Using Electronic Books in the Classroom to Enhance Emergent Literacy Skills in Young Children

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Abstract

Electronic books (e-storybooks) are widely used in early childhood classrooms in efforts to encourage engagement in storybooks while promoting emergent literacy development. This article assesses the current research on e-storybooks for supporting young children and offers suggestions about how this evidence can be translated into best practice in classroom. Findings suggest that the use of high quality interactive e-storybooks may support emergent literacy development through the use of scaffolding, thus, supporting vocabulary development, engagement, and comprehension of the story. Evidence suggests that lower quality e-storybooks may offer distracting digital features including animations and sounds unrelated to the story. Additional information about effective implementation in the classroom is provided.

The use of e-storybooks in early childhood classrooms seems to be a growing trend. Educators are interested in the use of reading technologies to support young emergent readers, especially those who are at risk for reading failure. E-storybooks allow children to read and listen to a book while obtaining emergent literacy supports including digital features (e.g., animations, word pronunciations, etc.). Many of these books are commercially available to educators and parents and they allow children opportunities to read independently, even when they lack foundational reading skills. Despite the growing popularity of e-storybooks, there continues to be a lack of evidence literature to explain the extent to which electronic books support children's emergent literacy development. This article examines current research on e-storybooks and provides suggestions about how educators can use critical evidence to better support young struggling readers in early childhood classrooms when using e-storybooks.

Early education experiences can provide children with opportunities to develop essential foundational skills in literacy that directly translate into later school success (Burchinal, Peisner-Feinburg, Pianta, & Howes, 2002; McCardle, Scarborough, & Catts, 2001). In the area of early literacy, intervention is cost effective and can improve the future academic achievement of children who are at-risk for academic failure (Ramey & Campbell, 1991; Schweinhart, Barnes, & Weikart, 1993). If children are unable to gain needed skills prior to beginning school, additional and more in-depth services may be required over time (Barnett, 1998).

Stanovich's work (1986, 1993) recognizes the strong relationship between early deficits in literacy skills and later risks for reading difficulties. The progressive widening of the gap between readers and non-readers is labeled as the Matthew Effect (Stanovich, 1986), a principle that emphasizes the importance of early interventions delivered to young children that seek to reduce this gap in its earliest manifestations. This empirical evidence combined with government reports (e.g., National Reading Panel; NRP, 2000) encouraged politicians to create legislation requiring the use of high-quality, scientifically-based instruction to increase children's academic achievements in reading if they are at risk (NCLB, 2001). Examinations surrounding best practices for early detection and intervention in the area of reading are therefore growing (Adams, 1990; Snow et al., 1998; Torgesen & Burgess, 1998) and a growing body of work in this area emphasizes the use of technology for improving children's emergent literacy skills. Thus, educators are working to provide high-quality evidence-based emergent literacy instruction during the critical developmental time period of early childhood, especially for children who are most at risk due to poverty and disabilities (Barnett, Brown, & Shore, 2004).

Emergent Literacy Development

The No Child Left Behind Act of 2001 specifies four areas of emergent literacy development children require before learning to read (Justice, Chow, Capellini, & Flanigan, 2003), and include (a) oral language, (b) phonological awareness, (c) print awareness, and (d) alphabet knowledge. Thus, instruction in these four areas is essential for young children at risk for reading difficulties. Oral language includes grammar, phonology, vocabulary, and pragmatics. Research indicates that 78% of oral language development is unexplained by age (Bates, Dale, & Thal, 1995). Thus, early education programs can provide children with opportunities to strengthen their oral language skills. Phonological awareness refers to the understanding of how speech can be broken down into smaller units of sound (Stanovich, 1991). Poor phonological awareness skills serve as a strong predictor of future reading difficulties in students (Cunningham, 1989). However, research indicates a mean effect size of .53 for the effectiveness of phonological awareness instruction for improving children's reading outcomes. Thus, explicit instruction of phonological skills is essential (Ehri, 1989). Print awareness is knowledge of the form and function of print and the association between written and oral language units (Ehri, 1989; Ehri & Sweet, 1991; Snow et al., 1998). Acquisition of print concepts during the preschool years enhances a child's ability to bridge the gap between written and oral language (Adams, 1990). The implementation of these print referencing strategies may improve early achievements in print concepts (Justice & Ezell, 2002). Finally, alphabet knowledge refers to a child's ability to distinguish letters as separate units called graphemes and then name those letters (Worden & Boettcher, 1990). Letter identification is considered a predictor of letter sound knowledge, which is essential in achieving understanding of the alphabet principle and later decoding words (Ehri & Sweet, 1991). These concepts can be

