2018

Developing Language and (Pre)literacySkills in Deaf Preschoolers through Shared Reading Activities with Bimodal-Bilingual eBooks

Gene Mirus
Gallaudet University, gene.mirus@gallaudet.edu

Donna Jo Napoli
Swarthmore College, donnajonapoli@gmail.com

Follow this and additional works at: https://fordham.bepress.com/jmer

Part of the Bilingual, Multilingual, and Multicultural Education Commons, Disability and Equity in Education Commons, Early Childhood Education Commons, Language and Literacy Education Commons, and the Special Education and Teaching Commons

Recommended Citation

Developing Language and (Pre)literacySkills in Deaf Preschoolers through Shared Reading Activities with Bimodal-Bilingual eBooks

Cover Page Footnote
Financial disclosure: Neither author has any financial interests to disclose.

We adopt the usual convention of using small capitals to indicate signs.

We adopt the usual convention of using hyphens between letters to indicate fingerspelling.

Gene Mirus, PhD, is Associate Professor of ASL and Deaf Studies at Gallaudet University. Through his doctoral training in linguistic anthropology from the University of Texas at Austin (2005), he developed a strong interest in studying the relationship between technology and language---specifically how various new technologies contributed to new language practices among Deaf users. He takes much interest in various sign language situations that deaf people encounter in their everyday lives. At present, his area of focus is in understanding best practices for creating bilingual/bimodal ebooks for deaf children. He works in collaboration with Dr. Donna Jo Napoli and their students.

Donna Jo Napoli, PhD, is Professor of Linguistics and Social Justice at Swarthmore College. She has published widely in theoretical linguistics, across the entire grammar, in both spoken languages and sign languages. She works with a team doing advocacy for the language rights of deaf children. Her commitment to ebooks stems from her experience as a children's book writer and her deep trust in Gene Mirus, as both a linguist and a dramatic artist.

Developing Language and (Pre)literacy Skills in Deaf Preschoolers through Shared Reading Activities with Bimodal-Bilingual eBooks[1]

Gene Mirus, PhD
Department of ASL and Deaf Studies, Gallaudet University

Donna Jo Napoli, PhD
Department of Linguistics, Swarthmore College

Encouraging relaxed and playful interaction over stories naturally fosters language interaction and both preliteracy [hereafter (pre)literacy skills] and literacy without anxiety. Reading for pleasure is valuable for young hearing children – we know that, it is among the most beloved family rituals. In this article we argue that reading for pleasure needs to be recognized as valuable for young deaf children and needs to become a beloved family ritual for them, as well. One way to achieve this is to read ebooks to deaf children in order to advance their communication and other (pre)literacy skills. An exploration of these types of books showed that bilingual-bimodal ebooks are being produced to promote literacy through explicit pedagogical techniques, so adults have to learn specific methods to share the books with the children. As an alternative, we describe the Reading Involves Shared Experience (RISE) project, which produces bimodal-bilingual ebooks. Our analysis discusses how using this approach can advance a range of (pre)literacy skills through playful shared reading with deaf children.

Keywords: deaf children, literacy, ebooks, shared reading activities, bimodal, bilingual

This article focuses on the development of (pre)literacy skills using bimodal-bilingual ebooks in classrooms as well as families that have deaf students (where the rubric *deaf* subsumes anyone with reduced auditory access, including hard-of-hearing). We present lessons learned through RISE, a project with undergraduate students, where innovative bimodal-bilingual ebooks are produced and offered gratis on the Internet. These bimodal-bilingual ebooks are intended to be used to develop (pre)literacy skills, specifically teaching children about characterization and narrative. We build on our preliminary work (Napoli & Mirus, 2016) and argue that, stronger communication skills can turn into stronger language skills, particularly if the families

of the deaf children then learn to sign; and stronger language skills should lead to overall improved literacy skills at home and school.

Throughout this article we use the term *bilingual* to include knowledge of a sign language and of the written version of a spoken language, as commonly done in studies of literacy concerning deaf children. First, we explore the scholarly literature to discuss the value of pleasurable shared reading activities (SRAs). Then we turn to a description of the nature of ebooks and how they can be used to enhance (pre)literacy skills of young children through fun SRAs. The RISE project is discussed in the third section of the article. Additionally, via a close analysis of certain aspects of one bimodal-bilingual ebook, we illustrate how, through signing with ebooks, specific (pre)literacy skills can be developed in a relaxed and fun manner. We then identify benefits of using the bimodal-bilingual ebooks, offer suggestions of how the classroom instructor can use them in their lessons, and encourage families to use them at home. Preliminary results from observations on the use of these books are described. Finally, we encourage the development of these types of books at a global scale.

Importance of Pleasurable, Interactive Shared Reading Activities

Through RISE, we produce bimodal-bilingual ebooks with the proposition that deaf children need to engage in SRAs that are enjoyable and that help develop communicative skills. This proposition emerges from our analysis of the scholarly literature discussed below.

Deaf children are academically at risk (Easterbrooks et al., 2015). Scholars point to lack of a solid language foundation as the major culprit (Lederberg, Schick, & Spencer, 2013), where deaf children with enhanced language skills do better at reading (Mayberry, Del Giudice, & Lieberman, 2011). Many deaf children are raised strictly orally; but the auditory information they receive through hearing aids and cochlear implants may not provide language access. A bilingual approach protects academic success since "…exposure to an accessible language is the key to developing native-like proficiency in any language, and a solid first language foundation is also critical for the successful acquisition of a second language" (Mounty, Pucci, & Harmon, 2014, p. 334). Regardless of their speech skills, deaf children who feel confident in signing do better academically in reading (Chamberlain & Mayberry, 2000; Freel et al., 2001; Goldin-Meadow & Mayberry, 2002; Scott & Hoffmeister, 2017) and writing (Basha Ludago, 2014), whether their parents are hearing or deaf (Hassanzadeh, 2012), although socio-demographic factors play a secondary role in academic success (Scott, 2015).

We therefore need efforts to aid communicative development of young children, including preschoolers and early elementary-grade students. Importantly, activities for those children should be grounded in pleasure. Children learn through play (Kuschner, 2008), gaining skills critical to reading (Gambrell, 2011) and math (Murayama, Reinhard, Lichtenfeld, & Vom Hofe, 2013). Play promotes health (Alexander, Frohlich, & Fusco, 2014), ethical development (Edmiston, 2007), and lifelong happiness (Martin, 2014). Preschoolers explore the world through play, nourishing language and other cognitive faculties their plastic brains are primed to develop (Humphries et al., 2012). A study of deaf preschoolers suggests that engaging them in a game of storytelling is a

powerful way to enhance their (pre)literacy skills (Aristizábal, Cano, Vesga, & Collazos, 2017).

Deaf children's need for enjoyable (pre)literacy support leads directly to the benefits of using appropriate SRAs. The 1985 National Academy of Education Commission on Reading concluded: "The single most important activity for building the knowledge required for eventual success in reading is reading aloud to children" (National Academy of Education, 1985, p. 23). That claim has garnered support over the years. A 2014 policy statement of the American Academy of Pediatrics says reading to children from birth on is an essential part of their care (High & Klass, 2014). That policy statement is based on research showing that SRAs activate the parietal-temporal-occipital association cortex, which is largely responsible for multisensory integration. SRAs help the youngest children by nurturing the type of cross-modal associations crucial to vicariously entering a story – to experience and understand holistically (Bus, Van Ijzendoorn, & Pellegrini, 1995; Mol & Bus, 2011; Whitehurst et al., 1988); such early cognitive work marks the emergent print-literacy period (Mayer & Trezek 2015). A ritual of daily SRAs is the bedrock of certain cognitive skills, including reading.

Much research cited in the Commission's report and in the AAP's policy report focuses on monolingual hearing children. However, these findings hold as well for multilingual children (Kalia, 2007) and deaf children (Andrews & Zmijewski, 1997; DesJardin, Ambrose, & Eisenberg, 2014; Dirks & Wauters, 2018; Fung, Chow, & Mc-Bride-Chang, 2005; Williams, 2004). SRAs increase vocabulary (Mol, Bus, & deJong, 2009; Mol, Bus, deJong, & Smeets, 2008), which is particularly important for the deaf child learning to read print, since this child does not pick up vocabulary in the print language by simply 'overhearing' it but can increase vocabulary through SRAs (Trussell, Dunagan, Kane, & Cascioli, 2017; Trussell & Easterbrooks, 2014). SRAs teach narrative skills, particularly when adult-child interaction involves higher level facilitative language techniques rather than simply yes/no questions (Trivette, Dunst, & Gorman, 2010) and see Long and Szabo (2016) on guided reading. When adults ask open-ended questions about story comprehension – such as, "What do you think the bunny will do next?" and then give the child time to consider and formulate an answer, the child's preparatory skills for print-literacy grow (Peters, 2015; Wasik & Bond, 2001; Whitehurst & Lonigan, 1998), particularly the ability to engage in inferencing (van Kleeck, 2008). Interestingly, for some the benefit in SRAs lies in enjoyment, not in pedagogical behavior (Zevenbergen & Whitehurst, 2003). Children gain (pre)literacy skills by talking about the written text (hereafter referred to as 'text') with the adult; they do not need (and often do not enjoy nor pay attention to) the adult pointing at the print words as they say them. Important for us, SRAs can use both monolingual and bilingual books to enhance print-literacy (Semingson, Pole, & Tommerdahl, 2015).

In conclusion, SRAs develop skills necessary for print-literacy through extensive playful language interaction (Deckner, Adamson, & Bakeman, 2006) for both deaf and hearing children. The emotional and intellectual involvement in a story fostered by a pleasurable SRA makes the hard job of learning to read worth it (Willingham, 2015, p. 182). In addition, frequency of pleasurable interactive SRAs is most critical for prekindergarten children, at home and at preschool (Zucker, Cabell, Justice, Pentimonti, & Kaderavek, 2013).

Unfortunately, hearing parents do not often engage in SRAs with their deaf children (Ewoldt, 1986) and, if they do, it is typically not a pleasurable experience that they want to repeat (Schleper, 1995) but a test that leaves both child and adult feeling defeated. Generally, hearing parents of deaf children tend to point to pictures and label them or ask the children to do that, leading to less responsive, less active behavior on the child's part than in truly effective SRAs (Aram, Most, & Mayafit, 2006; DesJardin et al., 2014). This needs to change. In the next section we argue that the use of ebooks for this purpose is a step in the direction of the necessary change.

The Nature of Ebooks

Ebooks are electronic versions of printed books. They are read on computers or tablets. Importantly for RISE, they can embed videos.

In the initial discussion of this section we explain the nature of ebooks differentiating them from traditional picture books. Then, we discuss scholarly literature that show the potential of ebooks to promote (pre)literacy skills.

Gaining the attention of deaf children in an SRA requires gaining their visual attention and holding it. A hearing child cannot decide not to hear; even if her visual attention strays, she is still exposed to the book. But once the deaf child's visual attention strays, the connection to the story is broken. Traditional picture books, being static, have generally failed to capture and hold the visual attention of young deaf children.

Ebooks do, in fact, appear to be useful pedagogical tools. The most recent research shows that SRAs with traditional picture books and SRAs with ebooks produce no significant differences in (pre)literacy skill development in hearing preschoolers (Homer et al., 2014; Silverman, 2013; Willoughby, Evans, & Nowak, 2015). Further, hearing first grade children's pleasure in ebooks corresponded to three motivational aspects of "intrinsic motivation": curiosity, choice, and challenge (Ciampa, 2016), thus, ebooks enhance children's motivation to learn to read (see also Elahi, Mahmood, Shazadi, & Jamshed, 2015; Picton, 2014). It may be that parent-child interaction with traditional books differs from parent-child interaction with ebooks, but not enough work has focused on this question to reasonably speculate whether such a difference might have consequences for the child's development of (pre)literacy skills (Krcmar & Cingel, 2014). Still, it looks like ebooks that are designed to tell a story lead to very young children's comprehension of the material that is equal to or even superior to that from traditional picture books, in contrast to ebooks that are enhanced (such as with games), which can be distracting and might lead to cognitive overload (Bus, Zsofia, & Kegel, 2015; Reich, Yau, & Warschauer, 2016; Shamir, Korat, & Fellah, 2012; Takacs, Swart, & Bus, 2015).

