Reading in a digital age: How e-books influence children’s emergent literacy

By: Lauren Lowry  
Hanen SLP and Clinical Writer

Technology has had an enormous influence on the books parents and educators choose for children. Consider the following statistics:

- from 2009 to 2010, electronic book (“e-book”) sales increased by 164.4%, while printed book sales declined slightly
- a 2003 US survey reports that three out of four parents say that their child has a “talking book”
- as of 2013, LeapFrog electronic console books could be found in over 100,000 U.S. classrooms (Parish-Morris, Mahajan, Hirsh-Pasek, Michnick Golinkoff, & Fuller Collins, 2013)

Many experts feel that “education systems must come to terms with multiple literacies and digital literacies that are part of everyday life” (McLean, 2013, p. 34). Researchers have started to examine the impact that e-books have on children’s language and literacy development. In our February 2012 issue of Wig Wag Minute, I reported on a seminal study regarding e-books by de Jong & Bus (2002). They found that children who read a traditional paper book had a better understanding of the story content than children who read an e-book, and concluded that e-books do not provide children with the same reading experience as paper books.

Since then, many more studies have been conducted on e-books. What emerges from these studies is that there are advantages and disadvantages to e-books, and that we shouldn’t disregard this emergent literacy tool. E-books are here to stay, so we need research-based advice for parents and educators about how to best use this resource.

What is an e-book?

E-books include a range of software that may be sometimes referred to as CD ROM storybooks, computer books, interactive books, or digital books (Salmon, 2014). Many e-books are interactive and include multimedia effects such as oral reading, oral discourse,
animations, music, sound effects, and hotspots which link to sounds, dialogue, games, and/or a dictionary (Korat, Shamir, & Arbib, 2011). Interactive e-books usually have different modes to choose from, such as “read only”, “read and play”, and “read with dictionary” (de Jong & Bus, 2003).

A distinction is drawn in the literature between “considerate” and “inconsiderate” e-books:

- **considerate e-books** – include multimedia effects that support the story and support children’s story comprehension
- **inconsiderate e-books** – include games and interactive features that add extra information that is not related to the story (Korat et al, 2011). This can interfere with children’s story comprehension.

Due to the wide variation in e-book features, the reading experience with each e-book is significantly different (Salmon, 2014).

**Advantages and disadvantages of e-books**

In general, there is conflicting advice regarding the value of technology in children’s development, and this is also true when it comes to e-books:

**Advantages of e-books**

- **convenient and accessible** – e-books can be downloaded on computers or transferred to hand held devices (Salmon, 2014)
- **multi-sensory learning** - Shamir, Korat & Fellah (2012) point out that computerized technologies can provide exciting and interesting experiences for children with special needs, who may benefit from multi-sensory active learning opportunities
- **repeated readings** – children’s motivation to read e-books may result in repeated readings of the same story, which has been shown to improve literacy outcomes (Salmon, 2014)
- **independent reading** – while young children require an adult’s help to read a traditional paper storybook, e-books include narration. This may encourage children to pick up a book more often than they otherwise would (Salmon, 2014)
- **interaction may last longer** - Parish Morris et al (2013) found that parents and children interacted for longer when reading e-books versus traditional paper books

**Disadvantages of e-books**

- **access to e-books** – some researchers have voiced concern about how to get e-books into the hands of disadvantaged or at-risk preschoolers (Salmon, 2014)
- **decrease in traditional shared reading** – Parish Morris et al (2013) point out that outcomes in at-risk populations might be worse if e-books are used as substitutes for traditional shared reading, which has been shown to be very beneficial for children at risk for reading difficulties.
- **distracting interactive features** – the games and interactive hotspots included in many e-books may disrupt story comprehension (de Jong et al, 2002).
What the research says about the impact of e-books

A lot of research about the impact of children’s e-books has emerged in the past decade. Most of the research has been conducted on e-books delivered through non-touch screen desktop computers. Little research has looked at the specific effects of e-book apps using touch screen tablets (Neuman & Neuman, 2014). Below, I’ve summarized several studies conducted with young children (between ages 3 and 7 years) within the past four years which look at two aspects of e-books:

- how e-books affect parent-child interaction
- how e-books influence children’s emergent literacy and language development

How e-books affect parent-child interaction

- greater persistence with e-book, but more labelling with paper book - Moody, Justice, & Cabell (2010) found that children persisted more while looking at an e-book than with a traditional book, and this could be beneficial by increasing the child’s exposure to reading. However, they found that children labelled twice as much while sharing the traditional book. They also compared children’s experiences when sharing an e-book with a lot of adult support versus minimal adult support. They found that children labelled more and used more story comprehension references while looking at the e-book when provided with more adult support. Moody et al conclude that both ebooks and paper books can have an impact on children’s literacy and oral language development. However, much depends on how the adult interacts with the child during the book reading.