targeted through interactional storybook readings (Justice & Ezell, 2002). All these skills can be

targeted through the use of shared storybook reading.

Shared Storybook Reading

A highly researched activity for promoting emergent literacy development is storybook

reading because of its association with emergent literacy and oral language development (Bus,

Belsky, van IJzendoorn, & Crnic, 1997; Bus, van IJzendoorn, & Pellegrini, 1995; Morrow, 1990;

Scarborough & Dobrich, 1994). Immediate and lasting literacy and language achievements are

associated with children's book-reading experiences (See Scarborough & Dobrich, 1994; Bus et

al., 1995). More specifically, early book reading affects children's language (Conti-Ramsden,

Hutcheson, & Grove, 1995; McCabe & Meller, 2004; Vallance & Wintre, 1997; van IJzendoorn,

Dijkstra, & Bus, 1995), and literacy skills (Bus & van IJzendoorn, 1988; Reese & Cox, 1999).

Another study by Gunn, Simmons, & Kame'enui, (1995) indicates that the following

instructional interventions can promote emergent literacy development: (a) exposure to print

through reading and writing, (b) opportunities to learn and use language, (c) letter instruction,

and (d) phonological awareness instruction. Significantly, all of these intervention approaches

can be readily integrated into a storybook reading context making e-storybooks a possible

resource for young children. E-storybooks provide scaffolding which supports young children

who are developing emergent literacy skills. For example, the computer reads and highlighting

the text to support print awareness; provides animations to support comprehension; and uses

graphics to engage the young reader.

Researchers are currently conducting investigations into whether e-storybooks can

produce similar benefits to traditional print storybooks. Further, researchers are working to

determine the extent to which e-storybooks can contribute to the improvement of children's

language and literacy outcomes.

Potential Benefits of E-storybooks in the Classroom

E-storybooks are one form of technology that allow young children and struggling

readers to enjoy books independently due to electronic features. Thus, it is possible that

additional opportunities to explore e-storybooks may actually assist with the development of

important emergent literacy skills. Electronic books are defined as an electronic form of a book

with features similar to those of a traditional print book including pages that "turn," and digital

features that can assist the reader such as word pronunciations, text highlighting, and text-to-

speech options, and hypermedia (e.g., video, animations, and sound) (Horney & Anderson-

Inman, 1999; Korat & Shamir, 2004). E-storybooks are widely used with students who are

beginning to learn to read or diagnosed with reading disabilities (Zucker, Moody, & McKenna,

2009). They can provide supports to include the use of digital scaffolding supports (McKenna,

Reinking, Labbo, & Kieffer, 1999), pictures cues and read aloud options to enhance

comprehension (Doty, Popplewell, & Byers, 2001; Greenlee-Moore & Smith, 1996; Matthew

1996; 1997), and word pronunciation tools to assist students with phonological awareness and

decoding of text (Olson & Wise, 1992; Wise et al., 1989). For the purposes of this discussion

two perspectives on e-storybooks will be discussed.

