United States
Guevara et al., 2021	+	+	United States
Korat and Segal-Drori, 2016	+	+	Israel
Korat and Shneor, 2019	+	+	Israel
Korat et al., 2013	+	+	Israel
Korat et al., 2014	+	+	Israel
Kucirkova et al., 2013	+	+	United Kingdom
Kucirkova et al., 2015	+	+	United Kingdom
Kucirkova et al., 2021	+	+	Norway
Munzer et al., 2019a	+	+	United States
Munzer et al., 2019b	+	+	United States
Neuman et al., 2017		+	United States
O'Toole and Kannass, 2018		+	United States
Reich et al., 2019		+	United States
Richter and Courage, 2017		+	Canada
Rvachew et al., 2017	+	+	Canada
Sarı et al., 2019		+	Turkey
Skibbe et al., 2018		+	United States
Smeets and Bus, 2012		+	The Netherlands
Smeets and Bus, 2015		+	The Netherlands
Strouse and Ganea, 2016		+	United States
Strouse and Ganea, 2017a		+	United States
Strouse and Ganea, 2017b	+	+	United States

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Authors	Question 1	Question 2	Country
Takacs and Bus, 2016		+	Hungary
Takacs and Bus, 2018		+	Hungary
Troseth et al., 2020	+	+	United States
Willoughby et al., 2015		+	United States
Xu et al., 2019		+	United States

– Enhancements. Enhancements in digital books were classified according to their medium or function, resulting in: a) support for understanding the printed text (page navigation resources, text highlighting); b) auditory (music); c) audio narration of the story (voice telling the story); d) visual (static images); e) animation (dynamic images, videos); f) direct support for adults (toolbar with reading recommendations for adults); g) support for vocabulary knowledge (dictionary, vocabulary questions); h) hotspot (touching activates sounds or animations); i) hotspot focused on phonological awareness of the word (touching activates phonemes or syllables of the word); j) personalisation (customised marks, such as the name of the child reading); k) focus on an element of the story; l) undefined.

– Study conditions and instructional procedures. The study conditions in which the subjects participated and the instructional procedures used in the interventions were considered. The categories for the study conditions were as follows: a) Printed book/Digital book; b) Basic digital book/Digital book enhanced with some multimedia resource subject to experimental conditions (e.g., static image/animation, Figure 1); c) With adult support/Without adult support; d) Other condition (e.g., attention to image/attention to text). In the instructional procedures, the following categories were identified: a) only providing participants with the digital book; b) familiarising participants with the digital book beforehand; c) instructing participants on how to use the digital book; d) providing participants with reading recommendations; and e) providing reading training.

– Adult mediation. The linguistic input quality model by Rowe and Snow (2020) was adapted to classify the results related to mediation. Studies that reported on: a) adult interactions to promote child participation in back-and-forth exchanges were categorised under the interactive dimension; b) adult behaviours to promote language use at the phonological, morphosyntactic, and discursive levels were included in the linguistic dimension; and c) meaning-oriented interactions were assigned to the conceptual dimension.

– Children's skills. The results of research related to children's skills (Aparici-Aznar & Igualada, 2018; Whitehurst and Lonigan, 1998) were categorised as follows: a) knowledge and alphabetical awareness (skills related to knowledge of letters and alphabetical awareness); b) discourse production (the ability to produce a text, consisting of units larger than a sentence, with a communicative intention in a given context); c) discourse comprehension (the ability to retrieve a text and construct a representation of its content); d) lexical-semantics (the ability to understand or express the content of words); e) pragmatics (the ability to use language during conversational interactions in a context-relevant manner); f) phonology (the ability to recognise and use the sounds of language); g) print awareness (the ability to manipulate the e-book); h) attention (focusing on books as relevant stimuli). It should be noted that the studies reported more than one type of outcome (e.g., discourse comprehension and lexical-semantic ability).

Figure 1

Difference between basic LD (Ldb)/enhanced LD (LDe) with some multimedia resources subject to experimental conditions

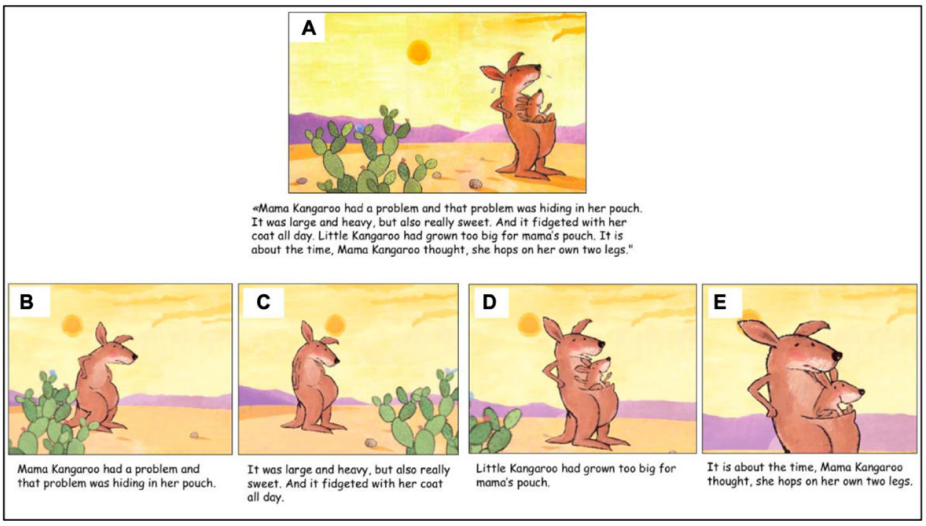

Fig. 1. A scene from *Little Kangaroo*. The static illustration is shown in the upper row (A), whereas screenshots of the animated version of the same illustration are shown in the bottom row (B–E). (Copyright 2007 by Het Woeste Woud, Groningen, The Netherlands).

