The effect of electronic books on enhancing emergent literacy skills of pre-school children

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ABSTRACT

The purpose of this study was to investigate the effects of e-books on enhancing Jordanian preschool children's emergent literacy skills (experimental group), in comparison to children who were exposed to regular printed books (control group). To achieve the objectives of this study, the total of 92 children were assigned to either experimental group ($n = 48$) and control group ($n = 44$). The pre- and post-test data was collected on print awareness, vocabulary, alphabetic knowledge and phonological awareness skills to determine the effectiveness of e-books. The results indicated that children in experimental group performed significantly better than the children in control group. Moreover, significant differences were found according to gender, as the female children exhibited superior emergent literacy skills to the male children. Regarding the different emergent literacy skills, children in the experimental group achieved better improvement in the areas of print awareness and vocabulary. Based on these findings, it is recommended that pre-school institutions incorporate e-books activities into their classrooms.

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1. Introduction

The current generation of young children is growing up in a digital media-saturated environment in which they receive daily exposure to a variety of technologies (Hisrich & Blanchard, 2009). As a result of this technology exposure, young children today have many opportunities to observe technology, explore it, and play with it. One of these technologies to which young children are exposed is electronic books (e-books).

E-books represent the combination of the advantages of printed books with the capabilities of computer technology, and this can be helpful to children who do not respond well to traditional print media or who are reluctant to read (Maynard, 2010; Maynard & McKnight, 2001). Through their exposure to e-books, children can explore the story by themselves without the help of an adult, and that is another merit of these digital texts (Gong & Levy, 2009).

Previous research into the effect of e-books on the development of children's language and literacy skills has offered evidence regarding how this digital form of book helps promote different emergent literacy skills (De Jong & Bus, 2004; Moody, 2010; Verhallen & Bus, 2010). However, a number of researchers have taken a more critical view on e-books due to their incorporation of features like animation, sound, music and other multimedia effects, which may distract young readers from the story content and negatively influence their understandings of the story's main theme (Labbo & Kuhn, 2000).

In addition to traditional printed storybooks, e-books are currently used in some Jordanian pre-school classrooms due to the availability of computers in these classrooms. Therefore, this present study was carried out to investigate the effect of e-books on the development of emergent literacy skills for Jordanian pre-school children, and to provide suggestions about how stakeholders can use critical evidence to better support pre-schoolers' literacy development when using e-books activities. Gender differences were also investigated to find out whether significant differences exist between boys and girls in relation to emergent literacy skills.

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2. Theoretical underpinning

The development of information and communication technology (ICT) such as computers, the Internet, and the introduction of hypertext and data storage media such as CD-ROMs have led to the evolution of the concept of the electronic book (Maynard & McKnight, 2001). E-book is a "text converted into digital form, a book in a computer file format, or an electronic file of words and images" (Rao, 2003, p. 86). It contains audio (e.g. music, narration) and visual (e.g. animation) features which are different from the mono-modal features of print books (Unsworth, 2006). These added features provide young children with many opportunities to enjoy storybook animations, hear and follow along with the text, and engage with interactive options provided to readers (De Jong & Bus, 2004; Horney & Anderson-Inman, 1999).

In recent years there has been a growing trend toward the use of digital versions of books in early childhood classrooms (Unsworth, 2006). The International Reading Association (2009) highlighted the importance of integrating technologies, including digital texts such as e-books, into current literacy programs. Research has found that exposure to educational e-books can enhance children's language and literacy development (De Jong & Bus, 2004; Gong & Levy, 2009; Maynard & McKnight, 2001; Moody, 2010; Neuman, 2009; Verhallen & Bus, 2010; Zucker, Moody, & McKenna, 2009). In the views of Zucker et al., (2009) e-books are increasingly used for learning to read by beginners and children with reading difficulties as well. According to Moody (2010), digital reading materials have become commonplace in early years classrooms in efforts to support children's engagement in storybooks while enhancing their emergent literacy.

Emergent literacy is the earliest stage of literacy development. The concept of emergent literacy came from Marie Clay who described young children's early reading and writing behaviors prior to entry into formal instruction in school (Clay, 1967). This concept includes knowledge, skills, and attitudes that are assumed to be developmental precursors to conventional reading and writing (National Early Literacy Panel, 2008; Whitehurst & Lonigan, 1998). According to Whitehurst and Lonigan (1998), emergent skills are categorized into two broad areas: 1) outside-in skills which support reading comprehension (e.g. Vocabulary and oral language development), and 2) inside-out skills which foster the development of early decoding and spelling (e.g. Print knowledge, alphabet letter names, and phonological awareness).