Two theoretical perspectives provide momentum for studies concerning the use of

technology to support children's emergent literacy development, particularly the use of e-

storybooks. More specifically, e-storybooks may support: (1) reading engagement, and (2)

scaffolding for emergent literacy development during storybook reading activities. E-storybooks

offer an engaging medium for young struggling readers, ease of implementation for classroom

teachers, and opportunities for individualized practice for all students. Thus, young children who

would not ordinarily be able to read a book on their own, (e.g., English Language Learners

(ELL), children with disabilities, etc.), can independently explore text. Digital scaffolds are also

available in e-storybooks to assist beginning readers who are learning to decode (McKenna et al.,

1999). Theories of reading development recommend scaffolding to promote literacy

development (e.g., Chall, 1996; Ehri, 1995).

Reading Engagement

Reading engagement is a mechanism for improving children's emergent literacy

outcomes during shared-reading interactions is indicated by studies of storybook reading

interactions showing that children's development is directly influenced by the types of tasks

(e.g., use of a manipulative storybook; see Kaderavek & Justice, 2005), materials (e.g., use of

manipulative figures; see Wasik & Bond, 2001), and verbal scaffolding and feedback children

are provided when reading storybooks (see Whitehurst et al., 1988). These storybook reading

activities promote active engagement and focus children on the storybook content (Whitehurst et

al., 1988). Researchers are making efforts to identify storybook reading practices that modify the

task, materials, and types of scaffolding adults can provide to increase reading engagement in

young children (e.g., Justice & Kaderavek, 2002; Lonigan et al., 1999; Lonigan & Whitehurst,

1998; Wasik & Bond, 2001; Whitehurst et al., 1994). E-storybooks may offer increased

interactive opportunities to promote child engagement, thus increasing child outcomes (de Jong

& Bus, 2002, 2003; Fisch et al., 2002; Talley, Lancy, & Lee, 1997) (see Table 1).

Table 1

Digital Features Designed to Provide Evidence-Based Instruction

Emergent Literacy Skill	Digital Feature	Evidence-Based Instructional Technique
Alphabet Knowledge	Computers offers letter pronunciation	Adult names letters
		Adult points to letters
	Computer highlights and repeats letters	
Print Awareness	Computer provides written text	Adult reads and points to text
	Computer reads and highlights text	
	Computer offers click to turn page and read options on each page	Adult allows child to turn pages or reads requested words on the page
Phonological Awareness	Computer offers word pronunciation	Adult blends and segments words
Use and Understanding of Language	Computer asks questions about book (e.g., who what, how, when, and where)	Adults asks questions about book (e.g., who what, how, when, and where)
	Characters talk in various voices	Adult uses voices to indicate different characters
		Adult explains word meaning
	Computer defines words	
Comprehension	Computer offers animations to support the text	Adult offers explanation of what is happening within the story
	Computer offers repeated readings of the storybook to support understanding of story plot	Adult offer repeated readings of text to support understanding of story plot
Reading Engagement and Expansion Activities	Digital animations, sounds, games, and activities within play and read modes	Adult voices, questions, and facial expressions, and reading manipulatives (e.g., puppets, etc.)

Teachers use e-storybooks with students who require the motivation of digital media effects to become engaged in reading. Reading engagement refers to the ability of a student to sustain attention to reading over time (Dunst, McWilliam, & Holbert, 1986; Guthrie et al., 1999; Guthrie & Cox, 1998; Kaderavek & Sulzby, 1994; McWilliam, Scarborough, & Kim, 2003). Engaged students may better attend to the reading task by pointing to pictures and engaging in discussion about the book (McWilliam et al., 2003). A number of studies highlight benefits of e-storybooks on reading engagement when compared to traditional books (de Jong & Bus, 2002, 2003; Fisch et al., 2002; Moody et al., in press; Talley et al., 1997).