Note. Adapted from Sarı et al., 2019.

RESULTS

Adult mediation

To contextualise the results, the enhancements identified in the studies linked to this review question are described (table 2). The most common enhancements in the digital books used in this study group are those that support knowledge of the printed text (n=11) and the presence of audio narration (n=12). In studies that employ highlighting, this accompanies the audio narration, which could favour the link between phonological processing and the printed code (e.g. Korat & Segal-Drori, 2016). Next, we count the studies that used digital books with animations (=10), audio resources (=7) and hotspot (=6) to bring elements of the story to life; support understanding of the narrative plot; communicate the emotional states of the characters; or access phonological knowledge of the word. Finally, there are studies that used digital books with dictionaries (=3), personalisation (=3) and focus (=1).

Table 2

Enhancements used in adult mediation studies

Enhancement	Articles
Supports knowledge of the printed word	Korat et al., 2013; 2014; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Kucirkova et al., 2013; 2015; 2021; Munzer et al., 2019a; 2019b; Rvachew et al., 2017; Strouse and Ganea, 2017b.
Auditive	Eggleston et al., 2021; Korat et al., 2013; Korat and Segal-Drori, 2016; Kucirkova et al., 2013; 2015; Munzer et al., 2019a; 2019b; Strouse and Ganea, 2017b.

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Enhancement	Articles
Audio narration	Guevara et al., 2021; Korat et al., 2013; 2014; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Munzer et al., 2019a; 2019b; Strouse and Ganea, 2017b; Troseth et al., 2020.
Visual	Munzer et al., 2019a; 2019b; Korat et al., 2014; Kucirkova et al., 2013; 2015.
Animation	Guevara et al., 2021; Korat et al., 2013; 2014; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Munzer et al., 2019a; 2019b; Rvachew et al., 2017; Strouse and Ganea, 2017b; Troseth et al., 2020.
Direct support for adults	Rvachew et al., 2017.
Supporting vocabulary knowledge	Korat and Shneor, 2019; Korat et al., 2014; 2013.
Hotspot	Eggleston et al., 2021; Guevara et al., 2021; Korat and Segal-Drori, 2016; Munzer et al., 2019a; 2019b; Strouse and Ganea, 2017b.
Personalisation	Kucirkova et al., 2021; 2013; 2015.
Zoom	Kucirkova et al., 2021.

As for adult mediation (table 3), 12 studies reported results on the interactive dimension of adult input; 5 on the conceptual dimension; and 2 on the linguistic dimension. The experimental studies compiled subject the study subjects to different study conditions (table 4) to systematise the effects of digital books on adult mediation in each of these dimensions. The most common are between digital and printed books (=8) and between basic and enhanced digital books (=6).

Table 3

Dimensions of adult mediation

Dimension	Articles
Interactive	Eggleston et al., 2021; Guevara et al., 2021; Korat et al., 2013; Korat and Segal-Drori, 2016; Kucirkova et al., 2013; 2015; 2021; Munzer et al., 2019a; 2019b; Rvachew et al., 2017; Strouse and Ganea, 2017b; Troseth et al., 2020.
Conceptual	Guevara et al., 2021; Korat et al., 2013; 2014; Korat and Shneor, 2019; Rvachew et al., 2017.
Linguistics	Korat et al., 2013; Rvachew et al., 2017.
Interactive, conceptual	Guevara et al., 2021.
Interactive, conceptual, linguistic	Korat et al., 2013; Rvachew et al., 2017.

In terms of printed books versus digital books, five studies report that when using digital books, adults tend to praise, encourage, and focus more on children during reading than when using printed books (e.g., Eggleston et al., 2021; Korat and Segal-Drori, 2016). Similarly, five studies found favourable results for the interactive dimension when using printed books over digital books, including more speech expansion and more interactions (e.g., Eggleston et al., 2021; Guevara et al., 2021; Korat & Segal-Drori, 2016). Although this pattern of results appears contradictory, it is important to note that the variables used in the studies are diverse and that instructional procedures could influence the results, as explained in the following paragraph.

Table 4

Study conditions in adult mediation studies

Study conditions	Articles
LD versus LI	Eggleston et al., 2021; Guevara et al., 2021; Korat and Segal-Drori, 2016; Korat et al., 2013; Munzer et al., 2019a; Munzer et al., 2019b; Rvachew et al., 2017; Strouse and Ganea, 2017b
LDb versus LDe	Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2014; Munzer et al., 2019a; Munzer et al., 2019b; Troseth et al., 2020
CAP versus SAP	Korat et al., 2013; Korat et al., 2014; Korat and Segal-Drori, 2016; Korat and Shneor, 2019

Note. LD = digital book; LI = printed book; LDb = basic digital book; LDe = enhanced digital book; CAP = reading with adult support; SAP = reading without adult support.

Analysis of the instructional procedures of the group that compared printed books versus digital books (table 5) reveals that the two studies that used digital books with recommendations for adults to ask questions or make comments to children during reading obtained favourable results over printed books for adult mediation in interactions (Guevara et al., 2021) and in helping children understand the text and learn the printed word (Korat et al., 2013). In contrast, studies that reported favourable results for printed books only used instructional procedures such as instructions for use and book delivery.