In fact, Takacs, Swart, and Bus (2014) found that ebooks with an oral narration can facilitate story comprehension without interaction from adults by using animation (such as showing how little crocodiles work their way out of the eggs) and music (such as sad music to convey someone is 'heartbroken'). They conclude that with such digital enrichments ebooks can be as effective as an adult in scaffolding a child's comprehension of a story and a child's vocabulary development. We note that other studies conclude, to the contrary, that adult interaction in reading ebooks intensifies the

(pre)literacy benefits (Korat, Levin, Atishkin, & Turgeman, 2014; Segal-Drori, Korat, Shamir, & Klein, 2010). Further, we note that the children in Takacs and colleague's study were reading ebooks in their home language. This is not the situation of many children, including deaf children.

Ebooks turn out to be of particular pleasure to children learning to read in a language that is not their home language (Ghalebandi & Hidawati, 2017), a situation common to deaf children. Here interaction with an adult is important: a study of immigrant children learning to read in a language that is not their home language found that sharing an ebook with a teacher was far more effective in promoting vocabulary development than using it alone (Segers, Takke, & Verhoevan, 2004). Studies of deaf children also conclude that ebooks have similar benefits to traditional picture books (Wauters & Dirks, 2017) and that the shared aspect is of great importance (Dirks & Wauters, 2018).

There are, in fact, a number of ebooks for deaf children that include signing. Many initiatives in early intervention promote pedagogical SRAs (that is, SRAs with explicit instruction) for deaf children using ebooks, with guidelines for parents, telling them to point to 'text' words and fingerspell them (Dirks & Wauters, 2015). Sometimes these initiatives give a simple linguistic analysis of the 'texts', such as the NSF Science of Learning Center on Visual Language and Visual Learning (VL2) at Gallaudet University. This Center produces ebooks (Napoli & Mirus, 2015) where, for example, the prevalence of verbs in final position in ASL but in medial position in English can be pointed out. Many times, pedagogical SRAs focus on 'dialogic reading': the parent asks a question, prompts the child's response, evaluates it, expands on it, then guides the child to repeat it (Fung et al., 2005).

SRAs guided in this way are explicit lessons of the type recommended for older children, rather than playful interaction, which support implicit learning, recommended for all children, even the very youngest. Some ebooks are designed to work with such guidelines (Malzkuhn & Herzig, 2013), but many are not, so parents may have difficulty using similar ebooks without guidelines. That difficulty can lead to the parent worrying about their own competence in guiding their child toward print-literacy. The child may interpret that the SRA is a test and may want to please the parent but, without understanding the story, may have little idea of how to do that. Thus, the child is, likewise, on edge. Both may leave the SRA defeated and relieved that it ended. In other words, when working with a younger child but using ebooks with explicit teaching methods (such as pointing at words in the 'text') intended for the older child, one might get a result contrary to that hoped for.

The evaluation of what is appropriate for older versus younger children in developing (pre)literacy skills is based not just on playfulness, but on methodology. There is a well-accepted distinction in discussions of acquiring literacy between 'outside-in' and 'inside-out' information (Whitehurst & Lonigan, 1998). Outside-in information includes matters associated with comprehension, but not necessarily tied to 'text', such as language development, story structure, and conceptual knowledge. Focusing on outside-in information is appropriate with children of all ages. Inside-out information includes matters closely tied to 'text', such as phonological and letter

knowledge. Focusing on inside-out information is appropriate with older children. Outside-in skills are "a critical step in learning to read for meaning" (Whitehurst & Lonigan, 2001, p. 14) and they feed inside-out skills. The younger deaf child, then, needs playful ebooks for SRAs that will promote, or at least have a chance of promoting, interactive communication of the outside-in information type.

The Promise of Bimodal-Bilingual Ebooks

To develop good literacy skills, scholars agree that children must have a solid foundation in a first language (Beck & Oláh, 2001) with extensive vocabulary and skills in syntax and discourse (Dickinson, McCabe, & Essex, 2006). This foundation allows the child complex interactions with capable users of the language (Mayer & Wells, 1996). It also allows the child use of language to communicate with oneself, transforming thought into language (Watson, 2001). One of the strongest arguments for SRAs, as we have seen, is that the interaction with adults provides support for first language acquisition, vocabulary growth, and development of a complex syntax (Whitehurst & Lonigan, 1988). Also, as mentioned earlier, just as animated scenes in electronic stories capture the hearing child's attention (Bus et al., 2015), a story in a sign language immediately captures the deaf child's attention, whether or not they have experience with a sign language in their home, which most deaf children do not in the early years (Beal-Alvarez & Huston, 2014).

All children need to acquire language. Some deaf children acquire a spoken language via an assistive aid, such as a cochlear implant, but there is little predictability as to which children will succeed (see Yoshinaga-Itano, Baca, & Sedey, 2010 for one of the most promising assessments). In contrast, a sign language is accessible for all deaf children (Humphries et al., 2012) and many now recommend that all deaf children learn a sign language, with the idea that, if they happen to also acquire a spoken language, they will have the added benefit of being bimodal-bilingual, but in no case, will they be linguistically deprived (Hall, 2017; Napoli, Mellon et al., 2015). Further, deaf children who sign achieve better academically, including reading (Clark et al., 2016). Likewise, the family of a deaf child is well-advised to learn a sign language, because language communication is an integral part of family health and happiness, as well as, of the deaf person's health and happiness (Kushalnagar et al., 2011; Luckner & Velaski, 2004).

The question, then, is how SRAs ebooks can help develop (pre)literacy skills in deaf children if the parent and child are not already signers. We propose that by introducing good signing models into the home via ebooks, the parent and the child could be enticed to get interested in a sign language. On the one hand, this could lead to the whole family learning to sign and getting involved in the deaf community. On the other, the family could simply watch and enjoy – which is not a bad result. We contend that effective SRAs can be promoted by reading ebooks that promote sign language use.

Bimodal-bilingual ebooks, offer the opportunity to plant a good sign language model in the home, and one that the family is likely to spend extended time with. Rich language exchanges between deaf children and their mothers in the child's preferred mode of communication, in particular, are critical to the academic success of deaf children (Calderón, 2000). The videos in bimodal-bilingual ebooks offer opportunities

for such exchanges; they may aid in general language learning through integration of visual and linguistic information (Tanenhaus, Spivey-Knowlton, Ebgerhard, & Sedivy, 1995), contextual cues (Chalhoub-Deville, 2003), and reliance on world knowledge (Chambers, Tanenhaus, Eberhard, Filip, & Carlson, 2002). Hearing family members can consult the 'text' for clarification as they play with learning to sign the story. These types of ebooks promote metalinguistic knowledge of language in general and of sign languages in particular, since the child and family can explore and develop knowledge of a particular sign language (a facet common to sign literature; Bascom, 1954).

While deaf preschoolers have been shown to learn some rudimentary ASL from virtually interacting with a screen character (Huang, Smith, Spreen, & Jones, 2008) and while they show improved literacy-related engagement behaviors after watching educational sign videos (Golos, 2010), none of this means that the child can acquire a first language from these bimodal-bilingual ebooks alone. No research on first language acquisition that we know of makes such a claim. All evidence from research on first language acquisition points toward the critical role of social interaction regardless of language modality (Clark, 2009; Hoffmeister & Caldwell-Harris, 2014; Kuhl, 2010; Meisel, 2011; Tomasello, 1992). Consequently, if the deaf child is to learn to sign, she will need much more exposure to a sign language than bimodal-bilingual ebooks alone can provide.

In contrast, those family members who already have a first language can learn much about a sign language from bimodal-bilingual ebooks with signing videos, just as other people with a firm first language foundation can learn much about a second language from digital supports (Kukulska-Hulme & Shield, 2008; Saville-Troike & Barto, 2016; Schulze, 2017). But even in the instance of learning a second language, many argue that human interaction is of critical importance (Gass, 2013; Gibbons, 2003).

Our point is not that the child, nor even the hearing family members, will become competent in a sign language from watching bimodal-bilingual ebooks. Rather, the child and the hearing family members will see a good sign language model and will recognize implicitly, that sign languages are real languages (since the signing and the 'text' are delivering comparable information), overcoming any overt or latent prejudice against signing (Humphries et al., 2017). This may lead the family to playful gestural and language interaction (perhaps mimicking the videos), and to learning some signs. Learning a few signs might wet their appetite for more. This is not just a pipe dream; many hearing parents hope to learn to sign precisely through SRAs with their deaf children (Weaver & Starner, 2011). The family that uses bimodal-bilingual ebooks, we would argue then, is more likely to make contact with the local deaf community and commit themselves to learning a sign language through classes and through interaction with deaf people, which is a first goal in establishing a language foundation for the child (Kushalnagar et al., 2010).

The language support that bimodal-bilingual ebooks supply is similar in some ways to that in multimedia stories for multilingual hearing children, such as the books used across Europe created with Fabula software (Edwards, Monaghan, & Knight, 2000). Fabula ebooks aim to support, among others, the child who uses a minority language at home that differs from the school language (such as Welsh-English, or

Basque-Spanish). These ebooks have 'texts' in both home and school languages. Children can click on a speaker button to hear the 'text' read in either language. We argue that there are several advantages in using ebooks that present multimedia stories. First, the child who speaks a minority language finds support in scaffolding from reading skills (especially comprehension) in the home language to the school language. Second, the parent who speaks the minority language but cannot read the school language is enabled to enter SRAs with the child. Further, those ebooks can help adults improve their own use of the school language. Third, the child who speaks the majority language and is often monolingual becomes more aware of language issues in general.

In the United States, ebooks using audio and video have been found to provide similar advantages (Skouge, Rao, & Boisvert, 2007). In a study of bilingual-bimodal ebooks with a signing narrator where hearing parents were trained on how to use the ebooks with their deaf children, even parents who did not undergo the parent training and were noncompliant about following the recommendations that came with the ebooks turned out to learn signs purely from watching the sign narrator (Mueller & Hurtig, 2010).

The ability to review the videos offers a final advantage: it promotes an analytical approach to language and story (Krentz, 2006). Given all this, the interaction of adult and child in SRAs should help in initial stages of learning some signs and in understanding characterization and narrative, and, further, it might establish a love of literature.

RISE

The authors of this article are linguists. One used to act in the National Theater of the Deaf, being a deaf native signer of ASL. The other writes children's books. Both of them have had an interest in the language and literacy development of deaf children for decades. Our areas of expertise are synergistic; they led us to contribute toward the (pre)literacy development of deaf children by providing materials for SRAs. We teach at Gallaudet University in Washington, DC and Swarthmore College in Swarthmore, Pennsylvania, a hundred miles apart, however our research led us to collaborate in spring 2012 to create RISE: Reading Involves Shared Experience. Essentially, RISE is a venture where ebooks that have 'text' plus sign videos are produced. In fall 2013, we offered for the first time a joint course in which undergraduate students from the two campuses collaborate to produce bilingual-bimodal ebooks. Since then, we have offered the course multiple times. Our interaction is often via the Internet (video chats), as well as several visits of one group to the other group's campus. RISE began solely with the support of our institutions in terms of allowing us to offer the joint course and funding the transportation costs to bring our students together. After the first five years, the Dolfinger McMahon Foundation contributed support for transportation costs for the next three years.

The main goal of RISE is to appeal to both deaf children and the hearing adults that would share the bimodal-bilingual ebooks with them. Note that the focus is on appeal and simple fun. RISE does not produce explicitly pedagogical tools; the ebooks

do not come with a guide for how to use them. Instead, all are encouraged to use them however they want.

In our experience, RISE is the only project within institutions of higher education producing ebooks for children that aims to give pleasure and trusts that pleasure that lead to implicit learning of both language and (pre)literacy skills. By making SRAs enjoyable for both children and adults, through the 'text' and signing videos, we expect to augment the likelihood that SRAs will be repeated when these books are read in classrooms with teachers and at home with parents.

In the years since RISE began, ebooks with signing videos embedded within them have been produced by others and videos of signed stories have proliferated on the Internet, sometimes with 'text' and/or illustrations and sometimes without. Stone (2014) gives an early evaluation of ebooks with 'text' and signing, pointing out that generally the emphasis is on learning to read the written text over gaining language skills. More recently ebooks can have no 'text' at all and no static illustrations; they are essentially short movies (and delightful ones) in which all characters sign, sometimes with an overvoice, as in those produced by Dawn Sign Press in their "Once Upon a Sign" series. RISE ebooks are unique in that they are intended for hearing adult and deaf child to share, they promote a strong language foundation in a sign language, and they offer 'text' for the benefit of those who can read or are ready to start learning to read.