Specifically, Verhallen et al. (2006) compared reading interactions in 5-year-old children participating in traditional and e-storybook reading interactions and found increased comprehension and vocabulary outcomes in the electronic conditions over the traditional conditions. Talley et al. (1997), found similar results in a study between 4-year-old children with extensive exposure to printed storybooks and their peers with less experience. Findings suggested that e-storybooks assisted in closing the literacy gap for these two participant groups. Additional e-storybook reading studies suggest better story retellings rates (Matthew, 1996; 1997) and better outcomes on comprehension questions (Doty et al., 2001) when compared to traditional adult read storybooks. Finally, Moody et al. (2009) found significantly higher levels of persistence favoring the e-storybook condition over the traditional storybook condition when measuring reading engagement in 3- to 6-year-old children from economically disadvantaged homes. Since reading engagement is associated with short- and long-term outcomes in reading (Frijters, Barron, & Brunello, 2000), teacher often strive to increase student attention to reading tasks using e-storybooks with digital animations.

Scaffolding to Support Emergent Literacy Development

A second theory relates to the concept of scaffolding, an instruction strategy that prompts child learning. Scaffolding should be delivered within the Zone of Proximal Development (ZPD; Vygotsky, 1978). This refers to the area of development in which children require assistance to perform. Edyburn (2007) suggests that assistive technologies such as e-storybooks can be employed as a form of differentiated instruction. Scaffolds provided by e-storybooks include the opportunity for children to read independently, review directions, receive immediate feedback, blend and segment words, access electronic dictionaries, and gain comprehension using digital features. Similar scaffolds are used to improve children's emergent literacy skills and oral language development (see Justice & Ezell, 2000; Wasik & Bond, 2001). It is well known that children learn best when taught in their ZPD (de Jong & Bus, 2002; McKenna, Reinking, & Bradley 2003; Talley et al., 1997), and digital features in e-storybooks can provide these supports (McKenna, Reinking, Labbo, & Kieffer, 1999).

Research suggests that e-storybooks can allow children to explore storybook reading mediums without adult assistance which can result in language and comprehension gains (de Jong & Bus, 2002; Doty et al., 2001; Greenlee-Moore & Smith, 1996; Matthew 1996, 1997; Shamir & Korat, 2008). For example, e-storybook features may assist children with word recognition skills by enhancing print by highlighting words and sentences as the computer reads them aloud. With some books, children are also offered opportunities to obtain word pronunciations, which can improve emergent literacy (McKenna, Reinking, & Bradley, 2003). Explicit decoding supports can also include letter-by-letter pronunciations or assist with blending and segmenting of words (e.g., McKenna, 1998). Additionally, read aloud features can improve vocabulary development and encourage repeated readings (Biemiller, 2004; Cunningham &

Stanovich, 1997). Finally, positive effects on language and reading engagement are evident when using e-storybooks (de Jong & Bus, 2002, 2003; Doty et al., 2001; Fisch et al., 2002; Moody, Justice, & Cabell, in press). Therefore, it seems possible that the combination of these digital features could produce powerful results if used appropriately and in conjunction with adult led storybook reading activities in the classroom.

Investigations into the effectiveness of scaffolding supports are also present in the research. Korat and Shamir (2008) examined the effects of e-storybooks on 149 kindergartners' emergent literacy skills from low and middle socioeconomic status (SES) groups. Results from pre- and posttest assessments in word meaning, word recognition, and phonological awareness suggest that children's understanding of word meaning improved in play and read only modes. Littleton, Wood, and Chera (2006) investigated phonological awareness skills in 5- year old children using e-storybooks. Data suggested that boys with lower phonological awareness skills at pretest showed significantly higher skills in the posttest than boys who had higher phonological skills on the pretest due to their willingness to use the digital features of the book to listen, repeat, and practice word pronunciations.