- kindergarten children communicate more with e-book, but mothers use more expanding talk with print book - Korat & Or (2010) studied parent-child interaction during a researcher-designed e-book, a commercially available e-book, as well as print versions of these two books. Both e-books had many features that are supportive of early literacy learning, such as text that is highlighted as the narrator reads, different modes (“read only” versus “read and play”), and dynamic visuals that dramatize the story. The researcher designed e-book also included specific words that the narrator divided into syllables. Korat & Or found that their specially-designed e-book resulted in more expanding talk related to word meanings than the commercially available e-book. They suggest that this may be because their e-book included more challenging words and “hotspots” on the screen that linked to elaborations about these words than the commercial e-book. This may have prompted mothers to talk about these words and their meanings with their children. Children initiated and responded more to their mothers’ initiations during both types of e-books (compared to print books). But contrary to the authors’ expectations, mothers used less expanding talk while reading both types of e-books. The print books, on the other hand, encouraged mothers to initiate, respond, relate the text to the child’s personal experiences, and have discussions beyond the text.
• parents use more dialogic reading strategies with paper books than with e-books - Parish-Morris et al (2013) found that parents made more story related utterances with paper books, and both parents and children used more distancing utterances (going beyond the here and now) with paper books. E-books, on the other hand, encouraged more behaviour-related utterances from parents and children (e.g. “Stop pressing the buttons and listen to the story”, “I just wanna make it go”, “Can we turn the page?”). Despite the fact that e-book interactions lasted longer, children heard less dialogic language than during shorter, traditional book reading sessions. Parish Morris et al conclude that “…if parents have only 10 min per day to read with their child, they can provide the richest and most condensed dialogic input by reading a traditional book together” (p. 207).

How e-books influence children's emergent literacy and language development

• children develop deeper story understanding when sharing traditional print books - Parish-Morris et al (2013) conducted a second study to determine whether the diminished dialogic reading with e-books affects 3 year old children’s story comprehension. They found that children could correctly identify superficial story information after sharing the e-book. But they had a harder time understanding aspects of deeper story structure. After shared reading with a traditional paper book, 3 year old children answered significantly more content questions and recalled the story sequence in the correct order.

• e-book with adult mediation resulted in greatest progress in emergent literacy - Segal-Drori, Korat & Klein (2013) used researcher-designed e-books and print books to examine 128 kindergarten children’s emergent literacy progress. They found that children who read an e-book with adult mediation made the greatest progress in letter name recognition, word reading, print concepts, and general emergent reading level compared to children reading an e-book independently and children who shared a print book with an adult. They concluded that young children benefit most from augmentation provided by the adult support while sharing an e-book, and that while good quality interactive e-book features can be helpful, these features alone (without adult support) may not be enough for a high level of emergent reading.

• children with developmental delay showed gains in vocabulary and phonological awareness with e-books – Shamir et al (2012) studied what children with developmental delay learn from a researcher-designed e-book (which the children looked at independently) compared to a print version of the same book (which they read with an adult). They found that both the e-book and the print book had high effect sizes for vocabulary outcomes, but children showed better progress with vocabulary and phonological awareness with the e-book. While the e-book divided some words into syllables to promote phonological awareness, the adult reading the print book did not emphasize phonological awareness during the reading. Therefore, it is not surprising that the authors didn’t find an improvement in the children’s phonological awareness with the print book as this skill was not targeted. Shamir et al conclude that both e-books and print books are beneficial, and that e-books can be used as a supplemental tool.
Summary of studies

Taken together, these studies demonstrate that:

- e-books can promote some emergent literacy skills in children
- children may persist and interact for longer with e-books
- there is conflicting evidence regarding whether children communicate more or less while looking at e-books
- parents use fewer dialogic reading strategies while sharing e-books with their child
- children demonstrate deeper story understanding with print books
- researcher-designed e-books are more helpful than commercially-available e-books because they include features that promote early literacy learning, such as dictionaries, highlighted text, options for repeated reading of pages or sentences, animated visuals that help explain the story content, and “read-only” modes
- when sharing an e-book, children learn more when an adult shares the book with them (versus independently enjoying the e-book)

Most researchers agree that the e-book should not be used as a replacement for shared reading with a traditional, paper book. Rather, a well-designed e-book based on principles of emergent literacy development can be used as a supplementary tool with children.

