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Click, Swipe, and Read: Sharing e-Books with Toddlers and Preschoolers

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Abstract e-Books share some key features with traditional printed picture books, but also include distinct features such as live animation, interactive components, and the operation of the technology that require new approaches to shared reading with young children. The purpose of this paper is to better inform adults working with young children (teachers, child care providers, and parents) of important factors to consider when choosing and sharing e-books with young children. We discuss why to share e-books with young children; types of e-books and how to evaluate them; how adults can best support young children's language and literacy development through shared readings of e-books, including examples of shared readings of an e-book with young children; and an exploration of the potential of e-books to support meaningful interactions around texts.

Keywords Literacy development · Shared reading · e-Books · Evaluating e-book resources · Early childhood

Shared reading with young children is not what it used to be. Or rather, it is not limited to what it used to be. Possibilities abound, not only in expansive options of genre and format of children's literature in print, but also e-books accessed through newer technologies like e-readers (e.g., Kindle, Nook) and tablet computers with touch screens (e.g., iPad, Android). We use the term *e-book* to refer to any digitally constructed literature, available in a wide variety of forms and of sources, e.g., online, CD-ROM, and most notably in downloaded applications, or "apps."

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E-books share key features with traditional printed picture books, such as the integration of text and image to convey meaning. However, some features of e-books are distinct, such as live animation, interactive components, and the operation of the technology. Thus, our purpose is to better inform adults working with young children (i.e., teachers, child care providers, and parents) of important factors to consider when choosing and sharing e-books with young children. We first discuss why to share e-books with young children, followed by a review of relevant research on shared reading. The remaining discussion describes types of e-books and how to select them; how adults can best support young children's language and literacy development through shared readings of e-books, including examples of shared readings of an e-book with young children; and an exploration of the potential of e-books to support meaningful interactions around texts.

Why Share e-Books with Young Children?

Shared reading with young children is common practice in homes and child care settings, usually involving reading printed children's books. Adults should also consider introducing e-books to young children in shared reading for the following three reasons that are supported by the recent position statement from the National Association for the Education of Young Children (NAEYC) and Fred Rogers Center (2012). First of all, e-book reading can be a highly engaging and enjoyable learning experience for both adult and child (Labbo 2009; Smith 2001).

Second, as society is becomes increasingly digitized, adults can use digital media like e-books to introduce toddlers to this ever-expanding part of our culture (Roskos and Brueck 2009). NAEYC and the Fred Rogers Center point out, "Just as we encourage children to use crayons and paper well before we expect them to write their names, it seems reasonable to provide access to technology tools for exploration and experimentation" (2012, p. 6). Modeling authentic reading practices on-screen and allowing children some "tinkering" with the devices can help foster children's growing understandings about how, why, and when we accomplish literate activities in modern society.

Finally, e-books function in different ways from printed texts and therefore children can learn new and important skills and literacies that are absent from interactions with printed texts (Buckleitner 2011; Smith 2001; Unsworth 2003). For example, children can learn to interpret audio and visual cues for comprehension when component parts of e-books use sound effects or animation (Verhallen et al. 2006; Bus et al. 2009) and to discriminate non-essential 'bells and whistles' that distract from the story from those that are essential to the story's meaning (De Jong and Bus 2003; Labbo and Kuhn 2000).

It is important that adults carefully consider when and how they share e-books with young children. The American Academy of Pediatrics (2011) recommends that no forms of digital media be used with children younger than 2 years. Research has consistently demonstrated that adult-child interactions around real life hands-on experiences, free play, and book reading better support infants' and toddlers' development than experiences with digital media. Even after age 2, children's total exposure to digital media (e.g., games, television, computers) should be limited to brief periods that total less than 2 h/day. When young children engage with digital media, high levels of interaction with an adult should be a part of the experience (American Academy of Pediatrics, 2001; NAEYC and Fred Rogers Center 2012; Takeuchi and Stevens 2011).