To illustrate the promise of bimodal–bilingual ebooks, we describe below ebooks that RISE produces, which have 'text' and illustrations, like ordinary picture books, plus videos in a sign language, where the signer is deaf and the sign language used is that signer's preferred language of communication. Studies considering the explicitly pedagogical ebooks produced by VL2 show that families with deaf children spend more time in SRAs when they have ebooks with a signing narrator, which is important, since longer exposure positively impacts language and print-literacy development (Mueller & Hurtig, 2010).

RISE has no funding to pay for anything other than transportation of course members; books used as a basis must be in the public domain or the copyright holders must grant their kind permission. As professors we serve as sounding boards and guides throughout acting, filming, and producing bimodal-bilingual ebooks. All undergraduate students in RISE study sign literature and educational research on literacy among deaf and hearing children, and they consult on every aspect of the bimodal-bilingual ebooks. We form pairs (one student from each campus) for each bimodal-bilingual ebook; then teams made of two pairs consult regularly. We test early drafts of these bimodal-bilingual ebooks at deaf schools local to our institutions and use children's and teachers' feedback in improving later drafts. We are attentive to providing opportunities likely to elicit the strategies for interactive behavior between adult and deaf child described in Dirks and Wauters (2015).

Deaf children and their parents deserve as high quality reading materials as the best materials for hearing children. We hope to guarantee quality by using published books (that is, books that have passed the scrutiny of an editorial board of a professional company, such as Penguin, Random House, or National Geographic) or books offered on the Internet that our students unanimously agree upon. We take their

unanimous agreement as important confirmation of the stories' and illustrations' appeal and appropriateness for two main reasons. First, our students study with us the literature on deaf children's language and academic needs. Second, half of our students have gone through the experience of learning to read as deaf people.

Some of these bimodal- bilingual ebooks present traditional tales, giving deaf children stories they have a right and need to know as people living in their country, whatever that country might be. Children living in the United States, for example, might stumble across a reference to Humpty Dumpty or Santa Claus. Being completely uninformed about something nearly all the hearing children are informed about puts the deaf child at risk of both appearing and feeling unintelligent and isolated. The same can be said of children in any country with respect to information traditionally known by hearing children, regardless of their family culture. While the hearing child picks up information simply by overhearing it, via so-called incidental learning, the deaf child needs to be specifically informed, particularly about matters outside the family experience (Powers, Gregory, & Thoutenhoofd, 1998; and see Trussell & Easterbrooks, 2014).

All stories used by RISE, must easily capture the visual attention of the child, which means that they should be full of actions or images that our signers can readily bring to life. All must be relatable to deaf children's life experiences to welcome them into reading (Dennis, Lynch, & Stockall, 2012). The narratives center on ordinary events like, birthday parties, as well as extraordinary but easily relatable events like a runaway baby carriage. In some a non-human character presents the story from a minority viewpoint, allowing deaf children to identify. In one a dog moves to a house full of cats; in another an egg decides to get hard-boiled and bounces away rather than allowing himself to get cracked; in another a character faces huge challenges, but with self-confidence and hard work, those challenges are met. Some introduce classics. Four are nonfiction. Some target toddlers; others, preschoolers or early elementary students.

The bimodal-bilingual ebooks produced by RISE use storytelling techniques of sign literature: the visual vernacular (extensively outlined in Bauman, 2006). In this way, these bimodal-bilingual ebooks develop not just (pre)literacy skills in print-literacy, but also sign-literacy skills, offering deaf children skills rightfully theirs as part of their deaf heritage (Holcomb, 2010; Sacks, 1989) and a way not simply to express themselves, but to be eloquent in doing so. That is, sign literature helps the deaf child not just increase world knowledge but create identity (Sutton-Spence & Kaneko, 2016). Further, a recent study of deaf children who were targeted as being at risk with respect to developing literacy skills and who were given SRAs as intervention concluded that a deaf story-signer leading those interactions was effective in helping them understand the readings (Andrews, Liu, Liu, Gentry, & Smith, 2017). This suggests that the visual vernacular is particularly suited to helping deaf children understand narrative.

The techniques of the visual vernacular often have spoken counterparts in the form of voice alterations (Greene Brabham & Lynch-Brown 2002). So when reading aloud, the reader can change voice pitch, geographical accent, nasality ... to sound like different characters. Visual-vernacular techniques can give the deaf child analogous

advantages (Napoli & Mirus, 2015); beside varying manual motion speed to indicate narrative changes (such as fast action), signers can role shift, whereby the signer embodies one character, then shifts (torso, head, or gaze) to embody another character. This helps the reader understand characterization and develop Theory of Mind (Schick, De Villiers, De Villiers, & Hoffmeister, 2007). Additionally, signers can vary shot distance (Bauman 2003), as in photography or film, for example, showing a horse up close by letting the fists become the hooves, or at middle-range by letting the non-dominant hand become the horse while the dominant hand is a rider on the horse, or at a distance by having the two index fingers brush past each other like horses in a race seen from the stands – all of which help readers interpret plot.

Sign languages have their own grammars, distinct from the grammars of their ambient spoken languages. Accordingly, we encourage RISE signers to read the story, then, tell it naturally in their sign language, without attempting to translate the 'text'. A crucial point which identifies one unique understanding of RISE, is that, strict adherence to a 'text', even while applying techniques of the visual vernacular, can result in grammatical but atypical signing that does not enhance comprehension. Signing deaf parents seem to instinctively know this; they do not feel constrained by 'text' in SRAs with their deaf children (Swanwick & Watson, 2005). RISE signers, likewise, are not constrained; they use accessible, uncontrived language, organizing the information in a way natural to sign narrative. Thus, for example, they present scenes by giving the background image (the room or the tree or wherever the action is to take place) before creating moving characters, as is typical of sign literature (Sutton-Spence & Kaneko, 2016, p. 168).

RISE signers practice to each other and to deaf people outside class. The final versions of RISE ebooks tend to integrate information from 'text' and illustrations into the signing. While the hearing child who someone reads the 'text' to might not get any mention of a mouse under the table in the illustration, the deaf child might well see signing that lingers on that mouse's pointy ears or flickering whiskers. In general, these signers make reference to details in the illustrations via the use of eye gaze or other pointing, an effective engagement strategy (Allen, Letteri, Choi, & Dang, 2014). In fact, even new information, not present in the 'text' nor illustrations, might creep into the signing of RISE ebooks. This freedom respects the signers' creativity, and the reader benefits. In our view this creative freedom has led to excellent language modeling and more fun for the signers. The relative autonomy of the signers allows them to enjoy developing their own methods, making each bimodal-bilingual ebook unique. This is a welcome result since complex differences in learning behaviors indicate that children should be offered reading materials employing varying strategies in helping understand stories (Moore & Wade, 1998).

As of this writing, thirteen of the bimodal-bilingual ebooks produced by RISE are in ASL with English 'text'. Seventeen others match the appropriate national sign language with 'text' in the ambient spoken language – including the sign languages of Brazil, Fiji, Grenada, Iran, Ireland, Italy, Japan, Korea, Nepal, and Saudi Arabia. On the RISE website (https://riseebooks.wixsite.com/access), two additional ebooks are included with the sign language of Russia, signed by a teacher at the Moscow Center for Deaf Studies and Bilingual Education, produced by RISE. Three more ebooks are

included with the sign language of Germany, produced by students at the University of Hamburg, one additional ebook with the sign language of Sweden, produced by students at the University of Stockholm, all guided with support from RISE. Finally, another aspect of RISE is making YouTube versions for use in classrooms and on more platforms, plus we are developing an app that will allow us to make ebooks for any platform (since iBooksAuthor, the only available free app presently, can be used only on Mac platforms). All products of RISE are offered free; all contributors are volunteers.

Analysis of a Bimodal-Bilingual Ebook Produced by RISE

We here exemplify how one of RISE's bimodal-bilingual ebooks could help develop (pre)literacy skills in a relaxed and fun manner with deaf children by analyzing one, best known by its opening words 'Twas the night before Christmas'. A YouTube version of it is available (https://www.youtube.com/watch?v=42nXcSIebPE), and our discussion below refers to the timing bar on that version (Beckman, Hakamali, Henderson, & Vieytez, 2014). We worked from Moore's picture book illustrated by Felix Octavius Carr Darley (Moore & Darley, 1862). This bimodal-bilingual ebook is representative of RISE ebooks for the older preschooler; we have chosen it for discussion since it is adaptable to SRAs with children as young as toddlers up through elementary school. It is a classic in the United States, so we assume familiarity, and do not reproduce the entire 'text'. The signer, Joshua Beckman, has given us permission to discuss every aspect of his work.

In terms of overall organization of 'text', the original version consists of 28 rhyming couplets, organized across five pages. The signer produced 37 video clips altogether, where most clips correspond to a page of 'text', but several times two clips correspond to a single page. We here compare how narrative is handled in the couplet verses of this bimodal-bilingual ebook.

The spoken rhyme is tyrannical with respect to organization of narrative. Consider:

> *He had a broad face and a little round belly,*
> *That shook when he laughed, like a bowl full of jelly.*
> *He was chubby and plump, a right jolly old elf,*
> *And I laughed when I saw him, in spite of myself.* (Moore, 1823)

The first three lines focus on the appearance of Santa; the fourth shifts focus to the narrator's reaction to Santa. However, the rhyme forces couplets; there is no oral opportunity to group the first three lines together in contrast to the fourth. The original book designer laid out these two couplets with the first on the bottom of one page (which page consists of three couplets, an illustration, then three more couplets) and the second on the top of the next page (preceded by an illustration and followed by five other couplets).

The sign rendering done by Joshua Beckman, instead, visually marks narrative focus-shift. He grouped these lines as outlined below, where numbers indicate the minute and second when clips begin and end in the YouTube video.

> 4:08-4:12   *He had a broad face and a little round belly*,
> 4:13-4:18   *that shook when he laughed, like a bowl full of jelly.*

> *He was chubby and plump, a right jolly old elf,*
> 4:19-4:26   *and I laughed when I saw him, in spite of myself.*

The focus-shift from Santa to the narrator coincides with a clip change (from the second to the third), enhancing the child's understanding of that focus-shift. Likewise, there are three pages, with each clip belonging to a different page of 'text'. This visual arrangement allows the first two pages/clips to focus on the appearance of Santa, while the third focus-shift is to the narrator's reaction. The visuals aid the learner follow the narrative focus.

In the 'text', rhyme also overrides narrative action-shifts. Here are two couplets appearing on the same page:

> *A wink of his eye and a twist of his head*
> *Soon gave me to know I had nothing to dread.*
> *He spoke not a word, but went straight to his work,*
> *And filled all the stockings, then turned with a jerk. (*Moore, 1823)

The action shifts from Santa's behavior toward the narrator to the job Santa came to do. This shift takes place in the middle of the third line. The arrangement of the couplet in no way contributes to the child's comprehension of the action shift.

The signer, instead, presents two pages of 'text' with a clip for each:

> 4:27-4:32   *A wink of his eye and a twist of his head*
>   *soon gave me to know I had nothing to dread.*
>   *He spoke not a word...*
> 4:33-4:44   *but went straight to his work,*
>   *and filled all the stockings, then turned with a jerk.*

Clip organization reinforces action shift, aiding narrative comprehension.

Such reorganizations of narrative materials are typical of the arrangements of 'text' to signing in RISE bimodal-bilingual ebooks. The deaf child can be baffled by an organization based on sound (rhyme) they do not access. Packaging that narrative in an organization based on visual information lends the story visual sense.

There is one more important difference between RISE's ebook and the 'text' in the original book.   The original poem includes the couplet:

> *As dry leaves that before the wild hurricane fly,*
> *when they meet with an obstacle, mount to the sky*. (Moore, 1823).

This line does not advance narrative, plus the syntax is convoluted to facilitate rhyme. Since this couplet, might limit comprehension through signing, the RISE ebook omits that couplet. No one has yet written to us complaining; the couplet was skip-able. In sum, the signer's clip organization and the matching 'text' reorganization give consistent support to narrative understanding.

The Three R's as Aids to Literacy

Rhyme, rhythm, and repetition can lead to predictability, which helps the child anticipate plot, aiding in narrative comprehension (Bialostok, 1992). We now discuss these tropes in this bimodal-bilingual ebook.