Notable benefits of adult mediation have also emerged in extant e-storybook literature. For example, Segal-Drori, Korat, Shamir and Klein (2009) found greater increases in 128 Kindergarten children's phonological awareness and word reading than other groups without adult instruction. Higgins and Hess (1999) found that grade 3 students showed greater gains in their vocabulary when an adult provided additional instruction and encouraged children to link new and prior knowledge from e-storybooks over e-storybooks alone. Additionally, results indicated greater gains for children when exposed to the read and play and read with dictionary modes when compared to the read only mode. Verhallen, Bus, and de Jong (2006), examined the

effects of e-storybooks on children's comprehension and results suggested that single reading of

the e-storybook were more effective than the adult read, repeated e-storybook readings, and

static e-storybook conditions in second language learners. Segers, Takke, and Verhoeven (2004)

also found differences favoring teacher read alouds over e-storybooks when examining

vocabulary development in seocnd language learners. Finally, Matthew (1997) compared the

effects of interactive e-storybooks with traditional books on comprehension in grade 3 students

and results suggested that children in the e-storybooks condition performed better on story

retellings than those using traditional books, although students' responses to open-ended

comprehension questions showed no significant differences. These results indicate possible

benefits of e-storybooks for young children, especially those from low SES and second language

learners.

        Other studies indicate no differences between e-storybook and traditional storybook

conditions suggesting that both types of reading in the classroom may be beneficial to young

children who are at risk. For example, de Jong and Bus (2002) completed a similar study with 48

kindergarteners and results suggested that traditional books were more supportive than e-

storybooks. In a follow-up study, de Jong and Bus (2004) found no significant differences in

comprehension test results when comparing e-storybooks to traditional books. Segers et al.

(2004) found similar non-differential results when they examined comprehension skills in 71

kindergartners using e-storybooks compared with adult read alouds. These studies suggest

possible benefits for young children who want to explore and read e-storybooks to supplement

their traditional read alouds and classroom reading experiences. Finally, Wood (2005) assessed

phonological awareness skills in 80 Kindergarten children and found no significant differences

between the e-storybook and traditional book conditions, however, posttests indicated greater

gains in rhyme awareness for the e-storybook.

Research on e-storybooks continues to provide more information about benefits.

Additional attention should be paid to controversies surrounding use of e-storybooks in

classroom to avoid pitfalls for educators and children. While e-storybooks have some supportive

characteristics, others are less favorable in supporting emergent literacy development.

Using E-Storybook in the Classroom

Controversies do exist about when and how to use e-storybooks to support emergent

literacy development in the classroom. These issues include concerns about the developmental

appropriateness of e-storybooks, considerations about matching digital features within books to

emergent literacy goals, and information regarding the overall quality of research behind e-

storybook use for young children.

Choosing Developmentally Appropriate E-storybooks

In efforts to assist educators with making quality choices about e-storybook purchases

researchers are beginning to report on the instructional effectiveness of digital e-storybook

features and to develop product evaluation guidelines. Educators should examine digital features

and their functions as well as the developmental appropriateness of the e-storybooks in their

classrooms. Developmentally appropriate practice (DAP) is defined by the National Association

for the Education of Young Children (NAEYC, 1997) as the process by which educators make

decisions about how children learn most effectively. This approach recognizes the child as an

active participant who develops over time and recommends that three dimensions of

appropriateness be considered for young children, including age, individuality, and cultural and

social context. By assessing children individually, educators can establish a current level of

functioning and then match instruction with the learner's level. Individual appropriateness

describes a child's unique learning traits including family background, preferences, and

experiences. As indicated in the literature (Hart & Risley, 1995; van Kleeck, Gilliam, Hamilton,

& McGrath, 1997), children who are at risk may enter school behind their peers due to

differences in the quality of their interactions, materials, and exposure to learning experiences

within the home and other caregiving environments. In light of these differences, children

learning experiences should correspond with their developmental needs and emerging skills to

promote growth (Bredekamp & Copple, 1997). E-storybooks meeting these criteria may

encourage exploration, discovery, choice, and variety while promoting children's creativity and

collaborative play (Haugland, 1997). Thus, instructional goals should also be carefully

considered before choosing e-storybooks for students.