Table 5

Instructional procedures in adult mediation studies

Implementation procedures	Articles
Book delivery	Kucirkova et al., 2013; Strouse and Ganea, 2017b; Troseth et al., 2020
Prior familiarisation with the LD	Kucirkova et al., 2015; Rvachew et al., 2017
Instructions on the use of LD	Eggleston et al., 2021; Munzer et al., 2019a; 2019b; Korat and Shneor, 2019; Korat et al., 2014; Korat and Segal-Drori, 2016
LC recommendations	Guevara et al., 2021; Korat et al., 2013; Kucirkova et al., 2021
Training	Korat and Segal-Drori, 2016

Note. LD = digital book; LC = shared reading.

When studying the three dimensions of interactivity, language and concept, it has been found that adults tend to talk more with their children about the story, the structure of words and their meaning when using digital books than when using printed books (e.g. Korat et al., 2013; Rvachew et al., 2017).

As for the comparison between basic and enhanced digital books, five of the six studies in this group report favourable results for enhanced digital books, particularly in terms of interactivity (Korat and Segal-Drori, 2016; Munzer et al., 2019a; Troseth et al., 2020) and conceptual understanding (Korat and Shneor, 2019; Korat et al., 2014). In the studies, the procedure of providing instructions for use predominates (=5), with the exception of Troseth et al. (2020), which uses book delivery, but includes an enhancement consisting of a character inserted into the digital book to encourage parents to talk to their children by providing dialogic reading strategies during reading. Only one study reports results more favourable to the basic digital book (Munzer et al., 2019b). It is striking that even though in this study the basic digital book differed from the enhanced digital book in terms of a group of enhancements (audio improvements, animations, and hotspots) and not just one of them, the basic book performed better.

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Additionally, studies by Korat et al. (2013; 2014); Korat and Segal-Drori (2016), and Korat and Shneor (2019) explore the role of adults in enhanced digital books. Their findings indicate that enhancements aligned with the content of the story and those that favour the conceptual dimension of mediation —such as a dictionary— can encourage adults to effectively support children while reading digital books. In these studies, the condition of maximum effectiveness for the child is LDe with adult support. It should be noted that only Korat et al. (2013) and Korat and Segal-Drori (2016) use procedures such as reading recommendations and training outside the book, which is why the role of enhancement materials, particularly dictionaries, seems to be fundamental in improving the quality of adult mediation and, along with it, children's language skills.

Children's skills

The enhancements (table 6) most commonly used in digital books in this study group are audio narration (=28) and those that support knowledge of the printed text (=22). Secondly, there are animations (=20), hotspots (=17) and audio resources (=13), such as background music or sounds associated with objects or characters in the story. Then there is the use of static images which, beyond illustrating the story, enrich specific aspects of it (=6). Finally, research reports the use of more specific resources in e-books, such as elements that support vocabulary knowledge (=4) and personalisation (=3).

Table 6

Enhancements used in studies addressing children's abilities

Enhancement	Articles
Supports knowledge of the printed word	Arslan-Ari I. and Ari F., 2021; Courage, 2021; Dore et al., 2018; Korat and Shneor, 2019; Korat and Segal-Drori, 2016; Korat et al., 2013; 2014; Kucirkova et al., 2013; 2015; 2021; Munzer et al., 2019b; Neuman et al., 2017; O'Toole and Kannass, 2018; Richter and Courage, 2017; Rvachew et al., 2017; Skibbe et al., 2018; Strouse and Ganea, 2016; 2017a; 2017b; Willoughby et al., 2015; Xu et al., 2019.
Auditive	Courage, 2021; Korat and Segal-Drori, 2016; Korat et al., 2013; Kucirkova et al., 2013; 2015; Munzer et al., 2019a; Richter and Courage, 2017; Sarı et al., 2019; Smeets and Bus, 2012; 2015; Strouse and Ganea, 2017b; Willoughby et al., 2015.
Audio narration	Arslan-Ari I. and Ari F., 2021; Courage, 2021; Deasley et al. 2016; Dore et al., 2018; Guevara et al., 2021; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2013; 2014; Kucirkova et al., 2013; 2015; 2021; Munzer et al., 2019b; Neuman et al. 2017; O'Toole and Kannass, 2018; Reich et al., 2019; Richter and Courage, 2017; Rvachew et al., 2017; Sarı et al., 2019; Skibbe et., 2018; Smeets and Bus, 2012; 2015; Strouse and Ganea, 2016; 2017a; 2017b; Takacs and Bus, 2016; 2018; Troseth et al., 2020; Willoughby et al., 2015; Xu et al., 2019.
Visual	Korat et al., 2014; Munzer et al., 2019a; Munzer et al., 2019b; Sarı et al., 2019; Takacs and Bus, 2016; Willoughby et al., 2015.
Animation	Courage, 2021; Deasley et al. 2016; Guevara et al., 2021; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2013; 2014; Munzer et al., 2019b; Neuman et al. 2017; Reich et al., 2019; Richter and Courage, 2017; Rvachew et al., 2017; Sarı et al., 2019; Smeets and Bus, 2012; 2015; Strouse and Ganea, 2016; 2017b; Takacs and Bus, 2016; Troseth et al., 2020.
Supporting vocabulary knowledge	Korat and Shneor, 2019; Korat et al., 2013; 2014; Smeets and Bus, 2012.
Hotspot	Courage, 2021; Guevara et al., 2021; Korat and Shneor, 2019; Korat and Segal-Drori, 2016; Munzer et al., 2019a; 2019b; Richter and Courage, 2017; Smeets and Bus, 2015; Strouse and Ganea, 2016; 2017b.
Hotspot for phonological knowledge	Deasley et al. 2016; Korat and Segal-Drori, 2016; Korat et al., 2014; Munzer et al., 2019b; Reich et al., 2019; Smeets and Bus, 2012; Willoughby et al., 2015.
Personalisation	Kucirkova et al., 2013; 2015; 2021.
Zoom	Kucirkova et al., 2021.