Shared Reading with Young Children

We define shared reading as an interactive and scaffolded reading experience, in which the adult operates as a facilitator of children's meaning making from texts. Children aged 2–5 years acquire many foundational aspects of language and literacy while exploring their world through social interactions with others around texts (Teale and Sulzby 1986; Vygotsky 1978). We focus on shared reading as a context for young children to develop oral language, vocabulary, and comprehension of written language (listening comprehension), as well as to begin to acquire some of the language, values, practices, and dispositions of a literate culture (e.g., understanding reading to be a pleasurable and rewarding activity) (Heath 1983). Although shared reading experiences can also build early literacy skills like concepts of print, phonological awareness, alphabet knowledge, and word reading (Aram 2006; Justice and Kaderavek 2002; Justice et al. 2008), these are not the focus of our discussion, primarily because studies of the impact of shared reading with e-books on these skills have typically been of slightly older children who were receiving formal reading instruction and accessing e-books independently [see Zucker et al. (2009) for a review of this literature]. In addition, we focus on shared reading in contexts that allow for high levels of individualization—with individuals or small groups of children—rather than with large groups as is common with school-aged children (Schickedanz and Collins 2012). We do this for two reasons. First, young children (toddlers and young preschoolers especially) develop in such different ways and rates that individualization of scaffolding is typically necessary to create meaningful interactions around books. Second, the nature of the technologies used to access e-books (e.g., tablets and e-readers) make them more difficult to share with large groups than a traditional printed book without more expensive technologies such as a projector and projection screen or Smart Board.

When sharing books with young children, both what we read and how we interact with children during the reading experience affect the shared reading experience and outcomes (e.g., Beck and McKeown 2001; Hoffman 2012; Teale et al. 2008a). In order to understand how to effectively select and share e-books with young children, we first review what we know about shared reading with traditional printed books.

Shared Reading of Printed Books with Young Children

What to Read: Selecting Books

When selecting books for young children, adults should look for well-constructed, engaging content, conveyed through rich language and visuals (Table 1). Adults should also seek texts that relate to the young child's developing personal interests (e.g., trains, animals, fairy tales) and acquired life experiences (e.g., special events, recent activities). Lastly, adults should consciously balance shared reading experiences with a variety of genres and forms of texts, e.g., informational texts (including concept books for very young children), narratives (including theme books for very young children), and rhyming or predictable books (including songs and poetry) (Teale et al. 2008b; Temple et al. 2014).

How to Read: Sharing Books

Shared reading experience in general is related to language development and listening comprehension (Hepburn et al. 2010; Richman and Colombo 2007), but especially when adults and children interact around the text to actively construct meanings. To do so, adults should intentionally build interaction through talk occurring outside of reading the written text (Blake et al. 2006; Britto et al. 2006; Ortiz et al. 2001). This talk should focus on *comprehensible input* (Krashen 1985, 2003), which refers to efforts to make language understandable to the child. Comprehensible input uses contextualizations like gestures, facial expressions, and references to the illustrations, as well as explanations of unknown words or difficult language structures. Adults may at times even substitute language in the text with their own language that will be more understandable to the child e.g., "nanna" for the word *grandmother* (Martin 1998). Adults should also encourage *output* (Swain 2005), or expressive language use and interpretation. Output is often achieved through questioning or prompts for children's talk during shared reading (Blake et al. 2006; Deckner et al. 2006; McArthur et al. 2005; Whitehurst et al. 1988).