Rhyme

Spoken rhyme can help children memorize story and associate words to print (Geller, 1983). The ability of spoken rhyme to do this depends on auditory access. RISE signers employ rhyme as well – sign rhyme. A sign consists of the parameters handshape, movement, and location (Kaneko, 2011; simplifying from Stokoe, 1960). If only one of these three parameters differs between two signs, they strongly rhyme; if two differ, they weakly rhyme (Valli, 1993).

This ebook opens with three sign rhymes. First we give the opening couplet in English, which is arranged in two video clips – each on a separate page. Under the English 'text' appears the ASL transcription:

0:09-0:19   *Twas the night before Christmas, when all through the house*
              I LOOK-BACK NIGHT BEFORE CHRISTMAS HOUSE ALL-AROUND QUIET[2]
0:20-0:28   *Not a creature was stirring, not even a mouse.*
              LOOK-FOR EMPTY-EVERYWHERE MOUSE LOOK-FOR NOTHING

Figure 1. Opening screen illustrating the first couplet.

The signs ALL-AROUND (0:16) and EMPTY-EVERYWHERE (0.23-0.24) differ only by handshape. The signs HOUSE (0:15) and QUIET (0:17-0:18) differ only by movement and the fact that QUIET changes palm orientation. The signs MOUSE (0:25) and LOOK-FOR (0:21, repeated in 0:26) differ by location and movement, as well as by the fact that MOUSE is one-handed, while the signer uses both hands for LOOK-FOR.

As a tool for memorization, this description of the rhyme, however, does not do it justice. The dictionary forms for the signs HOUSE and QUIET use a B-handshape, while the dictionary form for ALL-AROUND would use the 5-handshape. But in this clip the signer uses a relaxed B-handshape, so the fingers, instead of pressing against one another, are slightly spread. Likewise, he uses a relaxed 5-handshape, so the fingers,

instead of being strongly spread, are, again, slightly spread. The result is that the child (and parent) who mimics the signing can move fluidly from HOUSE to ALL-AROUND to QUIET, using the same handshape. The signer (and child, and parent) transforms one sign into the next. Transformation is typical of sign poetry (Bauman, 2006) and might aid in memorization as much as rhyme does.

Rhythm

The metrical line of the 'text' is doggedly anapestic tetrameter. Even without regular metrics, however, hearing readers tend to fall into a meter (Guaïtella, 1999). Something about the reading aloud process itself leads us to a rhythmic organization. The perception of rhythm may be critical to gaining literacy (Huss, Verney, Fosker, Mead, & Goswami, 2011). If that is true, and if sign stories are to give the deaf child whatever advantage rhythm gives the hearing child in an SRA, then they also must establish a rhythm. Rhythm in sign languages can be established by varying the size and dynamics of movement (Valli, 1993). Rhythm in sign literature helps capture the attention of younger deaf children (Blondel & Miller, 2000, 2001).

Rhythm in spoken language poetry can also signal closure (Smith, 1968). Sign languages likewise have rhythmic ways to show closure, including 'resting or holding a sign after performing several in quick succession', as well as 'pulsing' (body beats while holding or repeating a sign: Maler, 2013, sections 3.9-3.10).

All signers in RISE ebooks establish rhythms. Fingerspelling, for one, has a strong beat. Consider the sign rendering of these lines (the clip from 2:15 to 2:33):

> *And he whistled and shouted and called them by name.*
> *Now, Dasher! Now, Dancer! Now, Prancer and Vixen!*
> *On Comet! On, Cupid! On, Donner and Blitzen!*

As the signer moves into the list of names, he points to one side and fingerspells a name. Then he shifts his torso to the other side, points, and fingerspells another name. The strong beat and body shifts emphasize parallelism between phrasing and meaning.

Before the signer began that name list (from 2:11 to 2:14), he was holding the reins of the sleigh, moving his hands up and down as though controlling reindeers. At the end of the name list, he returns to that action with the original rhythm. Thus, we have the name rhythm nested inside the rein-controlling rhythm, helping the child see the continuity of action before and after the name list.

Rhythmic phrases end in holds (pauses). Let's look again at the first two clips, where we have now marked the holds:

> I LOOK-BACK NIGHT BEFORE CHRISTMAS [$hold_1$] HOUSE ALL-AROUND QUIET [$hold_2$]
> LOOK-FOR EMPTY-EVERYWHERE [$hold_3$] MOUSE LOOK-FOR NOTHING [$hold_4$]

The holds make it clear that in these clips each sign line is comprised of two equal parts – hemistichs. The end of each hemistich is indicated by a nonmanual marker (an articulation of eyes, eyebrows, head…). For $hold_1$ (0:14) and $hold_2$ (0:18) that marker is a head nod; for $hold_3$ (0:25), eye aperture: the eyes go from squint to fully open, then blink; for $hold_4$ (0:28), a blink. Holds mark rhythmic closures throughout the story and coincide with semantic groupings.

If, instead, there is a semantic grouping that continues from one clip to the next, the signer makes continuity obvious via articulatory transitions. One transition-method repeats the sign from the end of one clip at the beginning of the next. The clip corresponding to the 'text' *had just settled our brains for a long winter's nap* (1:23-1:30) ends with the sign FALL-ASLEEP (1:30). The next clip (1:31-1.38) corresponds to two couplets:

> *When out on the roof there arose such a clatter,*
> *I sprang from my bed to see what was the matter.*
> *Away to the window I flew like a flash,*
> *tore open the shutter, and threw up the sash*

The signer repeats the sign FALL-ASLEEP (1:31-1:32) at the start of this clip, linking the temporal unity of falling asleep (a single sleep event) with the roof clatter. The other transition-method increases speed as the signer moves from the end of one clip to the beginning of the next. This happens between the clip above (1:31-1:38) and the clip following, corresponding to this couplet (1:39-1:47):

> *The moon on the breast of the new-fallen snow*
> *gave the lustre of midday to objects below.*

Once again we see a mechanism used in oral stories and poems being used in sign stories and poems. Rhythm here signals semantic groupings, and, therefore, is one more aid in comprehending narrative.

Repetition

The English poem uses little repetition. The RISE signer, in contrast, uses frequent repetition, typical of sign literature (Bauman, Nelson, & Rose, 2006). Repetition helps with language development; the first time a language unit is used, the child can note it, but on later times, the child is primed to mimic (Corrigan, 1980).

Repetition in sign literature can be of several types: semantic units, phonetic ones, whole signs, and entire sequences (Sutton-Spence & Kaneko, 2016). All types occur in this ebook. Consider the line *The stockings were hung by the chimney with care.* This is rendered by a long clip (0:29-0:46). The signer tells us to take a close look, and we will see that the house is decorated. He introduces the mantelpiece (0:36), indicating three loops there (0:37-0:39). He tells of red (0:40) stockings – three, again (0:41-0:42) – with white (0:43) cuffs (0:44-0:46). There is a natural progression: three loops prepare us for three stockings, which prepare us for three cuffs. In each set, the first, second, and third instance of a sign is given in consecutive points along a spatial line, moving from signer's left to right. The reader is primed by the first set to know what will happen movement-wise in the second and third sets, encouraging the child to make that movement with him. This is similar to how repetition in a pattern book primes the child for what will come next, encouraging the child to speak out along with the adult (an effective intervention for children from low-income backgrounds; Lonigan & Whitehurst, 1998). Since pattern books are useful in advancing literacy skills of children who are not entirely familiar with the language used in the books (such as English as a Second Language (ESL) children; Peregoy & Boyle, 2000), we expect

repetition priming to be useful in advancing the skills of deaf children in hearing households.

Repetition of threes occurs again in the clip corresponding to the 'text' line *The children were nestled all snug in their beds* (0:55-1:04). The signer tells us about three beds with a child in each, along that spatial line from the signer's left to right. After the last child is snug in bed, the signer has a hold, signaling the end of that rhythmic phrase.

Threes occur once more in the video corresponding to the line: *While visions of sugar-plums danced in their heads* (1:05-1:15). The signer signs CANDY (1:07), followed by pointing at three spots high in the air (1:08), then COOKIES (1:09), followed by pointing to those same three spots (1:10), and finally SUGAR P-L-U-M-S[3] (1:11-1:12), followed by pointing to those three spots (1:13). This instance of threes does not correspond to information in the 'text' or illustrations; the 'text' does not mention and the illustrations do not show candy and cookies. The signer introduced them to aid vocabulary development. Candy and cookies are familiar. But sugarplums are not. The signer deftly teaches the child what sugar-plums are by inference at the general level (two similar things are followed by an unknown, so we assume the unknown is similar to the others) and at the particular level (two sweets are followed by an unknown, so we assume the unknown is a sweet).

Figure 2. Use of finger spelling to illustrate a less familiar noun.

Near the end of the poem (4:33 to 4:44) the signer uses repetition to reinforce memory and emphasize coherence: Saint Nicholas fills the three stockings we saw earlier in the story. Phonetic repetitions occur often in the clips, as we already noted when we talked about rhyme.

Full sign repetitions occur often, as well, including ALL-AROUND (0:16 and 0:57), HOUSE (0:15, 0:56, 2:38), FAMILY (0:32 and 0:58). Sometimes the signer uses full-sign

repetition to underscore meaning. Of the four clips corresponding to the four lines below, all but the third ends with the sign FALL-ASLEEP:

0:55-1:04	*The children were nestled all snug in their beds*
1:05-1:15	*while visions of sugar plums danced in their heads*
1:16-1:22	*And Mama in her 'kerchief, and I in my cap*
1:23-1:30	*had just settled our brains for a long winter's nap*

The most striking repetition this signer uses is of sequences. He often reminds us he is Santa, who drives reindeers (1:55-1:57, 2:02-2:04, 2:12-2:13, 2:34-2:35, 5:06-5:07). The story closes with Santa driving that sleigh a final time (one quick move and a hold in 5:20). The signed repetition in this ebook can help the child understand and memorize the narrative.

Transparency of Literary Techniques

Some literary techniques that call for cognitive sophistication when delivered orally are transparent in signing, making them accessible to the younger child. Much signing involves iconicity (Perniss, Thompson, & Vigliocco, 2010), analogy (Sutton-Spence & Napoli, 2013), and metaphor (Taub, 2001; Wilcox, 2000). The signing in this bimodal-bilingual ebook revels in all. In the second clip here, a 'text' simile is rendered by a sign simile:

3:55-4:00	*The stump of a pipe he held tight in his teeth,*
	and the smoke it encircled .....
4:01-4:07	................................*his head like a wreath.*
	....MY ALL-AROUND-FACE EDGES-OF-HEAD LIKE CHRISTMAS W-R-E-A-T-H

Another 'text' simile is handled not with LIKE but by juxtaposing signs (perhaps more like a metaphor) in the line: *and the beard on his chin was as white as the snow* (3:51-3:54).

Finally, the signer introduces a graphic metaphor. In the clip corresponding to this line: *The children were nestled all snug in their beds,* (0:55-1:04), we see the three children in bed. The signer tightens his fingers around the last child (1:02), as a metaphor for snugness.

By helping the child become comfortable making the cognitive associations necessary for understanding similes and metaphors, our signer paves the way for the child to decipher 'text' similes and metaphors later as a reader.

Attention as a Key to (Pre)literacy

As noted earlier, for any techniques to encourage (pre)literacy, the child must pay attention. For the deaf child, that means visual attention. Further, since child-directed speech has been argued to play a role in speech development, one might expect child-directed signing to enter into RISE ebooks.

Eyegaze. Joint attention for sighted people is defined as an observer following the eyegaze of an interactant to a target (Corkum & Moore, 1995). It is critical for a successful SRA for deaf children (Swanwick & Watson, 2007) and for children with language-related special needs (Kaderavek & Justice, 2002). The research on joint attention usually concerns live interactions. However, if a character in a video tries to

interact with viewers, viewer-addressees visually attend to a video-narrator's gestures under the condition that the narrator holds a gesture or gazes at her own gesture (Gullberg & Holmqvist, 2006; and see Huang et al., 2008 and Golos, 2010).

Sign language literature makes use of at least six types of eyegaze (Kaneko & Mesch, 2013) to potentially foster/scaffold joint attention, and all are used by our signers:

(1) narrator's gaze at the audience, at the outset and repeatedly.

(2) character's gaze, as when Santa looks around the house (0:57).

(3) spotlight gaze on hand(s), as when the signer alternates between narrator's and spotlight gaze in describing the stockings (0:29-0:46).