With regard to the influence of digital books on children's skills (table 7), studies focused on examining their influence on children's lexical-semantic skills (=15) and discourse comprehension (=11). Six studies were then identified that addressed pragmatic skills; five addressed reading attention; and four addressed skills related to knowledge of the alphabet. A smaller number addressed behaviours related to the use of digital books (=3); phonological skills (=2); and discourse production (=3). Nearly half of the studies (=15) assessed more than one skill.

Table 7

Children's skills reported in studies

Children's skills	Articles
Literacy knowledge and awareness	Deasley et al. 2016; Korat and Segal-Drori, 2016; Rvachew et al., 2017; Willoughby et al., 2015.
Discourse production	Kucirkova et al., 2013; 2015; Strouse and Ganea, 2016.
Discourse comprehension	Courage, 2021; Dore et al., 2018; Neuman et al. 2017; O'Toole and Kannass, 2018; Reich et al., 2019; Richter and Courage, 2017; Sarı et al., 2019; Smeets and Bus, 2015; Takacs and Bus, 2016; 2018; Troseth et al., 2020.
Lexical semantic	Arslan-Ari I. and Ari F., 2021; Guevara et al., 2021; Korat and Shneor, 2019; Korat et al., 2013; 2014; Kucirkova et al., 2021; Neuman et al. 2017; O'Toole and Kannass, 2018; Sarı et al., 2019; Smeets and Bus, 2012; 2015; Strouse and Ganea, 2017a; 2017b; Takacs and Bus, 2016; Troseth et al., 2020.
Pragmatic	Guevara et al., 2021; Kucirkova et al., 2021; Munzer et al., 2019b; Reich et al., 2019; Richter and Courage, 2017; Strouse and Ganea, 2017b.
Phonological	Korat et al., 2013; Korat and Segal-Drori, 2016.
Use of the book	Munzer et al., 2019a; Strouse and Ganea, 2017b; Xu et al., 2019.
Attention	Courage, 2021; Richter and Courage, 2017; Skibbe et., 2018; Takacs and Bus, 2016; Troseth et al., 2020.

With regard to study conditions (table 8), 16 studies compared groups that read digital books versus printed books. In this group, nine point to favourable results for digital: Four studies point to support for lexical-semantic skills (Korat et al., 2013; O'Toole and Kannass, 2018; Strouse and Ganea, 2017a, 2017b); 1 to comprehension (Courage et al., 2021); 1 to pragmatic skills (Strouse and Ganea, 2017b); 1 to alphabetical knowledge and awareness (Rvachew et al., 2017); and 2 to phonological awareness (Korat and Segal-Drori, 2016; Korat et al., 2013). Analysis of the instructional procedures (table 9) in the studies favourable to digital books shows that five used independent reading by the child with audio narration support and, within this group, three gave instructions to the child; one used prior familiarisation of the child with the digital book; and one did not give any instruction. In the remaining four studies in the group favouring digital books, an adult close to the child or a volunteer did the reading, and in three of these, the children received some kind of instruction; in contrast, in this subgroup, the children did not receive any instruction.

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Table 8

Study conditions in studies addressing children's skills

Comparison conditions	Articles
LD versus LI	Courage, 2021; Deasley et al., 2016; Guevara et al., 2021; Korat et al., 2013; Korat and Segal-Drori, 2016; Munzer et al., 2019b; Neuman et al., 2017; O'Toole y Kannass, 2018; Reich et al., 2019; Richter and Courage, 2017; Rvachew et al., 2017; Strouse and Ganea, 2017a; Strouse and Ganea, 2017b; Willoughby et al., 2015; Xu et al., 2019
LDb versus LDe	Deasley et al., 2016; Dore et al., 2018; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2014; Kucirkova et al., 2021; Munzer et al., 2019b; Sarı et al., 2019; Smeets and Bus, 2012; Smeets and Bus, 2015; Takacs and Bus, 2016; Troseth et al., 2020.
CAP versus SAP	Dore et al., 2018; Korat and Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2013; Korat et al., 2014; O'Toole y Kannass, 2018.
Another condition	Arslan-Ari I. and Ari F., 2021; Skibbe et., 2018; Strouse and Ganea, 2016; Takacs and Bus, 2018
None	Kucirkova et al., 2013; Kucirkova et al., 2015

Note. LD = digital book; LI = printed book; LDb = basic digital book; LDe = enhanced digital book; CAP = reading with adult support; SAP = reading without adult support.

Among the research studies that compared digital books with printed books, with favourable results for the latter (=7), are those that reported findings in favour of knowledge and literacy skills (Deasley et al., 2016; Willoughby et al., 2015); pragmatic skills (Munzer et al., 2019b; Richter & Courage, 2017); discourse comprehension (Reich et al., 2019); print knowledge (Xu et al., 2019) and general linguistic ability (semantic, morphosyntactic and pragmatic; Guevara et al., 2021). In this group, five studies used independent reading by the child with audio narration, and two used a parent as the reader. In the group that uses audio narration, only two give instructions to the child; in the group where parents participate, the child receives no instruction.