Other strategies that support children's developing abilities to make meaning with texts include making connections to children's real-life experiences (Blake et al. 2006), including discussion of *narrative intangibles* (e.g., characters' feelings and motivations) (McArthur et al. 2005). Adults should also provide repetition, both of texts themselves and of the language as they read, to emphasize new words and structures and to enable children to develop deeper understandings of texts and language through multiple encounters over time. (Fletcher and Jean-Francois 1998; Simcock and DeLoache 2008) These approaches to shared reading need not (and should not) result in an artificial or regimented approach (Trelease 2006). This list simply describes features of quality interactions that when woven in real shared reading contexts appear as natural conversations between adult and child that help the child make meaning with a text. The following brief excerpt of a shared reading experience illustrates how one parent applied a variety of these shared reading strategies to construct meanings with her 2-year-old son. She connected the book *The Mitten* by Jan Brett (1996) to her child's experiences with yarn and knitting at his grandmother's, she accepted the child's contributions, clarified or extended his language attempts, explained difficult concepts in the text, and asked questions that prompted the child's language use.

Table 1 Choosing high quality literature (adapted from: Teale et al. 2008a, b; Schickedanz et al. 2013)

	Narrative	Informational
Defining characteristics	Accounts of connected events that typically surround a central problem and lead to a resolution	Representation of information about the natural or social world Duke and Bennett-Armistead (2003)
Primary purposes	Entertain; connect with and "live through" human experiences	Convey information
Content	Authentic narrative portrayals of human experience	Scientific accuracy and currency of the content
Text Structure	Story structure (often characterized by five parts: introduction to characters, setting, problem; rising action, climax, falling action, and resolution)	Informational text structures, e.g.: description, cause-effect, compare-contrast, sequence
Text features/ elements	Relevant themes, developed characters, use of metaphor and symbolism	Vary by format, but examples include: titles and headings, captions, labels, charts and graphs
Language	Rich language that develops complex meaning and imagery[a]	Lesser known, more technical vocabulary Factual description Scientific linguistic registers or scientific discourse (reporting information, rather than telling a story)[a]
Visuals	Artful, synergistic relationship between text and images that results in a sum greater than its parts, aka *transmediation* Sipe (1998)	Interesting, clear, and detailed visuals (either photography or realistic illustrations) directly related to the text

[a] However, language should always be accessible to young children when supported with discussion during shared reading

> Adult: [reading text] "But Nicki wanted snow-white mittens so much that grandma [substituted for Baba] made them for him." Oh, look at all that yarn. See the yarn balls? [pointing] His grandma is going to knit some mittens. See here? She knits yarn just like your grandma does
> Child: Balls yarn mitten
> Adult: Yes, those are balls of yarn, and his grandma is going to knit and make mittens out of that yarn, just like grandma does … [continued reading and discussing next few pages]
> Child: Rabbit coming!
> Adult: Oh, yes, there's the rabbit. See here. Nicki is stepping on top of the rabbit's house? I don't think the rabbit likes that. He's scared, and he's going to

run away. [discussing for a moment] Where is he going? [turning page]
Child: Coming in mitten
Adult: Yup, here comes the rabbit to snuggle in the mitten. [reading text] "A rabbit came hopping by. He wiggled in [adult snuggling in closer to child] next to the mole." He's snuggling in [pointing to illustration] … [continued reading and discussing next few pages] Oh, look. Nicki is stepping on another animal's house and scaring him. Who is that?
Child: Doggie. Where Sadie go? [looking for own dog]
Adult: I don't know where Sadie is. [pointing back to book] This does look like a dog, but it's a fox. Remember fox, with the pointy ears?
Child: Fox
Adult: Mm hmm, there's the fox, and looks like he's going to run to the mitten, too

This excerpt illustrates that intentional support of young children's meaning making in shared reading does not require highly structured, lesson-like formats, but rather genuine conversations about books (adapted from Hoffman 2012, p. 34).

Sharing e-Books with Young Children: What and How

All of the above considerations for shared reading with printed books also apply to selecting and sharing e-books with young children. However, in order to effectively engage children in shared reading experiences with e-books, parents, teachers, and caregivers require some additional knowledge unique to the e-book format about what kinds of e-books to select and how to share them.