Research has clearly shown that young children must possess these outside-in and inside-out skills in order to become successful readers (Anthony et al., 2002; Niessen, Strattman, & Scudder, 2011). On the contrary, children who start elementary school with poor emergent literacy skills have been shown to be unable to take advantage of reading instruction in pre-school settings (Snow, Burns, & Griffin, 1998).

Because of their many unique features, e-books provide children with many opportunities for promoting their emergent skills. For instance, pictures and animations support word recognition and comprehension (Doty, Popplewell, & Byers, 2001), while computers that read and highlight the text support print awareness and alphabets (Moody, 2010), and word pronunciation tools enhance phonological awareness (Wood, Pillinger, & Jackson, 2010). These skills (e.g. Alphabetical knowledge, phonological awareness, print awareness, and vocabulary) are considered significant to the development of children's emergent literacy abilities.

Alphabetical knowledge refers to young children's ability to identify letter names and letter sounds (Adams, 1990). It is causally related to the development of emergent literacy among children (Treiman, 2006). Research has shown that e-books can enhance children's letter knowledge (De Jong & Bus, 2004). It is worth mentioning that Arabic is the background language for this present study. The Arabic language has its unique features which are different from other language; for instance Arabic does not have the concepts of upper and lowercase letters. That is, children are exposed to the letter in the initial position of the word followed by the different shapes of the same letter according to its location in the word (in the middle of the word and in the final position of the word).

Phonological awareness is an important element of emergent literacy. It deals with the understanding that spoken words are made up of separate units of sounds that are blended together when words are pronounced (Adams, 1990; Bradley & Bryant, 1993). Phonological awareness describes "the ability to notice, think about, or manipulate the individual sounds in words" (Torgesen & Mathes, 1998, p. 2). Early literacy researchers have found that rhyming words, phoneme blending, phoneme identification, and phoneme segmentation are essential aspects of phonological awareness (Catts, Fey, Zhang, & Tomblin, 2001; Torgesen, 2002; Vloedgraven & Verhoeven, 2007; Wood, 1999, 2000). Research has found that e-books contribute to the development of children's phonological awareness (Chera & Wood, 2003; Wood et al., 2010). For instance, Chera and Wood (2003) carried out a study to investigate whether e-books can promote phonological awareness and reading acquisition in kindergarten children, and found that children who were exposed to e-books during a four-week program achieved higher scores on the phonological awareness tasks (e.g. visual and auditory letter sound awareness, visual, auditory and verbal onset awareness, and rhyme awareness) than the children, in comparison to the control group.

Print awareness generally refers to a child's understanding of the nature and uses of print. Research has revealed that print awareness is an important first step in the development of emergent literacy (Christie, Enz, & Vukelich, 2010; Walpole, Chow, & Justice, 2004). Children's print awareness includes identifying the functions and conventions of print such as understanding the difference between print and pictures, knowing that print has meaning, knowing how to handle a book, and noticing print all around, knowing that words are separated by spaces, and that writing is arranged linearly (Heroman & Jones, 2010). Karemaker, Pitchford, and O'Malley (2010) explored whether multimedia software stories enhance children's recognition of written words, and found that children who were exposed to e-stories during a five-week program achieved significant improvement in written/printed word recognition compared to children who were exposed to traditional printed Big Books.

Vocabulary refers to children's ability to understand word meaning in a text. In the view of Thurlow (2009), e-books help children improve their vocabulary when e-books are read aloud and the accompanying pictures help children link them to the spoken words. Moreover, vocabulary is enhanced when an adult provided children with further instruction and encouraged them to link new and prior knowledge from e-books over e-books alone (Higgins & Hess, 1999). Labbo and Kuhn (2000) pointed out that e-books help children better understand word's meaning and story line, thereby contributing to the development of their vocabulary (De Jong, Miller, & Olson, 1997; Moody, 2010; Segers, Takke, & Veroeven, 2004; Thurlow, 2009; Verhallen, Bus, & DeJong, 2006).

Against this background, some educators have nevertheless expressed skepticism regarding the usefulness of e-books in early years education (Labbo & Kuhn, 2000). For example, De Jong and Bus (2004) considered reading from e-books to be an entertainment activity rather than a learning activity. Despite these potential limitations, however, e-books are increasingly coming to be viewed as a useful tool for children's language and literacy development.

One of the most important aims of early childhood curricula is the development of children's emergent literacy skills, as these are the basis for the development of conventional literacy in later years. Literature written on emergent literacy suggested that many instructional