INSPIRING EARLY READERS: NEW TECHNOLOGY AND FORMATS SHOW EFFICACY

Dana M Reisboard Ph.D., Widener University

Introduction

Research has shown that children who are allowed ready access to books at a young age, and those who are read to consistently, develop skills essential for later reading success most readily (Anderson, 1985). Through their on-going exposure to picture books and appropriate print material, children become aware of the importance of letters, words, and word meanings, and the thoughts and ideas words generate (Young, 2016). Consequently, the child's development of important reading and comprehension skills becomes encouraged well before they are provided with formal instruction (Wang, 2014). In addition, through their early involvement with books children have been found to develop positive attitudes toward reading and have been observed to formulate healthy reading habits (Yang, 2016). Sims-Bishop (1982; 1990), suggested that picture books serve as "windows" which expose children to a myriad of experiences which extend their background knowledge, as "mirrors" which reflect their own experiences, and as "sliding glass doors" which allow them to change perspective regarding the manner in which they might have thought previously about particular topics.

When children are read to consistently, they tend to grow in their ability to develop self-understanding and knowledge of the world in which they live (Lagard, 2020). Children who enjoy steady access to picture books when younger not only choose to read more as they age, but maintain positive feelings toward reading, particularly when their developing skills enable

them to enjoy scholastic success. Research findings also reveal that adding just 10 minutes per day to the time a child is exposed to reading can result in profound gains in their overall development of literacy-based skills (Beers & Probst, 2018). Whitman (2016) noted that these same children tend to enjoy greater physical well-being and appear better equipped to reduce their stress levels. However, despite current and historic findings, far too many children continue to be allowed few opportunities to benefit from shared story book reading.

VOX Publishing Products Support Early Reading

VOX Publishing products were developed to be user friendly and powerful literacy tools intended for use with children ranging in age from 2 to 14. They include VOX Books, a hardback book with an installed speaker, iVOX, an app-based read-along with a multi-sensory experience, and IR Books, a book and app combo that includes VR goggles. iVOX books provide novel opportunities for children ages 2 to 8 to engage in reading activities with less adult support. While involvement with VOX Books does not reduce in any way the importance or value of a parent or other adult reading aloud to a child, they do offer audio narration and visual highlighting, which enable youngsters to read and listen simultaneously and independently to a particular story. VOX audio-print books provide the child access to age- appropriate story content and, as they age, with greater independence as their need for adult narration is diminished (Korat and Shamir, 2012). All VOX Publishing products combine picture-based books and fiction and non-fiction material with audio recordings intended to stimulate interest while providing unfettered access to a book's content. VOX Publishing products have been found to possess important features which lead to advanced literacy development in children (Lee, 2020).

The IVOX app enables children age 3 to 8 to access a range of narrative material while following a highlighted storyline as they listen to a particular selection and while interacting with 3D characters. In fact, IVOX ebooks are multi-sensory experiences which enhance the child's ability to process information and to develop understanding of content (Schiavo et al., 2021).

These digital ebooks possessing multimedia features, reduce cognitive load and allow children to derive the same literacy benefits they do when reading traditional print books (Yow and Priyashri, 2019). iVOX ebooks, while providing bi-modal stimulation through visual and auditory channels simultaneously, also possess a forementioned highlighting feature. Each word read aloud by a narrator is highlighted visually in a manner which enhances the child's ability to attend and stimulates the development of phonological awareness and letter and word recognition skills (Korat and Shamir, 2012; Yow and Priyanshiri, 2019).

When employing the Immersive Reality (IR) app intended for use with children ages 7 to 14, children become immersed in a reality-based digital environment in which they are stimulated multimodally, and in a manner which requires them to establish a spatial presence. As their spatial awareness increases, so does their ability to learn maximally (Pellas, Dengel, Chrisopoulis, 2020). Before engaging with an immersive experience, children read along with a narrator age-appropriate non-fiction material designed to develop or extend their understanding of traditional topics (e.g., planets, sharks, polar bears, asteroids, etc.). Topics dealing with geographical and cultural characteristics of specific countries are also presented in these materials. The content of each book in the IR series is accessible via Android or IOS mobile devices with the free- to- download IR app. IR content is acquired by opening the app

and scanning an on- page QR code. Children are then directed to place their phones in a headset (e.g., Google Cardboard) which is provided to them. IR content may also be viewed without the use of a headset. However, this would reduce the presence of an available 360° perspective to a single, full screen, 2 dimensional view (https://www.slj.com/?detailStory=library-ideas-launches-ar-vr-enhanced-childrens-books). Digital publishing and new technologies have expanded the number of available formats of traditional books. Ebooks are easily accessible on a tablet or other mobile device, and 95% of public libraries provide ebook access (Lee, 2020).

In order to address the fact that Mandarin and Spanish are first languages of nearly 20% of school age children in the United States (https://sllc.umd.edu/news/mapping-languages-spoken-us) VOX multi-language ebook versions were developed. These versions provide high quality text in Spanish, Mandarin, and English. It has been found that when engaged with learning materials which respect and value a child's culture and existing expressive language, multilingualism becomes more easily attained and future school success becomes increasingly assured (Justice and Pullen, 2003; Rios and Castillon, 2020). In addition, Miller, Machiewicz, and Correal (2017) found that the strength of the foundation on which first language development has been built enables the language learner to gain understanding of English language linguistic and literary principles most readily. The availability of VOX Books written in multi-language formats provide emergent and more advanced learners with opportunities to successfully improve their development of first language and English language literacy-based skills (Yang, 2016).

Conclusions

In summary, VOX Publishing materials are effective for use with children ranging in age from 2 to 14 and with children for whom English is a secondary language. VOX materials enable even preschoolers to engage in listening activities while being read to in a manner which enhances language processing development and sets the stage for the future development of reading and thinking skills. iVOX ebooks possess embedded technological features (e.g., auditory narration, visual highlighting of each word read aloud by a narrator, animation, 3D potential, and multi-modal stimulation) which serve to assist learners to develop age-appropriate literacy -based skills effectively. Books which provide access to written text and oral reading and oral discourse opportunities, and those possessing multi-media features such as sound effects, animation, and music, have been found to provide alternative pathways in which children become able to develop enhanced reading and related language processing skills. These same children have been found as they age to enjoy independent reading opportunities. It has also been determined that the oral reading of a text by a narrator accompanied by the presence of highlighted text which enables the learner to attend to each word read aloud can foster development of insights into the nature of written text as children attend visually to the presence of words, phrases, and passages being read to them (Yow & Priyashri, 2019).

The repeated reading aloud of the same text has been found to support the child's ability to read independently (Horst, Stewart, and True, 2019). It has also been determined that vocabulary development tends to occur incidentally when children listen actively when read to and when they simultaneously provided with a highlighted text (Korat and Shamir, 2012). Horst, Stewart, and True (2019) also found that when children participate in structured

read aloud activities and as increased vocabulary development occurs, they build background knowledge, phonological awareness, letter and word recognition capabilities and age-appropriate thinking skills. As discussed above, by providing children whose first language is not English with material written in their first language, English language acquisition and the development of literacy-based skills occurs most readily.

The use of table-based and well-designed ebooks have been found to effectively improve literacy-based teaching outcomes. It has been determined that exposure to ebook technology provides learning support similar to that offered through adult mediation when children are involved with traditional printed books (Lee, 2020). Through the use of the VOX Publishing immersive reality (IR) app children enjoy 3D virtual reality and spatial experiences which also serve to extend their background knowledge in a manner which enhances their development of reading comprehension skills Pellas, Dengel, Chrisopoulis, 2020).

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