What to Read: Selecting e-Books

Types of e-books fall on a spectrum, from simple digital images of printed literature, to transformations of printed books with some embedded digital features, and finally digitally originated literature, which are books made specifically for the digital form involving embedded multimedia features (Buckleitner 2011; Unsworth 2006; Yokota and Teale 2014). All forms of e-books are accessible from a multitude of technologies and work in somewhat similar ways (Box 1). It is also important to note that other educational or entertainment applications for children may mimic or claim to be e-books, but operate more as games or videos than books, "such that meaningful engagement with story and print is seriously reduced, and the literacy experience is superficial" (Roskos et al. 2009, p. 219). Roskos et al. (2009), among others, suggest that shared

Box 1 Technologies for accessing e-books

There are a multitude of options for accessing e-books, many more options now than a decade ago. e-Books on CD-ROMs are now nearly obsolete. Current options range from the traditional desktop computer, to tablets (e.g., Android/Windows tablet, iPad, Kindle Fire, Nook) and mobile devices (e.g., Android Smartphone, iPod touch/iPhone), and even gaming systems (e.g., XBOX Kinect, LeapFrog's LeapPad, Fisher Price's iXL). The device used will determine to a great extent the variety of e-books available. Of all the options currently available, we personally enjoy sharing e-books with tablet devices because they most resemble the close, "hands on" feel of traditional shared reading—sitting side by side on the couch or floor (instead of at a desk), holding and manipulating the "book", and "turning" pages. One huge advantage of e-books over printed books is that there are countless titles readily and instantly available online or as apps, often in multiple languages. e-Books can be accessed (free and for purchase) in many ways (see a list of resources on the second author's blog—http://katiepaciga.blogspot.com/2013/06/ebooks-some-news-research-stories-and.html)

reading with true e-books (those that actually function as books and include print) better promotes language and literacy development.

It especially important to understand that when selecting any type of e-book, adults should consider all of the same recommendations as for printed books (Table 1). Selecting high quality e-books with multimedia features requires attention to some additional criteria, though. In general, the design features of the e-book largely determine what a user can do with the text (Labbo 2009; Smith 2001; Yokota and Teale 2014). High quality multimedia features will complement and extend the plot and/or information to help readers better understand story elements and concepts presented. In addition, a quality e-book allows the user to turn on/off various features in a settings menu to enable discussion of the text while reading.

Adults should look for what Labbo and Kuhn called *considerate* e-books, those that "include multimedia effects that are congruent with and integral to the [text]" (Labbo and Kuhn 2000, p. 187). An example of a considerate e-book is *Bats! Furry Fliers of the Night* (Story Worldwide & Bookerella 2012). *Bats!* harnesses hot spots, animation, and sound to present complex scientific concepts. *Inconsiderate* e-books, which "include multimedia effects that are incongruent with or incidental to the story" (Labbo and Kuhn 2000, p. 187), such as hot spots that activate animations irrelevant to the story. Yokota and Teale (2014) provide more detail on how to evaluate e-books using four guiding questions that pertain to shared reading emphasizing oral language and listening comprehension development (see Table 2 for an adaptation of their guidelines and explanation for how adults working with young children can evaluate e-books; also see Box 2 for additional resources for evaluating e-books).

Table 2 Additional considerations for selecting high-quality e-books (adapted from Yokota and Teale 2014)

1. Is the text appropriately presented in digital format?	Is the text well-constructed with respect to the genre expectations (Table 1)?
	Is the language of the text skillfully crafted?
	Do the illustrations/visuals work well with the text to illuminate, extend and/or co-create the text as a whole?
	Do the sound effects and music work well with the text to illuminate, extend and/or co-create the text as a whole?
	Do the size and shape of the illustrations fit the screen's proportions?
2. Does the story take appropriate advantage of features the digital world allows beyond what is possible in print?	Are there meaningful audio, animated, or interactive features that help children better understand the text?
	Are there digital features that distract from the text?
3. Do the interactive features within the text maintain the integrity of central meanings of the text?	How does the reader participate in ways that focus on central events?
	How does the reader participate in ways that divert attention to trivial details?
4. Do any supplementary features (add-ons to the text) align with central meanings of the text?	Are there additional games, puzzles, etc. included in the e-book app?
	Are the games, puzzles, etc. closely related to central meanings in the text?
	Are links to these features embedded in the text in ways that might distract children from the reading, or do they operate as separate from the e-book reading?