In regards to developmental appropriateness, the *Evaluation Questionnaire of CD-ROM*

Storybooks allows educators to examine the developmental appropriateness and quality of an e-

storybook (Shamir & Korat, 2006). This questionnaire is based on developmental guidelines

delineated by Haughland and Wright (1997) and de Jong & Bus (2003) and can be used to

produce recommendations of worthy electronic books for use with young students. This measure

includes the analysis of features that may benefit young students with reading disabilities.

Pairing Digital Features with a Learner's Emergent Literacy Goals

E-storybooks should be chosen by educators to target specific emergent literacy skills

(see Table 1). Roskos, Brueck, & Widman (2009), analyzed a sample of 50 mixed-genre

(informational and narrative) from five popular online sources for teachers and parents. Results

suggested that for e-storybooks to be considered high quality they should facilitate learning by

using a design that "has to function at every juncture in the construction" (p.234). Thus, digital

features found in products should aim to produce gains in emergent literacy development in

some way. To review, digital features can serve multiple function including vocabulary

development, decoding scaffolds, plot comprehension, and more. Thus, Educators should

carefully select e-storybooks that are designed with features that fit a child's individual needs.

According to Roskos et al. (2009) and their examination of the extant literature on e-storybook

design (see de Jong & Bus, 2003, Shamir & Korat, 2009; Bus et al., 2009), considerations about

design should include the following: (1) multimedia design for presentation of words and

pictures, (2) interface design for format and control, and (3) learning design for purpose, content

, and feedback. Educators can use this information. Specifically, each constructed digital features

provides a specific type of support for an emerging readers. Educators should consider the

content and function of e-storybook features before assigning books to young readers.

Distracting E-storybook Features

       While teachers may find e-storybooks to be useful reading intervention tools for the

classroom, they should use a critical eye when selecting e-storybooks. Today e-storybooks come

in many forms with varying digital features and titles. Educators should be cognizant of current

research when considering which e-storybook features so they do not purchase products with

potentially unsupportive features. In a recent meta-analysis of e-storybooks (Zucker et al., 2009),

researchers examined 7 experimental studies,11 quasi-experimental, and 9 qualitative studies

examining e-storybook use for students in pre-K to grade 5, published in English between

January 1997 to January 2007. Findings suggest that digital animations range from "supportive,

supplementary, considerate hotspots" to "unsupportive, incidental, inconsiderate hotspots that are

irrelevant to the story, distracting, and often unrealistic" (Zucker et al., 2009, p. 78). These

findings are consistent with the extant literature describing some digital features as disengaging

and superfluous can decrease comprehension of the story (Trushell et al., 2003; Labbo & Kuhn,

2000). Educators are also encouraged to search for e-storybooks with features that match the

individual needs of students in their classrooms. This should include the inclusion of

developmentally appropriate text and features as well as alignment with individual instructional

goals (Lewis, 1998). It is also essential to observe children using e-storybooks, provide

directions for use, and encourage use of beneficial digital features (e.g., word pronunciations,

dictionaries, etc.) versus distracting and incidental features.

Research suggests that embedded hotspots and animations designed to make the reading

experience entertaining or can be distracting (Kamil, Intrator, & Kim, 2000). Similarly, a study

by Labbo and Kuhn (2000) suggests that hotspots may encourage passive participation, distract

learners from text thereby impeding comprehension. Lefever-Davis and Pearman (2005)

completed a study on e-storybooks and found that some first-grade children appeared to be

passive observers in the e-storybook and did not engage with the computer or gain benefits from

the digital features such s word pronunciations, decoding, or animations. Finally, digital

animations that are enjoyable for children can actually distract them and limit their exposure to

text (Trushell, Burrell, & Maitland, 2001).