Among the studies that employed more specific group study conditions were those that compared children's performance after reading a basic digital book and an enhanced digital book (n=12). Nine studies report favourable effects on enhanced digital book conditions, with six of them pointing to positive results for semantic skills (Korat et al., 2014; Korat & Segal-Drori, 2016; Korat & Shneor, 2019; Smeets & Bus, 2012; 2015; Takacs & Bus, 2016); three for comprehension (Dore et al., 2018; Sarı et al., 2019; Takacs & Bus, 2016); and 1 for phonological skills and knowledge of the alphabet (Korat & Segal-Drori, 2016). Among the enhancements studied to improve lexical-semantic ability are dictionaries, animations, and vocabulary questions; among those aimed at comprehension are audio narration, animations, and visual and sound effects consistent with the story. The interactive feature that reveals the phonological structure of the word was an enhancement that promoted the children's phonological awareness.

Regarding the instructional procedures used in studies that employed enhanced digital books and found favourable effects on lexical-semantic skills, three used independent reading by the child with audio narration and delivery of the device without any instruction; one used instruction for both the mother and the child; and one used instruction for the adult only and no instruction for the child. In contrast, all studies that found favourable effects of enhanced digital books on comprehension used independent reading by the child, and only one gave instructions.

Table 9

Instructional procedures in studies addressing children's skills

Instructional procedures	Articles
None	Deasley et al., 2016*; Guevara et al., 2021*; Korat et al., 2013*; 2014*; Korat & Segal-Drori, 2016*; Kucirkova et al., 2013*; 2015*; 2021*; Munzer et al., 2019b*; Rvachew et al., 2017*; Strouse and Ganea, 2017b*; Willoughby et al., 2015.
Book delivery	Arslan-Ari I. and Ari F., 2021*; Kucirkova et al., 2013; Neuman et al., 2017*; Reich et al., 2019*; Sarı et al., 2019*; Skibbe et al., 2018*; Smeets and Bus, 2012*; 2015*; Strouse and Ganea, 2017b; Takacs and Bus, 2016*; 2018*; Troseth et al., 2020*.
Prior familiarisation with the LD	O'Toole and Kannass, 2018*; Kucirkova et al., 2015; Rvachew et al., 2017.
Instructions on the use of LD	Courage, 2021*; Dore et al., 2018*; Korat and Segal-Drori, 2016; Korat and Shneor, 2019 (adulto and niño); Korat et al., 2014; Munzer et al., 2019b; Richter and Courage, 2017*; Strouse and Ganea, 2016; 2017a*; Xu et al., 2019*.
LC recommendations	Guevara et al., 2021; Korat et al., 2013; Kucirkova et al., 2021.
Training	Korat and Segal-Drori, 2016.

Note. LD = digital book; LC = shared reading;

* child-centred teaching approach.

Of the six studies that used adult-supported versus unsupported conditions, five revealed favourable results for the supported condition in lexical-semantic skills (Korat & Segal-Drori, 2016; Korat and Shneor, 2019; Korat et al., 2013; 2014), discourse comprehension (Dore et al., 2018), and children's phonological awareness (Korat et al., 2013). An adult caregiver participated in all of these studies, whereas the only study in which an adult researcher participated (O'Toole & Kannass, 2018) determined that the child learned more words from the digital book without support and with an audio narrator than from the experimenter reading aloud. In this latest study, the child was familiarised with the digital book beforehand; in contrast, in the remaining studies, three used instructions for use, one used reading recommendations, and one used training.

DISCUSSION AND CONCLUSIONS

This review aims at analysing evidence from the last ten years on digital books and their relationship with adult mediation and language skills and emerging literacy, considering the role of enhancements, participants' study conditions and the instructional procedures of the interventions. The analysis showed studies focused on the interactive dimension of mediation, lexical-semantic skills, and discourse comprehension in children, as well as widespread use of enhancements that support knowledge of the printed word and audio narration. Finally, it showed slightly favourable results for digital books over printed books, and for enhanced digital books over basic ones, particularly for children's lexical-semantic skills and the interactive dimension of adult input. It also showed favourable results for the condition with adult support over without support and limited use of reading recommendations. These findings show that the impact of digital books on adult mediation or children's skills is inseparable from enhancement.

Analysis of the enhancements indicated that the most commonly used are supports for print comprehension and audio narration. However, their presence is not related to a possible superiority of digital books over printed books in terms of children's skills; in fact, some of the studies in this review recognise favourable results for audio-narration (e.g. O'Toole & Kannass, 2018) and others, an absence of differences (e.g. Neuman et al., 2017). Furenes et al. (2021) point out that printed books may be superior to digital ones in terms of comprehension and vocabulary when the only difference between them is the

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use of audio narration and text highlighting. Therefore, this result suggests that other enhancements could have a greater influence on users' skills. Dictionaries, animations, vocabulary questions, and hotspots for recognising the phonological structure of words (e.g., Korat & Segal-Drori, 2016) proved to be effective when comparing enhanced digital books with basic ones.

The comparison between enhanced digital books and basic digital books allows us to highlight the specific role of enhancements and focus the discussion on design aspects rather than on comparisons with printed books (Kucirkova, 2019). According to Furenes et al. (2021), the effectiveness of digital books depends on the quality of the enhancements, so it is important to continue researching in this area. Although our results show progress in this direction, studies remain less numerous than those comparing digital books with printed ones, which may be explained by the persistent belief in the superiority of printed books over digital ones. To move forward, it is essential to incorporate users' perceptions of digital books and their enhancements.

Although few studies compared the condition with adult support versus without support, the results are clear: the digital book enhanced with adult support is the most effective condition for learning. In accordance with Guernsey and Levine (2015), adult support is essential for promoting children's skills and providing them with cognitive and emotional support while reading; in other words, doing what the device cannot achieve on its own. Therefore, it is important to continue making progress in areas that will improve the quality of mediation.