Box 2 Evaluating e-books

Because there are countless e-books now available, finding *high quality* e-books can be a daunting task. At the present, we direct readers toward three additional resources that reinforce and expand on the criteria we've presented in the text and in Table 2, to help adults navigate the e-book terrain: (1) Common Sense Media (http://www.commonsensemedia.org/); (2) Digital Storytime (http://digital-storytime.com); and (3) Kirkus Reviews (http://www.kirkusreviews.com/book-reviews/ipad/). Children's librarians are also invaluable in sifting through media possibilities. Most sources for downloading e-book apps (e.g., iTunes/App Store) provide user ratings and reviews, although these should be read carefully for details about why the e-book is "good" or not, with an eye toward the research on the features of high quality e-books and how to share e-books with young children

Adults will also want to evaluate the technical operation of the e-book (page turning, ease of operation for reader), but except for cases when the e-book simply does not operate well, the specifics of the technical features are not as critical to the meaning-making process. Most current e-books are reasonably well-suited for children's operation, and differences in operation tend to be fairly clearly marked (e.g., arrows to click v. swiping to turn pages). Other features intended for language acquisition or beginning reading support for children accessing e-books independently (e.g., pronunciation of words or identification of illustrated objects) are also of less pressing concern for the purposes of shared reading with young children, because research supports the adults themselves reading and discussing the e-book with children (Kim and Anderson 2008; Labbo 2009; Smith 2001).

How to Read: Sharing e-Books with Young Children

Careful selection of e-books is critical. Nevertheless, research consistently concludes that the benefits of shared reading are mostly determined by the quality of interaction between adult and child (Blake et al. 2006; Britto et al. 2006; Ortiz et al. 2001). Very little research has investigated the effects of adult-child interactions during shared e-book reading. In many ways, the field has focused its efforts on the use of e-book technologies as a *replacement* for adult interaction, rather than a new context for adult interaction around book reading (Hoffman and Paciga 2012). Some of the chapters in a recent volume edited by Shamir and Korat (2013) include research designs of this sort wherein the device is completing the narration of the e-book. In other cases, research has explicitly compared conditions of adult-read printed books versus e-books independently accessed by an individual child. Thus, our review of research on how to share e-books with young children is limited by the relative inattention to the topic compared to research on the independent use of e-books of slightly older children (e.g., De Jong and Bus 2002, 2004; Korat and Shamir 2007; Shamir et al. 2008; Segers and Vermeer 2008).

Roskos et al. (2009) caution about an approach to e-book reading that positions technology as a replacement for adult-child interactions, "…the e-book affords an opportunity for storybook reading without adult mediation. Multimedia, in essence, replaces the adult mediator, providing the supports that 'read the story' to the young child. This has its benefits for early literacy development…, but it also has its dark side" (p. 219). In particular, we believe the "dark side" to be the misguided interpretation that children's *independent* use of multimedia scaffolds language and literacy learning in ways similar to interactions with adults. In contrast, there is evidence that multimedia,

especially with young children, cannot and should not replace the need for adult interactions around texts, but rather provides a new form and context that *requires* adult mediation through language interactions to promote rich learning of new literacies (Labbo 2009; Smith 2001).

Research involving adults sharing e-books with young children has found that adult-child interactions in shared e-book reading can differ from traditional shared reading, but that differences are mostly related to the features of the e-book (Labbo 2009; Smith 2001). As a result, features of e-books that are distinct from printed books require new approaches to scaffolding to mediate children's multimedia meaning-making efforts. Most obviously, sharing e-books requires supporting children's use of the media (e.g., scrolling, swiping, clicking, and modeling and prompting children's use of the interactive features) (Labbo 2009; Smith 2001). In addition, researchers have expressed concerns regarding features that may distract from the adult and child's meaning making, including irrelevant music and animation (Labbo and Kuhn 2000) and ongoing narration that discourages adults from reading and discussing the text (Kim and Anderson 2008).