(4) reactive gaze on hands, showing how the signer feels toward what the hands tell, as in the clips about what the narrator sees on opening the window (1:39-1:47) and discovering a sleigh (1:48-1:57 – the reactive gaze ends at 1:55).

(5) panoptic gaze, where the eyes add information to manual signs, as when the narrator hears hoof beats on the roof (3:01); his eyes go upward and right, indicating the sound's source.

(6) prescient gaze, indicating future action by anticipatory looking, as in the clip for the line *And away they all flew like the down of a thistle* (5:00-5:04). At the end of this clip, the signer raises his eyes, and at the beginning of the next clip, he rides off in his sleigh.

RISE signer's eyes establish joint attention by looking directly at the camera, inviting the reader to return direct gaze, and by looking at a target, pulling the reader's eyes toward it. In this way, a bimodal-bilingual ebook offers a hook that no 'text' (nor static illustrations) can match.

Child-directed signing. Some research concludes that child-directed speech (with exaggerated prosody) helps small children learn words (Golinkoff , Pasek, Bailey, & Wenger, 1992). Other research finds that exaggerated pitch differences in child-directed speech help preschoolers interpret others' emotions (Quam & Swingley, 2012). We might, then, expect child-directed signing during SRAs to help deaf children gain vocabulary and better understand characters' emotions.

When deaf parents use child-directed signing, their signing is characterized by larger, slower signs and by signs that have lexical-internal repetition. Additionally, these parents often sign on the child's body or displace signs to occur within the child's visual field (Holzrichter & Meier 2000).

In RISE ebooks many signs are, indeed, large and slow. However, the size and rate of signing corresponds to narrative structure, not visual salience of signs. In general, our signer places verbs toward the end of a clip, and they are often larger and slower because they are the heart of the message. But nothing about his signing is child-directed – neither the type of repetitions nor the lexical items used (Holzrichter & Meier, 2000). Rather, the RISE signer develops reader vocabulary via using signs in

isolation or in brief utterances, as well as stressing signs through lengthened duration and increased size (De Temple & Snow, 2003).

Why would our signer not have employed child-directed signing? The goal of RISE bimodal-bilingual ebooks is to increase the frequency of SRAs by making them so enjoyable that child and adult want to repeat the experience. That means RISE ebooks must appeal to the adult, too. On an adult reader, child-directed language soon wears thin. Hence we avoid it.

Use of the Ebooks at Home and at School

On the basis of the scholarship that explains the importance of pleasure in SRAs (discussed earlier) and from our experience working with adults and children in the production of RISE ebooks, we suggest that parent and child share RISE bimodal-bilingual ebooks however they want, enjoying themselves. The parent might simply read 'text' while the child looks at videos. This is the least interactive kind of SRA, but it still may support development of (pre)literacy skills. For instance, the child may learn that books hold good stories and fascinating information. Sharing the bimodal-bilingual ebook also means parent and child have shared experience and information, so when something comes up during the day that makes one or the other think about it, they can discuss it. In this way, the SRA strengthens family bonds.

The parent might, instead, point to illustrations and guess what part of the signing is describing the visuals that the illustrations provide (such as the children snug in bed). He might ask the child to make guesses (perhaps about the mantelpiece decorations). He might imitate the story actions and invite the child to do the same. The parent could copy the signer and encourage the child to. As signing knowledge grows (ideally in conjunction with classes in the sign language), parent and child could have simple conversations in sign about the story (not worrying about grammar details) and then about other topics.

That is, interaction may range from minimal (like parallel play; Parten, 1933) to prolonged and complex. So long as parent and child enjoy themselves, they are likely to repeat SRAs, engaging in interactive discussions of the stories. These unscripted SRAs might be as fruitful for the emergent deaf reader as unscripted SRAs are for the emergent hearing reader. At the least, parent and child will have fun.

Teachers of deaf children can help parents of deaf children by recommending these SRAs, and telling parents that there is no one right way to use them. Teachers have power; parents often see them as trusted professionals "who should know" best (Marschark, 2007, p. 5). A teacher's assurance that it is okay to engage with the bimodal-bilingual ebooks, can make parents relax about simply enjoying sharing a story with their child instead of incessantly assessing how much their child is (or is not) learning.

Likewise, these ebooks in their YouTube form lend themselves to classroom use. While everyone agrees that preschoolers need SRAs (Duusrma, Augustyn, & Zuckerman, 2008; High & Klass, 2014), elementary schoolers need SRAs, as well (Gambrell, 2011). In our view, the classroom teacher in the United States should buck

the race to fulfill all requirements of the Every Student Succeeds Act (2015) curriculum, and find time to read with the children for pure pleasure.

Since most deaf children are mainstreamed, these bimodal-bilingual ebooks may offer all students in the class the benefits of exposure to another language and culture: the classroom can learn about a sign language from watching and mimicking the clips. Students can discuss whatever they notice of Deaf Culture in the videos – and the teacher is free to augment with outside reading and experience.

RISE ebooks can be shared in the classroom the same way traditional picture books are – at circle time. Deaf and hearing children, alike, can enjoy the signing by watching and then discussing what they see. The teacher can encourage them to make up signs for objects that lend themselves to transparent visual representations – 'book', 'tree', 'house'. Then the teacher can go to an online dictionary and look up the actual signs. The class can compare and (implicitly, at least) learn something about what is likely a sign articulation. The children can imagine occasions in which it would help to communicate silently. Children can be encouraged to take RISE ebooks home for sharing. They can be challenged to learn to sign a page for their parents.

For favorite stories, the teacher could try follow-up activities. The class might act out the story. Children could take turns telling the story through mime and gestures. Gradually, children could move more toward memorizing signing the particular story – modeling their signing after the clip. This is an opportunity for the deaf children in the class to lead the way.

Finally, the classroom that has hearing children with special needs might find that introducing ebooks with sign clips allows children whose needs concern language in a variety of ways to improve communication skills (Deonna, 2014; Tincani, 2004). Table 1, below, outlines examples of ways ebooks can support a mainstreamed classroom.

Table 1

Strategies for Using Bilingual-Bimodal Ebooks in the Classroom

Strategy	Example/Explanation
Introducing a new topic	Literature that relates thematically to a lesson can serve to acquaint a deaf student with the topic at hand.
Supporting deaf identity	The deaf child who learns to sign the story in an ebook can teach the whole class, showing that ASL is a real language.
Supporting independent reading	Literature in sign might soothe feelings of frustration and fatigue common among deaf children in a hearing environment.
Supporting the deaf child who has vocalization skills	Many of the ebooks have a voiceover. So those children who would like to practice their speech skills can benefit.
Using sign version as preview	Deaf students can read the ebook on their own (perhaps at home) ahead of circle time in order to understand its content as the classroom teacher presents the 'text' to the class.
Using sign version as review	After a book has been shared in circle time, deaf students can read it on their own to further their understanding.
Comparing sign and 'text' versions for self-assessment	All students can find out how much English or ASL they are learning by counting the words and signs they understand before and after the book is shared in circle time.
Learning about iconicity	All students can make up signs for things and then compare them to the real signs in the stories.
Improving home-school connections	Ebooks allow deaf family members active involvement in their child's education, whether the child is deaf or hearing, even if their English skills are limited. Deaf parents can be invited to class to sign with the children. Weekend workshops on signing might be made available, with transportation costs covered by the school.
Supporting family literacy programs	Assisting parents of deaf students in locating ebooks is a great way to start a family literacy program.
Raising awareness of multiculturalism	Ebooks can raise all children's awareness through exposure to different languages and cultures.
Helping teachers and students learn another language	Ebooks can help teachers and all children recognize that sign languages are true languages and can teach them some rudimentary sign. All children can be encouraged to bring the ebooks home to share with their families, so the children can practice signing at home.
Encouraging reading for pleasure	Our ebooks involve no stress. No one should be 'tested' on them. They are purely for fun.
Supporting students with other language-related issues	Ebooks offer an augmentative communication system for children who have language-related issues, such as autism or AEA.

Preliminary Observations on the Use of RISE Bimodal-Bilingual Ebooks

The signers in RISE ebooks naturally employ techniques that make it easy for readers to understand, mimic, and retell stories in their own way, as attested through preliminary studies. In order to assess the efficacy of RISE ebooks, in autumn of 2013, 2014, and 2017 we brought RISE ebooks to the Pennsylvania School for the Deaf. Children at the Early Childhood Center through grade 4 engaged in SRAs with their teachers and with our undergraduate students, sharing one-on-one or in small groups of up to four children with an adult. After initial SRAs, we distributed iPads to groups of children (again, no more than four) in grades 1 through 4 and observed how they shared them. Our students took handwritten notes of what they observed throughout, since that method was suggested to us by the school administration as the least likely to divert the children's attention from the ebooks (a benefit to us) and the least disruptive of classroom atmosphere (a benefit to teachers). We encouraged them to think about the characteristics of effective SRAs listed in Zebenbergen & Whitehurst (2003), as well as to note anything else they considered important.

Some groups of children hovered over an iPad together initially, then took turns going through the ebook alone. Other groups took turns from the start. Throughout, the children did not simply watch, they signed. These are the most prominent behaviors we observed:

(1) They mimic the videos as they watch them repeatedly, beginning as early as the second viewing.

(2) They tell the child next to them what the story is about, preparing them for it and telling them they are going to love it.

(3) In retelling, they vary the stories, exaggerating certain parts to show feelings or personal interests.

(4) They retell the bimodal-bilingual ebooks together, as a game; one will elaborate on the other's sentence, sometimes pushing to extremes that leave them laughing.

(5) Throughout the above four behaviors they use higher level facilitative language techniques (such as asking open-ended questions and building off each other's elaborations of the story).

These five behaviors are typical of effective SRAs (Zevenbergen &Whitehurst 2003). Additionally, we recorded the following two behaviors:

(1) They play with the signs in the videos and transform them at will, claiming language ownership (Bahan, 2006).

(2) They appropriate the bimodal-bilingual ebooks as their own; they do not want teachers to explain them. Instead, they explain them to teachers. This suggested to us that the children are delighted these ebooks are designed for and belong to them, as deaf people.

The children in our observations went beyond being receptive, however. We introduced ourselves as wanting to learn from them what worked and did not work.

They told us which illustrations they liked, which orientation (landscape or portrait) they preferred, and whether they liked the formatting choices. They were the authorities, proud and happy to teach us. They made suggestions about other stories we might want to convert into bimodal-bilingual ebooks, and were excited at the idea that there could be more of these types of ebooks in the future. Their teachers also expressed enthusiasm about the videos, and said they were delighted to see the children discussing stories.

Rehana Omardeen (2015), an undergraduate student at Swarthmore College at the time, also did an observation study of home use of ebooks in autumn 2014, with approval from the college IRB and agreement on the part of children and parents to be identified in publications that should stem from the study. She gave two families (hearing parents with a deaf child as well as hearing children) an iPad loaded with ebooks for a two-week period and encouraged them to do SRAs. During those two weeks, she visited their homes twice and video-recorded parent and deaf child (and sometimes the hearing children) engaged in SRAs. Both didactic-oriented stories produced by VL2 (described earlier) for the older children and RISE ebooks were on those iPads. The families were urged to share as many and as often as they liked, with some from the VL2 group and some from the RISE group. Importantly, Omardeen did not characterize each set of ebooks beyond pointing out that there were two groups, identifiable by their covers. After each recording session, Omardeen sat with the deaf child and sometimes with the hearing siblings, as well, and conversed in a mix of English, gestures, and ASL about the ebooks in both groups, following the children's lead.

Documented comments from the children suggested that they were delighted that a book would have a video inside it. They loved manipulating the iPad. Analysis of the video-recorded sessions showed that the parents, however, did not bring attention to the signing during the SRA. They were convinced that signing was unnecessary. Their preschoolers had cochlear implants, and the parents trusted the professionals who had advised them to be patient and wait for success with speech. We also suspect they had been discouraged by medical professionals from signing with their children – a common, unfortunate experience (Humphries et al., 2012).

The children, deaf and hearing, on the other hand, were fascinated by the signing and eager to use the signs they had learned from the videos. They expressed preference for RISE bimodal-bilingual ebooks over the VL2 ebooks; those were the ones they opened up to show Omardeen when they talked about what they enjoyed.