One outstanding issue is to optimise instructional procedures, offering adults more tools to mediate in these new reading contexts. Digital books can be accessible and economical alternatives to interventions with printed books. The use of a character in the digital book to encourage interaction between parents and children has shown promise in improving mediation (Troseth et al., 2020), reducing the time and resource costs associated with shared reading training. Therefore, developing digital books with recommendations for adults would facilitate their adoption in vulnerable populations.

While one of the main strengths of this study was to provide an overview of the factors involved in the influence of digital books on mediation and emerging language and literacy, one limitation is that the classifications of enhancements could be refined. To this end, studies should carefully describe each multimedia resource incorporated and its function.

The results suggest that future research should continue to explore enhancements aimed at both children and adults. This research showed that it is possible to work on other skills beyond children's comprehension and vocabulary and other dimensions of mediation, in addition to interactive mediation, through specific enhancement activities, which can be tested under specific experimental conditions.

In conclusion, this study highlights the need for researchers and software developers to seek out elements that are attractive, accessible, and well-suited to the skill being taught. One pending task is to transition towards instructional procedures that provide more support to adults on how to read with children. Technological support could be a great ally to this end.

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REFERENCES

Aparici-Aznar, M., & Igualada, A. (2018). *El desarrollo del lenguaje y la comunicación en la infancia.* Editorial UOC.

Arslan-Ari, I., & Ari, F. (2021). The effect of visual cues in e-books on pre-K children's visual attention, word recognition, and comprehension: An eye tracking study. *Journal of Research on Technology in Education*, *54*(5), 800-814. https://doi.org/10.1080/15391523.2021.1938763

Biesta, G. J. J. (2010). Why "What Works" still won't work: From evidence-based education to value-based education. *Studies in Philosophy and Education*, *29*(5), 491-503. https://doi.org/10.1007/s11217-010-9191-x

Bus, A. G., Neuman, S. B., & Roskos, K. (2020). Screens, apps, and digital books for young children: The promise of multimedia. *AERA Open, 6*(1), 1-6. https://doi.org/10.1177/2332858420901494

Courage, M. L., Frizzell, L. M., Walsh, C. S., & Smith, M. (2021). Toddlers using tablets: They engage, play, and learn. *Frontiers in Psychology, 12*, Article 564479. https://doi.org/10.3389/fpsyg.2021.564479

Deasley, S., Evans, M. A., Nowak, S., & Willoughby, D. (2016). Sex differences in emergent literacy and reading behaviour in junior kindergarten. *Canadian Journal of School Psychology, 33*(1), 26-43. https://doi.org/10.1177/0829573516645773

Dore, R. A., Hassinger-Das, B., Brezack, N., Valladares, T. L., Paller, A., Vu, L., Golinkoff, R. M., & Hirsh-Pasek, K. (2018). The parent advantage in fostering children's e-book comprehension. *Early Childhood Research Quarterly*, *44*, 24-33. https://doi.org/10.1016/j.ecresq.2018.02.002

Dore, R. A., Logan, J., Lin, T.-J., Purtell, K. M., & Justice, L. (2020). Characteristics of children's media use and gains in language and literacy skills. *Frontiers in Psychology, 11*, Article 2224. https://doi.org/10.3389/fpsyg.2020.02224

Dowdall, N., Melendez-Torres, G. J., Murray, L., Gardner, F., Hartford, L., & Cooper, P. J. (2020). Shared picture book reading interventions for child language development: A systematic review and meta-analysis. *Child Development*, *91*(2), 383-399. https://doi.org/10.1111/cdev.13225

Eggleston, C., Wang, X. C., & Choi, Y. (2021). Mother-toddler shared reading with electronic versus print books: Mothers' language use and perspectives. *Early Education and Development, 33*(7), 1152-1174. https://doi.org/10.1080/10409289.2021.1943638

Flack, Z. M., Field, A. P., & Horst, J. S. (2018). The effects of shared storybook reading on word learning: A meta-analysis. *Developmental Psychology, 54*(7), 1334–1346. https://doi.org/10.1037/dev0000512

Furenes, M. I., Kucirkova, N., & Bus, A. G. (2021). A comparison of children's reading on paper versus screen: A meta-analysis. *Review of Educational Research, 91*(4), 483-517. https://doi.org/10.3102/0034654321998074

Grolig, L. (2020). Shared storybook reading and oral language development: A bioecological perspective. *Frontiers in Psychology, 11*, Article 1818. https://doi.org/10.3389/fpsyg.2020.01818

Guernsey, L., & Levine, M. (2015). *Tap, click, read: Growing readers in a world of screens* (First). Jossey-Bass. A Wiley Brand.

Guevara, J. P., Erkoboni, D., Gerdes, M., Winston, S., Sands, D., Rogers, K., Haecker, T., Jimenez, M. E., & Mendelsohn, A. L. (2021). Promoting early literacy using digital devices: A pilot randomized controlled trial. *Academic Pediatrics*, *21*(6), 1001-1008. https://doi.org/10.1016/j.acap.2021.05.013

Haring-Biel, C., Buzhardt, J., Brown, J. A., Romano, M. K., Lorio, C. M., Windsor, K. S., Kaczmarek, L. A., Gwin, R., Sandall, S. S., & Goldstein, H. (2020). Language interventions taught to caregivers in homes and classrooms: A review of intervention and implementation fidelity. *Early Childhood Research Quarterly*, *50*, 140-156. https://doi.org/10.1016/j.ecresq.2018.12.002