Such studies have concluded that when sharing e-books with young children, adults should mimic the environment of traditional shared reading in two ways. First, they should *control the pacing* of e-book sharing by disabling continuous play modes. Second, they should *turn narration options off to read the text aloud* (Kim and Anderson 2008; Labbo 2009), especially when there are extended sections of text on each page that will prevent the adult from discussing ideas as they arise. These two moves create the "meaning space" (Corcoran 1987) necessary to interact around the text while reading. When adults control both the pace and reading, research has found highly similar patterns of interaction compared to shared reading of printed books (Fisch et al. 2002), through which the adult and child can collaboratively construct meanings (Labbo 2009).

Shared Reading with an e-Book

To illustrate how adults can interweave considerations of text and interaction in shared reading of e-books with young children, we present excerpts of readings of one currently popular (and highly rated) e-book, *The Three Little Pigs* (Nosy Crow Limited 2011). We chose this e-book not because it is a perfect example of a high quality e-book (it is not), but rather because it is representative of common features in popular e-books currently on the market. Thus, we found this title useful to illustrate both typical affordances and drawbacks of e-books for shared reading. We shared this e-book with different children aged 2–5 years in the "Read by Myself" mode, in which the music, animation, and hot spots are on, but narration of the text is disabled. Across multiple readings of this e-book, we found points at which some examples of multimedia did support meaningful discussion of the text (as discussed in Labbo and Kuhn 2000 and Yokota and Teale 2014). For example, when the "big, bad wolf arrive[s] in the neighborhood," readers hear looming, suspenseful music in background and the tires of the wolf's van screeching as he pull up near the pig's houses. These audio components effectively contribute to the mood of the story. But other multimedia features distracted from the story and detoured conversations (as discussed in Labbo and Kuhn 2000 and Yokota and Teale 2014). For example, while the pigs walked through the woods with sounds of woodpeckers pecking, one child asked, "What is that little thing that goes [making pecking sound]?…What are they doing?" initiating a side conversation about woodpeckers searching for food. At other points, the hot spots themselves were so motivating that they became the goal for the child, rather than making meaning with the text. For example, during a shared reading experience, the second author observed her daughter of 30 months abandon a conversation about the character's speech that appeared from one hot spot to continue exploring the other (less relevant) hot spots on the page.

> Adult: Let's see what they say. [adult models by activating hotspot on first pig] "I'm tired already."
> Adult: Why is he tired?
> Child: 'Cause they was tired from walking.
> Adult: Yes, they walked from their mother's house into the woods. What about this pig? What does she say? [adult activates hotspot on second pig] "This is exciting."
> Adult: Why is she excited?
> Child: Let's see what this is [child activates hotspot on third pig].
> Text: This plant is heavy [child repeats].

We observed this kind of rushing through the hot spots behavior in many children; one child admonished his mother for trying to finish reading the text, saying, "No, you have to do this!" [hurrying to "blow" the houses down].

At other times, the function of the hot spots that were more connected to the text deterred central meanings in conversations. In the following excerpt, the first author attempted to scaffold her 39-month-old son's understandings of the central theme of the story of *The Three Little Pigs*—that hard work pays off in the end (examples in boldface text).

> Child: [clicking hot spots to build the straw house]
> Adult: "The first little pig soon found a piece of land and he quickly built himself a house made of straw."