Preliminary observational documentation of the use of RISE bimodal-bilingual books with deaf children, their teachers, and their families suggest a promising outlook for their enjoyment of SRAs and development of (pre)literacy skills. Further, anecdotal information from the constant emails we receive from parents and children telling us how much they enjoy RISE ebooks, suggests that we are adding to deaf children's appreciation for the value of stories and encourages us to persist. However, more rigorous studies that are longitudinal in nature are necessary to better understand what works and how in using bimodal-bilingual books for these purposes.

Conclusion

More information about RISE bimodal-bilingual ebooks can be found at this website, where all can be downloaded for free: https://riseebooks.wixsite.com/access . Those involved in raising and educating deaf children need to focus on pleasurable interactions over storybooks. Parents look to teachers for informed guidance. Teachers should encourage parents to relax with the ebooks, doing whatever they want, from simply reading to lots of play. They should let them know that enjoying SRAs with their children is their right as parents – and it is the children's right, as well. Deaf children need pedagogical ebooks designed specifically for their academic requirements, but they also need bimodal-bilingual ebooks that are unadulterated fun and from which they can improve the development of (pre)literacy skills. Deaf children and their parents have a right to such an anxiety-free experience.

However, our work also points to a lack of ebooks for deaf children. We recognize that while there are hundreds of thousands of picture books for hearing children; for deaf children there are none in most countries, a handful in other countries, and at most only dozens in a very few countries. Thus, efforts to design, publish, and make available bimodal-bilingual ebooks for deaf children, as well as conduct research on their use, such as the RISE project, must continue and be expanded globally.

References

Alexander, S. A., Frohlich, K. L., & Fusco, C. (2014). Active play may be lots of fun, but it's certainly not frivolous: The emergence of active play as a health practice in Canadian public health. *Sociology of Health & Illness, 36*(8), 1188-1204. https://doi.org/10.1111/1467-9566.12158

Allen, T. E., Letteri, A., Choi, S. H., & Dang, D. (2014). Early visual language exposure and emergent literacy in preschool deaf children: Findings from a national longitudinal study. *American Annals of the Deaf, 159*(4), 346-358. https://doi.org/10.1353/aad.2014.0030

Andrews, J. F., Liu, H. T., Liu, C. J., Gentry, M. A., & Smith, Z. (2017). Increasing early reading skills in young signing deaf children using shared book reading: A feasibility study. *Early Child Development and Care, 187*(3-4), 583-599. https://doi.org/10.1080/03004430.2016.1210135

Andrews, J. F., & Zmijewski, G. (1997). How parents support home literacy with deaf children. *Early Child Development and Care, 127*(1), 131-139. https://doi.org/10.1080/0300443971270111

Aram, D., Most, T., & Mayafit, H. (2006). Contributions of mother–child storybook telling and joint writing to literacy development in kindergartners with hearing loss. *Language, Speech, and Hearing Services in Schools, 37*(3), 209-223. https://doi.org/10.1044/0161-1461(2006/023)

Aristizábal, L. F., Cano, S., del Sol Vesga, L. & Collazos, C. A. (2017). Towards the design of interactive storytelling to support literacy teaching for deaf children. In J. Guerrero-Garcia, J. M. González-Calleros, J. Muñoz-Arteaga, & C. A. Collazos (Eds.), *HCI for Children with Disabilities. Human-Computer Interaction Series* (pp. 115-126). New York, NY: Springer. https://doi.org/10.1007/978-3-319-55666-6_6

Bahan, B. (2006). Face-to-face tradition in the American deaf community. In H. D. L. Bauman, H. M. Rose, & J. L. Nelson (Eds.). *Signing the Body Poetic: Essays on American Sign Language Literature* (pp. 21-50). Berkeley, CA: University of California Press.

Bascom, W. R. (1954). Four functions of folklore. *The Journal of American Folklore, 67*(266), 333-349. https://doi.org/10.2307/536411

Basha Ludago, T. (2014). Signed language proficiency and writing skill of deaf children in special and integrated primary schools in Addis Ababa. *Turkish International Journal of Special Education and Guidance & Counselling (TIJSEG), 3*(2). 1-48.

Bauman, H.-D. L. (2003). Redesigning literature: The cinematic poetics of American Sign Language poetry. *Sign Language Studies* 4(1). 34-47. https://doi.org/10.1353/sls.2003.0021

Bauman, H.-D. L. (2006). Toward a visual and cinematic poetics of ASL. In H. D. L. Bauman, J. L. Nelson, & H. M. Rose (Eds.), *Signing the Body Poetic: Essays on American Sign Language Literature* (pp. 95-117). Berkeley, CA: University of California Press.

Bauman, H.-D. L., Nelson, J. L., & Rose, H. M. (2006). *Signing the body poetic: Essays on American Sign Language literature*. Berkeley, CA: University of California Press.

Beal-Alvarez, J. S., & Huston, S. G. (2014). Emerging evidence for instructional practice: Repeated viewings of sign language models. *Communication Disorders Quarterly, 35*(2), 93-102. https://doi.org/10.1177/1525740113514437

Beck, S. W., & Oláh, L. N. (Eds.). (2001). *Perspectives on language and literacy: Beyond the here and now.* Cambridge, MA: Harvard Education Press.

Beckman, J., Hakamali, I., Henderson, A., & Vieytez, M. (2014). *A bilingual ASL-English Ebook the Night before Christmas.* Gallaudette University and Swarthmore College. https://www.youtube.com/watch?v=42nXcSIebPE

Bialostok, S. (1992). *Raising readers: Helping your child to literacy*. Winnepeg, Manitoba, Canada: Peguis Publishers.

Blondel, M., & Miller, C. (2000). Rhythmic structures in French Sign Language (LSF) nursery rhymes. *Sign Language and Linguistics, 3*(1), 59-77. https://doi.org/10.1075/sll.3.1.04blo

Blondel, M., & Miller, C. (2001). Movement and rhythm in nursery rhymes in LSF. *Sign Language Studies, 2*(1), 24-61. https://doi.org/10.1353/sls.2001.0022

Bus, A. G., Takacs, Z. K., & Kegel, C. A. T. (2015). Affordances and limitations of electronic storybooks for young children's emergent literacy. *Developmental Review, 35*, 79-97. https://doi.org/10.1016/j.dr.2014.12.004

Bus, A. G., Van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*(1), 1–21. https://doi.org/10.3102/00346543065001001

Calderon, R. (2000). Parental involvement in deaf children's education programs as a predictor of child's language, early-reading, and social-emotional development. *Journal of Deaf Studies and Deaf Education, 5*(2), 140-155. https://doi.org/10.1093/deafed/5.2.140

Chalhoub-Deville, M. (2003). Second language interaction: Current perspectives and future trends. *Language Testing, 20*(4), 369-383. https://doi.org/10.1191/0265532203lt264oa

Chamberlain, C., & Mayberry, R. I. (2000). Theorizing about the relation between American Sign Language and reading. In C. Chamberlain, J. P. Morfod, & R. I. Mayberry (Eds.), *Language Acquisition by Eye*, (pp. 221-259). New York, NY: Psychology Press.

Chambers, C. G., Tanenhaus, M. K., Eberhard, K. M., Filip, H., & Carlson, G. N. (2002). Circumscribing referential domains during real-time language comprehension. *Journal of Memory and Language, 47*(1), 30-49. https://doi.org/10.1006/jmla.2001.2832

Ciampa, K. (2016). Motivating grade 1 children to read: Exploring the role of choice, curiosity, and challenge in mobile ebooks. *Reading Psychology, 37*(5), 665-705. https://doi.org/10.1080/02702711.2015.1105337

Clark, M. D., Hauser, P. C., Miller, P., Kargin, T., Rathmann, C., Guldenoglu, ... & Israel, E. (2016). The importance of early sign language acquisition for deaf readers. *Reading & Writing Quarterly, 32*(2), 127-151. https://doi.org/10.1080/10573569.2013.878123

Clark, E. V. (2009). *First language acquisition*. Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/CBO9780511806698

Corkum, V., & Moore, C. (1995). Development of joint visual attention in infants. In C. Moore & P. J. Dunham, *Joint Attention: Its Origins and Role in Development* (pp. 61-83). Hillsdale, NJ: Lawrence Erlbaum.

Corrigan, R. (1980). Use of repetition to facilitate spontaneous language acquisition. *Journal of Psycholinguistic Research, 9*(3), 231-241. https://doi.org/10.1007/BF01067239

De Temple, J., & Snow, C. E. (2003). Learning words from books. In A. van Kleeck, S. A. Stahl, & E. B. Bauer (Eds.), *On Reading Books to Children: Parents and Teachers* (pp. 16-36). East Sussex, UK: Psychology Press.

Deckner, D. F., Adamson, L. B., & Bakeman, R. (2006). Child and maternal contributions to shared reading: Effects on language and literacy development. *Journal of Applied Developmental Psychology, 27*(1), 31-41. https://doi.org/10.1016/j.appdev.2005.12.001

Dennis, L. R., Lynch, S. A., & Stockall, N. (2012). Planning literacy environments for diverse preschoolers. *Young Exceptional Children, 15*(3), 3-19. https://doi.org/10.1177/1096250612437745

Deonna, T. (2000). Acquired epileptic aphasia (AEA) or Landau-Kleffner syndrome: From childhood to adulthood. In D. V. M. Bishop & L. B. Leonard (Eds.), *Speech and Language Impairments in Children* (pp. 261-272). New York, NY: Psychology Press.

DesJardin, J. L., Ambrose, S. E., & Eisenberg, L. S. (2008). Literacy skills in children with cochlear implants: The importance of early oral language and joint storybook reading. *Journal of Deaf Studies and Deaf Education, 14*(1), 22-43. https://doi.org/10.1093/deafed/enn011

DesJardin, J. L., Doll, E. R., Stika, C. J., Eisenberg, L. S., Johnson, K. J., Ganguly, D. H., ... & Henning, S. C. (2014). Parental support for language development during joint book reading for young children with hearing loss. *Communication disorders quarterly*, *35*(3), 167-181. https://doi.org/10.1177/1525740113518062

Dickinson, D. K., McCabe, A., & Essex, M. J. (2006). A window of opportunity we must open to all: The case for preschool with high-quality support for language and literacy. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 11-28.). New York, NY: Guilford Press.

Dirks, E., & Wauters, L. (2015). Enhancing emergent literacy in preschool deaf and hard-of-hearing children through interactive reading. In H. Knoors & M. Marschark (Eds.), *Educating Deaf Learners: Creating a Global Evidence Base* (pp. 415-442). New York, NY: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190215194.003.0018

Dirks, E., & Wauters, L. (2018). It takes two to read: Interactive reading with young deaf and hard-of-hearing children. *The Journal of Deaf Studies and Deaf Education, 23*(3), 261-270. https://doi.org/10.1093/deafed/eny005

Duursma, E., Augustyn, M., & Zuckerman, B. (2008). Reading aloud to children: The evidence. *Archives of Disease in Childhood, 93*(7), 554-557. https://doi.org/10.1136/adc.2006.106336

Easterbrooks, S. R., Lederberg, A. R., Antia, S., Schick, B., Kushalnagar, P., Webb, M., Branum-Martin, L., & Connor, C. M. (2015). Reading among diverse DHH learners: What, how, and for whom? *American Annals of the Deaf, 159*(5), 419-432. https://doi.org/10.1353/aad.2015.0002

Edmiston, B. (2007). *Forming ethical identities in early childhood play*. New York, NY: Routledge. https://doi.org/10.4324/9780203934739

Edwards, V., Monaghan, F., & Knight, J. (2000). Books, pictures and conversations: Using bilingual multimedia storybooks to develop language awareness. *Language Awareness, 9*(3), 135-146. https://doi.org/10.1080/09658410008667142

Elahi, A. N., Mahmood, Z., Shazadi, M., & Jamshed, S. (2015). Digital storytelling: a powerful educational tool for primary school student. *2015 International Conference on Information and Communication Technologies (ICICT),* 1-4. https://doi.org/10.1109/ICICT.2015.7469583

Every Student Succeeds Act of 2015 (ESSA). Pub. L. No. 114-95 § 114 Stat. 1177 (2015-2016) Available from https://www.ed.gov/essa

Ewoldt, C. (1986). What does "reading" mean? *Perspectives for Teachers of the Hearing Impaired, 4*(3), 10–13.