Hutton, J. S., Huang, G., Sahay, R. D., DeWitt, T., & Ittenbach, R. F. (2020). A novel, composite measure of screen-based media use in young children (ScreenQ) and associations with parenting practices and cognitive abilities. *Pediatric Research*, *87*(7), 1211-1218. https://doi.org/10.1038/s41390-020-0765-1

Korat, O., & Falk, Y. (2019). Ten years after: Revisiting the question of e-book quality as early language and literacy support. *Journal of Early Childhood Literacy*, *19*(2), 206-223. https://doi.org/10.1177/1468798417712105

Korat, O., & Shneor, D. (2019). Can e-books support low SES parental mediation to enrich children's vocabulary? *First Language*, *39*(3), 344-364. https://doi.org/10.1177/0142723718822443

Korat, O., & Segal-Drori, O. (2016). E-book and printed book reading in different contexts as emergent literacy facilitator. *Early Education and Development*, *27*(4), 532-550. https://doi.org/10.1080/10409289.2016.1095613

Korat, O., Levin, I., Atishkin, S., & Turgeman, M. (2014). E-book as facilitator of vocabulary acquisition: Support of adults, dynamic dictionary and static dictionary. *Reading and Writing*, *27*(4), 613-629. https://doi.org/10.1007/s11145-013-9474-z

Korat, O., Shamir, A., & Heibal, S. (2013). Expanding the boundaries of shared book reading: E-books and printed books in parent–child reading as support for children's language. *First Language*, *33*(5), 504-523. https://doi.org/10.1177/0142723713503148

Kucirkova, N. (2017). An integrative framework for studying, designing and conceptualising interactivity in children's digital books. *British Educational Research Journal*, *43*(6), 1168-1185. https://doi.org/10.1002/berj.3317

Kucirkova, N. (2019). Children's reading with digital books: Past moving quickly to the future. *Child Development Perspectives*, *13*(4), 208-214. https://doi.org/10.1111/cdep.12339

Kucirkova, N., Gattis, M., Spargo, T. P., De-Vega, B. S., & Flewitt, R. (2021). An empirical investigation of parent-child shared reading of digital personalized books. *International Journal of Educational Research*, *105*, 1-12. https://doi.org/10.1016/j.ijer.2020.101710

Kucirkova, N., Messer, D., Sheehy, K., & Flewitt, R. (2013). Sharing personalised stories on iPads: a close look at one parent–child interaction. *Literacy*, *47*(3), 115-122. https://doi.org/10.1111/lit.12003

Kucirkova, N., Sheehy, K., & Messer, D. (2015). A Vygotskian perspective on parent-child talk during iPad story sharing. *Journal of Research in Reading*, *38*(4), 428-441. https://doi.org/10.1111/1467-9817.12030

Labbo, L. D., & Kuhn, M. R. (2000). Weaving chains of affect and cognition: A young child's understanding of CD-ROM talking books. *Journal of Literacy Research*, *32*(2), 187-210. https://doi.org/10.1080/10862960009548073

Madigan, S., McArthur, B. A., Anhorn, C., Eirich, R., & Christakis, D. A. (2020). Associations between screen use and child language skills: A systematic review and meta-analysis. *JAMA Pediatrics*, *174*(7), 665–675. https://doi.org/10.1001/jamapediatrics.2020.0327

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*(1). https://doi.org/10.1186/s12874-018-0611-x

Munzer, T. G., Miller, A. L., Weeks, H. M., Kaciroti, N., & Radesky, J. (2019a). Differences in parent-toddler interactions with electronic versus print books. *Pediatrics*, *143*(4). https://doi.org/10.1542/peds.2018-2012

Munzer, T. G., Miller, A. L., Weeks, H. M., Kaciroti, N., & Radesky, J. (2019b). Parent-toddler social reciprocity during reading from electronic tablets vs print books. *JAMA Pediatrics*, *173*(11), 1076-1083. https://doi.org/10.1001/jamapediatrics.2019.3480

Neuman, S. B., Wong, K. M., & Kaefer, T. (2017). Content not form predicts oral language comprehension: The influence of the medium on preschoolers' story understanding. *Reading and Writing*, *30*(8), 1753-1771. https://doi.org/10.1007/s11145-017-9750-4

Noble, C., Sala, G., Peter, M., Lingwood, J., Rowland, C. F., Gobet, F., & Pine, J. (2019). The impact of shared book reading on children's language skills: A meta-analysis. *Educational Research Review*, *28*, 100290. https://doi.org/10.1016/j.edurev.2019.100290

O'Toole, K. J., & Kannass, K. N. (2018). Emergent literacy in print and electronic contexts: The influence of book type, narration source, and attention. *Journal of Experimental Child Psychology*, *173*, 100-115. https://doi.org/10.1016/j.jecp.2018.03.013

Parish-Morris, J., Mahajan, N., Hirsh-Pasek, K., Golinkoff, R. M., & Collins, M. F. (2013). Once upon a time: Parent–child dialogue and storybook reading in the electronic era. *Mind, Brain, and Education*, *7*(3), 200–211. https://doi.org/10.1111/mbe.12028

Reich, S. M., Yau, J. C., & Warschauer, M. (2016). Tablet-based ebooks for young children: What does the research say? *Journal of Developmental and Behavioral Pediatrics*, *37*(7), 585–591. https://doi.org/10.1097/DBP.0000000000000335

Reich, S. M., Yau, J. C., Xu, Y., Muskat, T., Uvalle, J., & Cannata, D. (2019). Digital or print? A comparison of preschoolers' comprehension, vocabulary, and engagement from a print book and an e-book. *AERA Open*, *5*(3). https://doi.org/10.1177/2332858419878389