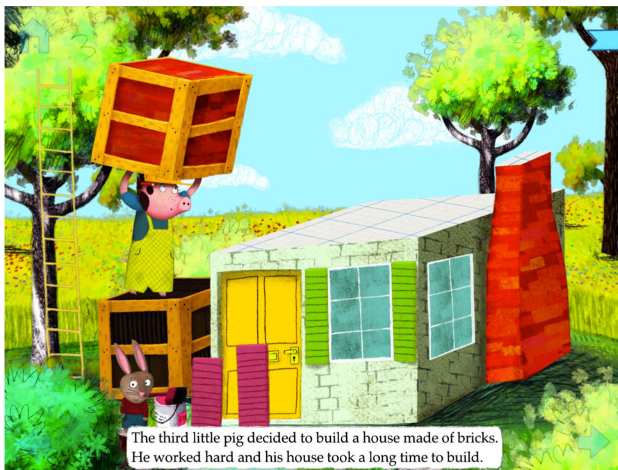

Fig. 1 Screenshot from *The Three Little Pigs*. © 2012 Nosy Crow. Reproduced by permission of Nosy Crow Limited (2011)

Then he said, "Looks fine to me." **Is this a very strong house?**
Child: Yes!
Adult: Is it? **Do you think it will keep the big bad wolf out?**
Child: No! Because it's not…[trailing off]
Adult: Yeah, I don't think it's strong enough.
Now he said, "I've finished already." **So, he got done quickly, but it's not a very strong house.** [a few pages later…]
"The third little pig decided to build a house made of bricks. He worked hard, and his house took a long time to build." So, he had to get all these bricks, and he said [clicking hot spot], "Ooof, these bricks are really heavy." (Fig. 1)
Child: [clicking hot spots to build the brick house] See? That was a loud sound. [referring to the grunts from the hard working pig, confirming that it was hard work]
Adult: Yes. He said, "That was hard work, but it's a great house."
Child: Is it going to blow it?
Adult: I don't know. Do you think the wolf is going to be able to blow down the brick house?
Child: No. Because he can't blow down the brick one.
Adult: Probably not. **It seems like a stronger house. It didn't take him very long to build, but in real life it would take a long time to build.**

Some of the animations and characters' speech supported the mother and child's interpretation of theme, for example the straw house pig's claim, "I've finished already!" and the brick house pig's grunts over his hard work. On the other hand, the function of the interactive hot spots in the e-book interfered with this interpretation, because the reader's actions required to build each of the pig's houses (three clicks) were identical (Fig. 1). When using the embedded hot spots, which are required to enable the next page turn, young readers may come away with the understanding that it is just as easy to build the brick house as the straw house. In this example, the mother struggled in her attempt to discuss this central idea of the story so much so that she felt the need to make explicit the difference between the effort required in the story, and the effort required in "real life."

Overall, we found our experiences with sharing *The Three Little Pigs* (Nosy Crow Limited 2011), to be highly similar to our experiences reading a number of other e-books for young children with multimedia features and to reflect common conclusions in research and theory on e-book reading. There are certainly aspects of the texts that support the children's understandings of the characters and events, and there was discussion similar to traditional shared reading that we know promotes oral language development and listening comprehension. In addition, there were many opportunities for the children to acquire some skill in operating the technology. However, again and again, certain animations and interactive features led the adult and child's conversation away from central meanings of the texts, inferring with the meaning-making goal of shared reading.

Potential for e-Books

Our extensive search through countless available e-books left us wanting more. Our vision for the potential of e-books involves uses of the technology to support the kinds of conversations we want to have when we share books with young children. In narrative texts, we desire animation and music that adds to the creation of mood in a story, character speech that seamlessly makes meaningful dialogue come alive, and interactivity and animations that deepen understandings of significant story events. In other words, we want features that will support real conversations about story elements, so that when a child wonders something like, "What's going to happen?" we can say things such as, "Ooh, I think something scary is coming! See how it's getting darker in the picture? And the music is getting slower…" In informational texts, we want additional resources that help us answer the "What's that? How? Why?" questions of our young co-readers.