Freel, B. L., Clark, M. D., Anderson, M. L., Gilbert, G. L., Musyoka, M. M., & Hauser, P. C. (2011). Deaf individuals' bilingual abilities: American Sign Language proficiency, reading skills, and family characteristics. *Psychology, 2*(1), 18-23. https://doi.org/10.4236/psych.2011.210

Fung, P. C., Chow, B. W. Y., & McBride-Chang, C. (2005). The impact of a dialogic reading program on deaf and hard-of-hearing kindergarten and early primary school-aged students in Hong Kong. *Journal of Deaf Studies and Deaf Education,* 10(1), 82-95. https://doi.org/10.1093/deafed/eni005

Gambrell, L. B. (2011). Seven rules of engagement: What's most important to know about motivation to read. *The Reading Teacher, 65*(3), 172-178. https://doi.org/10.1002/TRTR.01024

Gass, S. M. (2013). *Input, interaction, and the second language learner*. New York, NY: Routledge. https://doi.org/10.4324/9780203053560

Geller, L. G. (1983). Children's rhymes and literacy learning: Making connections. *Language Arts, 60*(2), 184-193. https://www.jstor.org/stable/41961449

Ghalebandi, S. G., & Noorhidawati, A. (2017). Engaging children with pleasure reading: The E-reading experience. *Journal of Educational Computing Research, 56*(8), 1213-1237., First Published November 7, 2017. https://doi.org/10.1177/0735633117738716

Gibbons, P. (2003). Mediating language learning: Teacher interactions with ESL students in a content-based classroom. *TESOL Quarterly, 37*(2), 247-273. https://doi.org/10.2307/3588504

Goldin-Meadow, S., & Mayberry, R. I. (2001). How do profoundly deaf children learn to read? *Learning Disabilities: Research & Practice, 16*, 222–229. https://doi.org/10.1111/0938-8982.00022

Golinkoff, R. M., Pasek, K. H., Bailey, L. M., & Wenger, N. R. (1992). Young children and adults use lexical principles to learn new nouns. *Developmental Psychology, 28*(1), 99-108. https://doi.org/10.1037/0012-1649.28.1.99

Golos, D. (2010). Literacy behaviors of deaf preschoolers during video viewing. *Sign Language Studies, 11*(1), 76-99. https://doi.org/10.1353/sls.2010.0001

Greene Brabham, E., & Lynch-Brown, C. (2002). Effects of teachers' reading-aloud styles on vocabulary acquisition and comprehension of students in the early elementary grades. *Journal of Educational Psychology, 94*(3), 465-473. https://doi.org/10.1037/0022-0663.94.3.465

Guaïtella, I. (1999). Rhythm in speech: What rhythmic organizations reveal about cognitive processes in spontaneous speech production versus reading aloud. *Journal of Pragmatics, 31*(4), 509-523. https://doi.org/10.1016/S0378-2166(98)00079-4

Gullberg, M., & Holmqvist, K. (2006). What speakers do and what addressees look at: visual attention to gestures in human interaction live and on video. *Pragmatics & Cognition, 14*(1), 53-82. https://doi.org/10.1075/pc.14.1.05gul

Hall, W. C. (2017). What you don't know can hurt you: The risk of language deprivation by impairing sign language development in deaf children. *Maternal and Child Health Journal. 21*(5), 961-965. https://doi.org/10.1007/s10995-017-2287-y

Hassanzadeh, S. (2012). Outcomes of cochlear implantation in deaf children of deaf parents: Comparative study. *Journal of Laryngology and Otology, 126*(10), 989-994. https://doi.org/10.1017/S0022215112001909

High, P. C., & Klass, P. (2014). Literacy promotion: An essential component of primary care pediatric practice. *Pediatrics, 134*(2), 404-409. https://doi.org/10.1542/peds.2014-1384

Hoffmeister, R. J., & Caldwell-Harris, C. L. (2014). Acquiring English as a second language via print: The task for deaf children. *Cognition, 132*(2), 229-242. https://doi.org/10.1016/j.cognition.2014.03.014

Holcomb, T. K. (2010). Deaf epistemology: The deaf way of knowing. *American Annals of the Deaf, 154*(5), 471-478. https://doi.org/10.1353/aad.0.0116

Holzrichter, A. S., & Meier, R. P. (2000). Child-directed signing in American Sign Language. In C. Chamberlain, J. P. Morford, & R. I. Mayberry, (Eds.). *Language Acquisition by Eye* (pp. 25-40). Mahway, NJ: Lawrence Erlbaum.

Homer, B. D., Kinzer, C. K., Plass, J. L., Letourneau, S. M., Hoffman, D., Bormley, M., … & Kornak, Y. (2014). Moved to learn: the effects of interactivity in a Kinect-based literacy game for beginning readers. *Computers & Education, 74,* 37-49. https://doi.org/10.1016/j.compedu.2014.01.007

Huang, K., Smith, J., Spreen, K., & Jones, M. F. (2008, June). Breaking the sound barrier: Designing an interactive tool for language acquisition in preschool deaf children. *Proceedings of the 7th international conference on interaction design and children,* 210-216. New York, NY: ACM Digital Library. https://doi.org/10.1145/1463689.1463758

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. (2012). Language acquisition for deaf children: Reducing the harms of zero tolerance to the use of alternative approaches. *Harm Reduction Journal, 9*(16), 1-9. Available from http://www.harmreductionjournal.com/content/9/1/16. https://doi.org/10.1186/1477-7517-9-16

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. (2017). Discourses of prejudice in the professions: The case of sign languages. *Journal of Medical Ethics, 43*(9), 648-652. http://jme.bmj.com/cgi/content/full/medethics-2015-103242. https://doi.org/10.1136/medethics-2015-103242

Huss, M., Verney, J. P., Fosker, T., Mead, N., & Goswami, U. (2011). Music, rhythm, rise time perception and developmental dyslexia: perception of musical meter predicts reading and phonology. *Cortex, 47*(6), 674-689. https://doi.org/10.1016/j.cortex.2010.07.010

Kaderavek, J., & Justice, L. M. (2002). Shared storybook reading as an intervention: Context, practices and potential pitfalls. *American Journal of Speech-Language Pathology, 11*(4), 395-406. https://doi.org/10.1044/1058-0360(2002/043)

Kalia, V. (2007). Assessing the role of book reading practices in Indian bilingual children's English language and literacy development. *Early Childhood Education Journal, 35*(2), 149-153. https://doi.org/10.1007/s10643-007-0179-2

Kaneko, M. (2011). Alliteration in sign language poetry. In J. Roper (Ed.), *Alliteration in Culture* (pp. 231-246). Basingstoke, UK: Palgrave MacMillan. https://doi.org/10.1057/9780230305878_15

Kaneko, M., & Mesch, J. (2013). Eye gaze in creative sign language. *Sign Language Studies, 13*(3), 372-400. https://doi.org/10.1353/sls.2013.0008

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

Krcmar, M., & Cingel, D. P. (2014). Parent-child joint reading in traditional and electronic formats. *Media Psychology, 17*(3), 262-281. https://doi.org/10.1080/15213269.2013.840243

Krentz, C. B. (2006). The camera as printing press: how film has influenced ASL literature. In H. D. L. Bauman, H. M. Rose, & J. L. Nelson (Eds.), *Signing the Body Poetic : Essays on American Sign Language literature*, (pp. 51-70). Berkeley, CA: University of California Press.

Kuhl, P. K. (2010). Brain mechanisms in early language acquisition. *Neuron, 67*(5), 713-727. https://doi.org/10.1016/j.neuron.2010.08.038

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL, 20*(3), 271-289. https://doi.org/10.1017/S0958344008000335

Kuschner, D. (Ed.). (2008)*. From children to red hatters: Diverse images and issues of play*. Landham, MD: University Press of America.

Kushalnagar, P., Mathur, G., Moreland, C. J., Napoli, D. J., Osterling, W., Padden, C., & Rathmann, C. (2010). Infants and children with hearing loss need early language access. *Journal of Clinical Ethics, 21*(2), 143-154.

Kushalnagar, P., Topolski, T. D., Schick, B., Edwards, T. C., Skalicky, A. M., & Patrick, D. L. (2011). Mode of communication, perceived level of understanding, and perceived quality of life in youth who are deaf or hard of hearing. *Journal of Deaf Studies and Deaf Education, 16*(4), 512-523. https://doi.org/10.1093/deafed/enr015

Lederberg, A. R., Schick, B., & Spencer, P. E. (2013). Language and literacy development of deaf and hard-of-hearing children: Successes and challenges. *Developmental Psychology, 49*(1), 15-30. https://doi.org/10.1037/a0029558

Long, D., & Szabo, S. (2016). E-readers and the effects on students' reading motivation, attitude and comprehension during guided reading. *Cogent Education, 3*(1), 1-11. https://doi.org/10.1080/2331186X.2016.1197818

Lonigan, C. J., & Whitehurst, G. J. (1998). Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. *Early Childhood Research Quarterly, 13*(2), 263-290. https://doi.org/10.1016/S0885-2006(99)80038-6

Luckner, J. L., & Velaski, A. (2004). Healthy families of children who are deaf. *American Annals of the Deaf, 149*(4), 324-335. https://doi.org/10.1353/aad.2005.0003

Maler, A. (2013). Songs for hands: Analyzing interactions of sign language and music. *Music Theory Online, 19*(1), 1-15. Accessed 20 July 2016: http://www.mtosmt.org/issues/mto.13.19.1/mto.13.19.1.maler.php https://doi.org/10.30535/mto.19.1.4

Malzkuhn, M., & Herzig, M. (2013, June). Bilingual storybook app designed for deaf children based on research principles. *Proceedings of the 12th International Conference on Interaction Design and Children* (pp. 499–502). New York, NY: Association for Computing Machinery Publications. https://doi.org/10.1145/2485760.2485849

Marschark, M. (2007). *Raising and educating a deaf child: A comprehensive guide to the choices, controversies, and decisions faced by parents and educators*. Oxford, UK: Oxford University Press.

Martin, P. (2014). *Making happy people: The nature of happiness and its origins in childhood.* London, UK: Harper Collins.

Mayberry, R. I., Del Giudice, A. A., & Lieberman, A.M. (2011). Reading achievement in relation to phonological coding and awareness in deaf readers: A meta-analysis. *Journal of Deaf Studies and Deaf Education, 16*(2), 164-188. https://doi.org/10.1093/deafed/enq049

Mayer, C., & Trezek, B. J. (2015). *Early literacy development in deaf children*. Oxford, UK: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199965694.001.0001

Mayer, C., & Wells, G. (1996). Can the linguistic interdependence theory support a bilingual model of literacy education for deaf students? *Journal of Deaf Studies and Deaf Education, 1*(2), 93–107. https://doi.org/10.1093/oxfordjournals.deafed.a014290

Meisel, J. M. (2011). *First and second language acquisition: Parallels and differences.* Cambridge. UK: Cambridge University Press.https:/doi.org/10.1017/CBO9780511862694

Mol, S. E., & Bus, A. G. (2011). To read or not to read: A meta-analysis of print exposure from infancy to early adulthood. *Psychological Bulletin, 137*(2), 267-296. https://doi.org/10.1037/a0021890

Mol, S. E., Bus, A. G., & de Jong, M. T. (2009). Interactive book reading in early education: A tool to stimulate print knowledge as well as oral language. *Review of Educational Research, 79*, 979-1007. https://doi.org/10.3102/0034654309332561

Mol, S. E. Bus, A. G., de Jong, M. T., & Smeets, D. J. H. (2008). Added value of parent-child dialogic book readings: A meta-analysis. *Early Education and Development, 19*(1), 7–26. https://doi.org/10.1080/10409280701838603

Moore, C. C. (1823). Account of a Visit from St. Nicholas*, Troy (New York) Sentinel,* December 23, 1823.

Moore, C. C., & Darley, F. O. C. (illus.). (1862). *A Visit from Saint Nicholas*. New York, NY: James G. Gregory. https://www.gutenberg.org/ebooks/17382

Moore, M., & Wade, B. (1998). Reading strategies: A comparative study of ex-Reading Recovery students and peers. *Research in Education, 60*(1), 21-28. https://doi.org/10.1177/003452379806000103

Mounty, J. L., Pucci, C. T., & Harmon, K. C. (2014). How deaf American Sign Language/English bilingual children become proficient readers: An emic perspective. *Journal of Deaf Studies and Deaf Education, 19*(3), 333-346. https://doi.org/10.1093/deafed/ent050

Mueller, V., & Hurtig, R. (2010). Technology-enhanced shared reading with deaf and hard-of-hearing children: The role of a fluent signing narrator. *Journal of Deaf Studies and Deaf Education, 15*(1), 72-101. https://doi.org/10.1093/deafed/enp023

Murayama, K., Pekrun, R., Lichtenfeld, S., & Vom Hofe, R. (2013). Predicting long-term growth in students' mathematics achievement: The unique contributions of motivation and cognitive strategies. *Child Development, 84*(4),1475-1490. https://doi.org/10.1111/cdev.12036

Napoli, D. J., & Mirus, G. (2015). Shared reading activities: a recommendation for deaf children. *Global Journal of Special Education and Services, 3*(1), 38-42.