Richter, A., & Courage, M. L. (2017). Comparing electronic and paper storybooks for preschoolers: Attention, engagement, and recall. *Journal of Applied Developmental Psychology*, *48*, 92-102. https://doi.org/10.1016/j.appdev.2017.01.002

Rowe, M. L., & Snow, C. E. (2020). Analyzing input quality along three dimensions: Interactive, linguistic, and conceptual. *Journal of Child Language*, *47*(1), 5-21. https://doi.org/10.1017/S0305000919000655

Rvachew, S., Rees, K., Carolan, E., & Nadig, A. (2017). Improving emergent literacy with school-based shared reading: Paper versus ebooks. *International Journal of Child-Computer Interaction*, *12*, 24-29. https://doi.org/10.1016/j.ijcci.2017.01.002

Sarı, B., Başal, H. A., Takacs, Z. K., & Bus, A. G. (2019). A randomized controlled trial to test efficacy of digital enhancements of storybooks in support of narrative comprehension and word learning. *Journal of Experimental Child Psychology*, *179*, 212-226. https://doi.org/10.1016/j.jecp.2018.11.006

Sénéchal, M., Lefevre, J.-A., Hudson, E., & Lawson, E. P. (1996). Knowledge of storybooks as a predictor of young children's vocabulary. *Journal of Educational Psychology*, *88*(3). https://doi.org/10.1037/0022-0663.88.3.520

Skibbe, L. E., Thompson, J. L., & Plavnick, J. B. (2018). Preschoolers' visual attention during electronic storybook reading as related to different types of textual supports. *Early Childhood Education Journal*, *46*(4), 419-426. https://doi.org/10.1007/s10643-017-0876-4

Smeets, D. J. H., & Bus, A. G. (2012). Interactive electronic storybooks for kindergartners to promote vocabulary growth. *Journal of Experimental Child Psychology*, *112*(1), 36-55. https://doi.org/10.1016/j.jecp.2011.12.003

Smeets, D. J. H., & Bus, A. G. (2015). The interactive animated e-book as a word learning device for kindergartners. *Applied Psycholinguistics*, *36*(4), 899–920. https://doi.org/10.1017/S0142716413000556

Strouse, G. A., & Ganea, P. A. (2016). Are prompts provided by electronic books as effective for teaching preschoolers a biological concept as those provided by adults? *Early Education and Development*, *27*(8), 1190-1204. https://doi.org/10.1080/10409289.2016.1210457

Strouse, G. A., & Ganea, P. A. (2017a). Toddlers' word learning and transfer from electronic and print books. *Journal of Experimental Child Psychology*, *156*, 129-142. https://doi.org/10.1016/j.jecp.2016.12.001

Strouse, G. A., & Ganea, P. A. (2017b). Parent-toddler behavior and language differ when reading electronic and print picture books. *Frontiers in Psychology*, *8*, Article 677. https://doi.org/10.3389/fpsyg.2017.00677

Takacs, Z. K., & Bus, A. G. (2016). Benefits of motion in animated storybooks for children's visual attention and story comprehension. An eye-tracking study. *Frontiers in Psychology*, *7*, Article 1591. https://doi.org/10.3389/fpsyg.2016.01591

Takacs, Z. K., & Bus, A. G. (2018). How pictures in picture storybooks support young children's story comprehension: An eye-tracking experiment. *Journal of Experimental Child Psychology*, *174*, 1-12. https://doi.org/10.1016/j.jecp.2018.04.013

Takacs, Z. K., Swart, E. K., & Bus, A. G. (2014). Can the computer replace the adult for storybook reading? A meta-analysis on the effects of multimedia stories as compared to sharing print stories with an adult. *Frontiers in Psychology*, *5*, Article 1366. https://doi.org/10.3389/fpsyg.2014.01366

Takacs, Z. K., Swart, E. K., & Bus, A. G. (2015). Benefits and pitfalls of multimedia and interactive features in technology-enhanced storybooks: A meta-analysis. *Review of Educational Research*, *85*(4), 698-739. https://doi.org/10.3102/0034654314566989

Troseth, G. L., Strouse, G. A., Flores, I., Stuckelman, Z. D., & Russo-Johnson, C. (2020). An enhanced eBook facilitates parent-child talk during shared reading by families of low socioeconomic status. *Early Childhood Research Quarterly*, *50*, 45-58. https://doi.org/10.1016/j.ecresq.2019.02.009

Tzuriel, D. (2013). Mediated learning experience and cognitive modifiability. *Journal of Cognitive Education and Psychology, 12*(1), 59–80. https://doi.org/10.1891/1945-8959.12.1.59

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24*(4), 552–559. https://doi.org/10.1037/0012-1649.24.4.552

Whitehurst, G. J., & Lonigan, C. J. (1998). Child Development and emergent literacy. *Child Development*, *69*(3), 848-872. https://doi.org/10.1111/j.1467-8624.1998.tb06247.x

Willoughby, D., Evans, M. A., & Nowak, S. (2015). Do ABC eBooks boost engagement and learning in preschoolers? An experimental study comparing eBooks with paper ABC and storybook controls. *Computers and Education*, *82*, 107-117. https://doi.org/10.1016/j.compedu.2014.11.008

Xu, Y., Yau, J. C., & Reich, S. M. (2019). The added challenge of digital reading: Exploring young children's page turning behaviors. In *Proceedings of the 18th ACM International Conference on Interaction Design and Children*, 432-438. https://doi.org/10.1145/3311927.3323121