Features of good quality e-books

As researchers have developed and studied e-books, a variety of features have emerged that seem to promote children’s learning from this type of media:

- **animations and interactive tools should enhance the story** – if they add extraneous information, it can distract from the storyline and interfere with children’s story comprehension (Smeet & Bus, 2014; Cahill & McGill-Franzen, 2013).

- **hotspots should only be active after the narrator has finished reading the text** – while hotspots connected to games and animations attract children’s attention, this can be at the expense of interrupting the story if they can be activated during the narration (Smeet et al, 2014; Parish-Morris et al, 2013). Many e-books now offer different modes (e.g. read-only versus read and play). Having the child listen to the story first in a read-only mode can ensure he develops a sense of the story before interacting with the games (Korat et al, 2011).

- **dictionary mode is beneficial** – e-books that have a dictionary mode or hotspots that label and define challenging words can stimulate vocabulary learning (Smeet et al, 2014). Unfortunately, Korat & Shamir (2008) report that many commercially available e-books do not include this feature.

- **forward and backward buttons are helpful** - these allow the child to turn the e-book pages forward or backward, and stimulate a pro-reading orientation (Shamir et al, 2012).
• **repeated reading function** – this helpful function that allows the child to repeat his reading/listening to pages, sentences, or specific words (Shamir et al, 2012).

• **the text should be highlighted as it is read aloud** – this encourages children to understand the relationship between the printed text and the auditory reading, and promotes their concepts about print. Unfortunately, many e-books do not include this feature (Segal-Drori et al, 2013).

• **appropriate story structure** – Shamir & Korat (2006) explain that e-books should have the same story structure elements as traditional storybooks, such as setting, characters, goal/initiating event, problem, and solution/ending.

### How to advise parents and educators

Several researchers (e.g. Segal-Drori et al, 2013; Korat & Or, 2010) suggest that different reading contexts may have different effects on parent-child interaction, and that we need to guide parents about ways to provide scaffolding during both traditional paper books as well as e-books. Here are some tips you may want to incorporate into your sessions about books during Hanen programs, or when working individually with parents and educators:

• **choose good quality e-books** – some of the facilitative e-book features above can be shared with parents and educators so that they can choose appropriate e-books.

• **it takes two to read** – studies have shown that sharing an e-book with an adult results in better outcomes than when children look at an e-book independently. Because e-books can be explored independently by a child, it may be tempting for parents and educators to allow children to explore these books on their own. But it is important to emphasize the value of shared reading, especially when it comes to e-books, in terms of promoting children’s emergent literacy skills.

• **focus on specific reading strategies when reading e-books** – the above studies revealed that parents used fewer dialogic reading strategies with e-books. Therefore, it is important to help parents and educators go beyond the pages of the e-book, linking the story to the child’s personal experiences, and deepen the child’s understanding of the story through discussions about the characters, setting, problem, actions, and resolution (or “CSPAR” as it is called in the ABC and Beyond™ program) (Weitzman & Greenberg, 2010).

• **e-books should be a supplement, not replacement, for traditional book reading** - Salmon (2014) suggests that initially, a story can be read in a traditional, print book, and then later using an e-book to reinforce the story and provide repetition.

It seems that e-books are here to stay. Salmon (2014) explains that as “adult interactions vary from print to digital text, a broader multi-literacy approach at home may better prepare children for the technological skills needed at school” (p. 90). By guiding parents and educators in their selection of appropriate e-books, and emphasizing the important role they play when sharing e-books with children, we can use this new tool to promote children’s language and literacy skills.

A parent-friendly version of this article is available on our website.
References


© Hanen Early Language Program, 2014. This article may not be further copied or reproduced without written permission from The Hanen Centre®.