Napoli, D. J., & Mirus, G. (2016). Fun bilingual-bimodal ebooks for deaf children: Developing language and preliteracy skills. *Revista Sinalizar, 1*(2), 152-178. https://doi.org/10.5216/rs.v1i2.42476

Napoli, D. J., Mellon, N. K., Niparko, J. K., Rathmann, C., Mathur, G., Humphries, T., … & Lantos, J. D. (2015). Should all deaf children learn sign language? *Pediatrics, 136*(1), 170-176. https://doi.org/10.1542/peds.2014-1632

National Academy of Education. (1985). *Becoming a nation of readers: The report of the Commission on Reading*. Washington, DC: Author.

Omardeen, R. (2015). *A preliminary look into the efficacy of bilingual ASL-English eBooks.* (Undergraduate Senior Thesis) Swarthmore College, Swarthmore, PA. (available by writing to the Linguistics Department: linguistics@swarthmore.edu)

Parten, M. B. (1933). Social play among preschool children. *The Journal of Abnormal and Social Psychology, 28*(2), 136-147. https://doi.org/10.1037/h0073939

Peregoy, S., & Boyle, O. (2000). *Reading, writing, & learning in ESL: A resource book for K-12 teachers*. (3rd ed.). New York, NY: Longman.

Perniss, P., Thompson, R. L., & Vigliocco, G. (2010). Iconicity as a general property of language: Evidence from spoken and signed languages. *Frontiers in Psychology,* 1, 227-243. https://doi.org/10.3389/fpsyg.2010.00227

Peters, S. M. (2015). *LENA measurements of language facilitation strategies utilized by parents during storybook reading.* (MA thesis). Utah State University, Logan, UT.

Picton, I. (2014). *The impact of ebooks on the reading motivation and reading skills of children and young people: A rapid literature review.* London, UK: National Literacy Trust. Retrieved from https://literacytrust.org.uk/research-services/research-reports/impact-ebooks-reading-motivation-and-readingskills-children-and-young-people/

Powers, S., Gregory, S., & Thoutenhoofd, E. D. (1998). *The educational achievements of deaf children.* Research Brief 65. Nottingham, UK: Department for Education and Employment. Accessed June 25, 2018: https://www.education.gov.uk/publications/eOrderingDownload/RB65.pdf

Quam, C., & Swingley, D. (2012). Development in children's interpretation of pitch cues to emotions. *Child Development, 83*(1), 236-250. https://doi.org/10.1111/j.1467-8624.2011.01700.x

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

Sacks, O. (1989). *Seeing voices: A journey into the world of the deaf.* Berkeley, CA: University of California Press.

Saville-Troike, M., & Barto, K. (2016). *Introducing second language acquisition.* Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/9781316569832

Schick, B., De Villiers, P., De Villiers, J., & Hoffmeister, R. (2007). Language and theory of mind: A study of deaf children. *Child Development, 78*(2), 376-396. https://doi.org/10.1111/j.1467-8624.2007.01004.x

Schleper, D. R. (1995). Reading to deaf children: Learning from deaf adults. *Perspectives in Education and Deafness, 13*, 4-8.

Schulze, M. (2017). Complexity approaches to computer-assisted language learning. In S. Thorne & S. May (Eds.), *Language, Education and Technology. Encyclopedia of Language and Education* (3rd edition) (pp. 1-12). New York, NY: Springer. https://doi.org/10.1007/978-3-319-02237-6_24

Scott, J. A. (2015). *Beyond the fourth grade glass ceiling: Understanding reading comprehension among bilingual/bimodal deaf and hard of hearing students.* (Doctoral dissertation). Graduate School of Education, Harvard University, Cambridge, MA.

Scott, J. A., & Hoffmeister, R. J. (2017). American Sign Language and academic English: Factors influencing the reading of bilingual secondary school deaf and hard of hearing students. *Journal of Deaf Studies and Deaf Education,* 22(1), 59-71. https://doi.org/10.1093/deafed/enw065

Segal-Drori, O., Korat, O., Shamir, A., & Klein, P. S. (2010). Reading electronic and printed books with and without adult instruction: Effects on emergent reading. *Reading and Writing, 23*(8), 913-930. https://doi.org/10.1007/s11145-009-9182-x

Segers, E., Takke, L., & Verhoeven, L. (2004). Teacher-mediated versus computer-mediated storybook reading to children in native and multicultural kindergarten classrooms. *School Effectiveness and School Improvement, 15*(2), 215–226. https://doi.org/10.1076/sesi.15.2.215.30430

Semingson, P., Pole, K., & Tommerdahl, J. (2015). Using bilingual books to enhance literacy around the world. *European Scientific Journal, 11*(6), 132-139.

Shamir, A., Korat, O., & Fellah, R. (2012). Promoting vocabulary, phonological awareness and concept about print among children at risk for learning disability: Can e-books help? *Reading and Writing, 25*(1), 45–69. https://doi.org/10.1007/s11145-010-9247-x

Silverman, R. (2013). Investigating video as a means to promote vocabulary for at-risk children. *Contemporary Educational Psychology, 38*(3), 170–179. https://doi.org/10.1016/j.cedpsych.2013.03.001

Skouge, J. R., Rao, K., & Boisvert, P. C. (2007). Promoting early literacy for diverse learners using audio and video technology. *Early Childhood Education Journal, 35*(1), 5-11. https://doi.org/10.1007/s10643-007-0170-y

Smith, B. H. (1968). *Poetic closure: A study of how poems end*. Chicago, IL: University of Chicago Press.

Stokoe, W. C. ,Jr. (1960). Sign language structure: an outline of the visual communication systems of the American Deaf. *Studies in Linguistics: Occasional Papers No. 8*. Buffalo, NY: University of Buffalo. Reprinted in 2005, *Journal of Deaf Studies and Deaf Education, 10*(1), 3-37.

Stone, A. (2014). New directions in ASL-English bilingual ebooks. *Critical Inquiry in Language Studies*, 11(3), 186-206.

Sutton-Spence, R., & Kaneko, M. (2016). *Introducing sign language literature: Creativity and folklore*. London, UK: Palgrave Press. https://doi.org/10.1007/978-1-349-93179-8

Sutton-Spence, R., & Napoli, D. J. (2013). How much can classifiers be analogous to their referents? *Gesture, 13*(1), 1-27. https://doi.org/10.1075/gest.13.1.01sut

Swanwick, R., & Watson, L. (2005). Literacy in the homes of young deaf children: common and distinct features of spoken language and sign bilingual environments. *Journal of Early Childhood Literacy, 5*(1), 53–78. https://doi.org/10.1177/1468798405050594

Swanwick, R., & Watson, L. (2007). Parents sharing books with young deaf children in spoken English and in BSL: The common and diverse features of different language settings. *Journal of Deaf Studies and Deaf Education, 12*(3), 385-405. https://doi.org/10.1093/deafed/enm004

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*(1366), 1-12. 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

Tanenhaus, M. K., Spivey-Knowlton, M. J., Eberhard, K. M., & Sedivy, J. C. (1995). Integration of visual and linguistic information in spoken language comprehension. *Science, 268*(5217), 1632-1634. https://doi.org/10.1126/science.7777863

Taub, S. F. (2001). *Language from the body: Iconicity and metaphor in American Sign Language.* Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/CBO9780511509629

Tincani, M. (2004). Comparing the picture exchange communication system and sign language training for children with autism. *Focus on Autism and Other Developmental Disabilities, 19*(3), 152-163. https://doi.org/10.1177/10883576040190030301

Tomasello, M. (1992). The social bases of language acquisition. *Social Development, 1*(1), 67-87. https://doi.org/10.1111/j.1467-9507.1992.tb00135.x

Trivette, C. M., Dunst, C. J., & Gorman, E. (2010). Effects of parent-mediated joint book reading on the early language development of toddlers and preschoolers. *Center for Early Literacy Learning, 3*(2), 1–15.

Trussell, J. W., Dunagan, J., Kane, J., & Cascioli, T. (2017). The effects of interactive storybook reading with preschoolers who are deaf and hard-of-hearing. *Topics in Early Childhood Special Education, 37*(3), 147-163. https://doi.org/10.1177/0271121417720015

Trussell, J. W., & Easterbrooks, S. R. (2014). The effect of enhanced storybook interaction on signing deaf children's vocabulary. *Journal of Deaf Studies and Deaf Education, 19*(3), 319-332. https://doi.org/10.1093/deafed/ent055

Valli, C. (1993). *Poetics of American Sign Language Poetry.* (Doctoral dissertation.) Cincinnati, OH: The Union Institute Graduate School.

van Kleeck, A. (2008). Providing preschool foundations for later reading comprehension: The importance of and ideas for targeting inferencing in storybook-sharing interventions. *Psychology in the Schools, 45*(7), 627-643. https://doi.org/10.1002/pits.20314

Wasik, B. A., & Bond, M. A. (2001). Beyond the pages of a book: Interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology, 93*(2), 243-250. https://doi.org/10.1037/0022-0663.93.2.243

Watson, R. (2001). Literacy and oral language: Implications for early literacy acquisition. In Neuman, S. B. & D. K. Dickinson (Eds.), *Handbook of Early Literacy Research,* (vol. 1, pp. 43-53). New York, NY: The Guilford Press.

Wauters, L., & Dirks, E. (2017). Interactive reading with young deaf and hard-of-hearing children in eBooks versus print books. *The Journal of Deaf Studies and Deaf Education, 22*(2), 243-252. https://doi.org/10.1093/deafed/enw097

Weaver, K. A., & Starner, T. (2011, October). We need to communicate!: Helping hearing parents of deaf children learn American Sign Language. *The proceedings of the 13th international ACM SIGACCESS Conference on Computers and Accessibility*, (pp. 91-98). New York, NY: ACM. ERIC Number: ED530818

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*, 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

Whitehurst, G. J., & Lonigan, C. J. (2001). Emergent literacy: Development from prereaders to readers. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of Early Literacy Research* (Volume 1, pp. 11-29). New York, NY: The Guilford Press.

Wilcox, Phyllis Perrin. 2000. *Metaphor in American Sign Language.* Washington, DC: Gallaudet University Press.

Williams, C. (2004). Emergent literacy of deaf children. *Journal of Deaf studies and Deaf Education, 9*(4), 352-365. https://doi.org/10.1093/deafed/enh045

Willingham, D. T. (2015). *Raising kids who read: What parents and teachers can do*. San Francisco, CA: Jossey-Bass/Wiley.

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 & Education, 82*, 107-117. https://doi.org/10.1016/j.compedu.2014.11.008

Yoshinaga-Itano, C., Baca, R. L., & Sedey, A. L. (2010). Describing the trajectory of language development in the presence of severe to profound hearing loss: A closer look at children with cochlear implants versus hearing aids. *Otology & Neurotology: Official Publication of the American Otological Society, American Neurotology Society [and] European Academy of Otology and Neurotology, 31*(8), 1268-1274. https://doi.org/10.1097/MAO.0b013e3181f1ce07

Zevenbergen, A. A., & Whitehurst, G. J. (2003). Dialogic reading: A shared picture book reading intervention for preschoolers. In A. van Kleck, S. A. Stahl, & E. B. Bauer (Eds.), *On Reading Books to Children: Parents and Teachers* (pp. 177-200). East Sussex, UK: Psychology Press.

Zucker, T. A., Cabell, S. Q., Justice, L. M., Pentimonti, J. M., & Kaderavek, J. N. (2013). The role of frequent, interactive prekindergarten shared reading in the longitudinal development of language and literacy skills. *Developmental Psychology, 49*(8), 1425-1439. https:/doi.org/10.1037/a0030347

End Notes

[1] Financial disclosure: Neither author has any financial interests to disclose.

[2] We adopt the usual convention of using small capitals to indicate signs.

[3] We adopt the usual convention of using hyphens between letters to indicate fingerspelling.