In a study investigating the supportiveness of digital features for 3 to 7 year olds in e-

storybooks, de Jong and Bus (2003) found that characteristics such as games and unsupportive

animations tended to detract from the story. Korat and Shamir (2004) completed a similar study

on 43 Hebrew e-storybooks and found congruent results. They reported positive features to

include oral reading options, appearance of printed text, and supportive animations. Both of these

studies highlight a limited number of dictionary options that can potentially assist students with

vocabulary and comprehension. Other recommended features include segmented speech

feedback and word pronunciation tools (Lewin, 1998).

Lack of Quality Research

Zucker et al. (2009) reported a limited number of quality studies on e-storybooks making

evidence-based instructional decision making a challenge for teachers. Of those available, 42.9%

of experimental studies being of high quality in a recent meta-analysis. This finding was due to

the fact that 43% of the researcher provided evidence of reliability of their outcome measures.

When examining quasi-experimental studies, small sample sizes were found in 45.5% of the

studies rated, indicating groups of 50 or fewer children in the studies. Overall findings looked at

effectiveness for e-storybooks in decoding and comprehension. For decoding, the effect sizes

ranged from $d = -0.18$ to $d = 0.19$ with an average, unweighted effect of $d = 0.005$, although

results were on only two studies, making findings statistically insignificant. For comprehension

outcomes, Zucker et al. (2009) found an average ES of $d = 0.45$, suggesting moderate to small

effects. Based on these findings, educators should advocate for additional research in this area to

determine whether e-storybooks effectively support children who are developing emergent

literacy skills.

Summary of Implications for Educators

Research indicates possible benefits of e-storybooks use for children who are struggling

to learn to read. Specifically, studies suggest that digital supports available in e-storybooks can

support reading engagement, vocabulary development, comprehension, and phonological

awareness skills in young children through the use of digital scaffolding supports (see Zucker et

al., 2009). Educators interested in making evidence-based instructional decisions should consider specific strategies for choosing and using e-storybooks in the classroom. These strategies include choosing developmentally appropriate storybooks, using e-storybooks in addition to traditional print books, pairing adult instruction with e-storybooks, and monitoring distracting features embedded in e-storybooks (see Moody et al., in press).

E-storybooks may be more effective for young children if educators provide developmentally appropriate e-storybooks that limit digital features that are unrelated to the story. These can serve as distractions for children and limit their comprehension of the story (Trushell, Burrell, & Maitland, 2001. Educators should also consider apply rules for -storybook use in the classroom (see Mercer et al., 2008; Underwood, 2000; Wood et al., 2005). These rules should include strategies for moving between pages, time expectations for completion, and interactional opportunities with peers. Educators can also support children by playing a role and instructing during the reading. They can do this by using evidence-based storybook reading strategies such as questions, scaffolding, and prompts during readings (see Higgins & Cocks, 1999; Higgins & Hess, 1999; Moody et al., in press; Zucker et al., 2009). By assisting in the e-storybook reading educators can support learning and ensure ground rules established early on in the reading are being adhered to.

Finally, teachers should consider which books have digital features that best support a child's emergent literacy needs (e.g., decoding, print awareness, etc.) (Roskos et al., 2009). By choosing DAP e-storybooks with digital features that support targeted emergent literacy goals, educators may facilitate emergent literacy development in young beginning readers. Research indicates that children require instruction in oral language, phonological awareness, print awareness, alphabet knowledge, and oral language (Justice, Chow, Capellini, & Flanigan, 2003).

It seems possible that educators who consider the functions of digital features and then

intentionally pair a reader with a book based upon specific scaffolding supports will achieve

higher levels of emergent literacy development.

These suggestions may assist educators in effectively presenting and using e-storybooks

to support emergent literacy development in the classroom. As with all innovative technology

applications, it remains unclear whether long-term effects of emergent literacy skills and

increased engagement will persist based upon current research. Thus, further investigations

would be helpful as educators determine best practices within the classroom. As technology

gains a stronger influence within the classroom is essential to continue examinations into how it

can be used as an effective tool for emergent literacy instruction.

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