One example that exemplifies some of the potential of informational e-books is *Bats! Furry Fliers of the Night* (Story Worldwide & Bookerella 2012). To illustrate, one chapter of *Bats!* presents the concept of echolocation to young children. The e-book production team helped readers understand how a bat identifies objects while flying in the dark through a simulation of echolocation. The reader

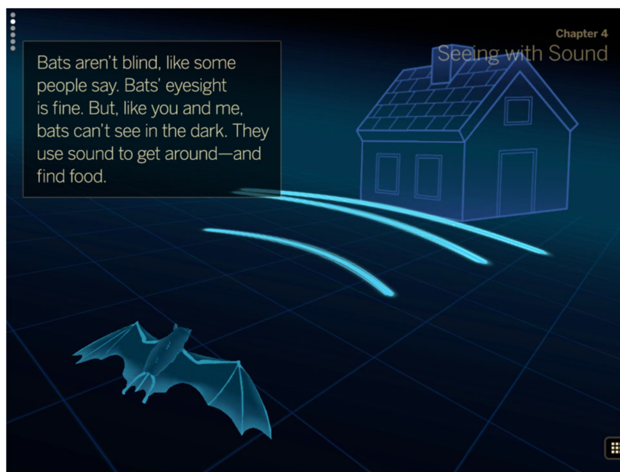

Fig. 2 Screenshot from *Bats! Furry Fliers of the Night*. Reproduced by permission of Story Worldwide & Bookerella (2012)

activates hot spots that make the bat screech, and the screeching sound is accompanied by illustrations of arcs (to mimic sound waves) that grow bigger and move away from the bat until they reach an object in the screen's background and then bounce back into the foreground (Fig. 2). The arcs in the echo/return are subtly longer or shorter relative to the object's size, e.g., the visualization of the echo from a building is larger than that of the echo/return arcs from a moth. In a shared reading conversation with a 5 year old, the second author and child were able to discuss the relationship between the size of the object and the return of the sound waves of the bat's screeching, drawing the conclusion that the bat can identify food like the moth, because its echo is smaller than the building's. In *Bats! Furry Fliers of the Night,* other hot spots open photos, maps, video simulations, and additional text that further explain the subject matter. In these ways, this e-book used technology effectively to convey complex concepts and support deep conceptual discussions, in ways less possible with traditional printed books. We would like to see more examples of such features in e-books, so that adults can better facilitate conversations that deepen children's understandings of texts through shared reading.

Conclusion

The limited number of studies of shared reading of e-books with children two to five years indicate that e-books can promote children's language and literacy development at least to the same extent as printed books when they are shared using research-based approaches to interactions during shared reading (Fisch et al. 2002; Kim and Anderson 2008; Labbo 2009; Smith 2001; Zucker et al. 2009). Even though many e-books are designed for children to use independently, and even though many children can independently operate the media (seemingly with greater ease than adults unfamiliar with the technology!), adults should scaffold e-book reading experiences in similar ways to research-based traditional shared reading in order for children to reap the full rewards of this literacy practice. To do so, adults should:

1. Carefully select high quality e-books with features that support, not interfere with, meaning-making with the text
2. Scaffold children's meaning-making efforts through language interactions that include comprehensible input, prompts for output, connections to real life experiences, and repetition
3. Control the *pacing* and *reading* of the text to the extent possible to enable supportive language interactions throughout the e-book shared reading experience
4. Scaffold children's own use of the technology (e.g., clicking, swiping).

That being said, much work remains to be done. Most of what researchers have studied related to e-books has emphasized uses of e-book technology as *replacements* for adult interaction, mostly in classroom or experimental settings with older children (i.e., 5–9 years old). Such research is not directly relevant to practice with younger children, as it opposes the extensive research base supporting the importance of adult-child interactions around texts. In order to better inform shared reading practices with e-books and young children, we need to shift away from investigating the effects of merely exposing children to new technologies, and begin to systematically explore how to share e-books *with* young children, as one piece of a holistic approach to early childhood literacy development.

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