

The Digital Reader

Using E-books in K–12 Education

Terence W. Cavanaugh

Are you looking for an effective and inexpensive way to encourage students and parents to read together? Post selected electronic books to your school's Web site so they can be accessed from home. That's just one nifty idea from educator and e-book guru Terence W. Cavanaugh. His new title for ISTE, *The Digital Reader: Using E-books in K–12 Education*, offers guidelines and strategies for using common technologies and the Web's huge and growing library of free and low-cost digital books with K–12 student communities. The author focuses on interactive activities to support personal productivity as well as reading instruction, literacy, and standards across the content areas. Sample the book's exciting approach with this chapter on enticing reluctant readers with e-books.

Chapter 7

E-books and the Reluctant Reader

Reading difficulties frustrate educators and students. It is estimated, from a national longitudinal study, that more than 17% of young children will encounter a problem learning to read (National Center to Improve the Tools of Educators [NCITE], 1996). Additionally, the National Assessment of Education Progress (NAEP) report of 2001 indicated that all schools in the United States have children who are failing the task of learning to read. The report stated that 38% of fourth-graders, 26% of eighth-graders, and 23% of 12th-graders were reading at a “below basic” level in 1998.

Difficulties that students have with reading can often be addressed with e-books. Because reading is a basic component of most educational activities, providing alternative formats and supports is necessary to reach all students. For many students, just a small reading support can make a big difference, a support that e-books can provide.

For example, a student with special needs that I worked with had trouble reading with speed and comprehension. After simply changing the background of the text to yellow, her reading speed more than doubled and she showed a marked increase in comprehension—in just the first day of using e-book technology.

The availability of books is another key factor in reading achievement. Countries scoring higher in reading provide students with greater access to books (Elley, 1992). Additional data support this need for book access by students. Krashen (1995) found a positive correlation between reading comprehension scores and the number of books per student in school libraries.

Student readers can be generally classified into three broad categories: strategic readers, reluctant readers, and remedial readers (West-Christy, 2003).

Strategic readers. These students effectively use reading strategies that allow comprehension of a text on or above the instructional reading level.

Reluctant readers. These students usually can read any material in which they are interested, but have text difficulties and few reading strategies.

Remedial readers. These readers typically read several grade levels below their peers, with limited vocabulary and few reading strategies.

Many of the activities that encourage good readers can actually discourage nonreaders by intimidating them and confirming their negative feelings toward reading (Beers & Samuels, 1998). In summarizing the reluctant reader, Pritchard (n.d.) further identifies two distinct groups: students with learning difficulties and students who are nonvoluntary readers.

All of these students, the reluctant and remedial readers, need additional tools to scaffold their reading. E-books can be one of those tools.

Five Techniques

Janice West-Christy (2003) identifies the following five techniques for assisting struggling reluctant and remedial readers. Of these techniques, e-books can clearly support four of them, and offer new opportunities for achieving the fifth (pre-reading techniques).

Offer a wide range of reading materials. A classroom with even a single computer and an Internet connection can make thousands of additional books available to students.

Incorporate large-print materials. Most e-book programs will allow users to vary the font size and make enlarged or “large-print” displays, with a few clicks of the mouse.

Engage multiple modalities. Many e-book readers provide a read-aloud feature with synchronized highlighting to engage reading in multiple modalities.

Teach important vocabulary. Using e-book readers with interactive dictionaries can provide just-in-time learning for new vocabulary.

Use pre-reading techniques. While most e-books don’t have pre-reading techniques built in, a teacher could use an e-book’s note-taking tool to provide questions and guidance for pre-reading and active reading strategies.

Offer a Wide Range of Reading Materials

According to Richard Allington (2001, 2005), one of the best ways for students to become better readers is to read more. Students need access to books that entice them, therefore attracting them to reading. Expanding the classroom and school library can easily be accomplished with readily available e-books. Free online libraries offer a range of titles. Even more are available for purchase from electronic bookstores. With tens of thousands of e-books available through the Web, students can drastically increase the chances of finding something of interest to them to read. See part 3 for more on digital libraries.

Educators can empower students by allowing them to determine their own reading selection. Some researchers, such as Moss and Hendershot (2002) and Harkrader and Moore (1997), believe that male reluctant and remedial readers prefer to read nonfiction. Nonfiction material abounds on the Web in the form of electronic books and on Web sites. The United

States Geological Survey (USGS), for example, publishes a large number of short nonfiction e-books in HTML format at <http://pubs.usgs.gov/products/books/gip.html> (Figure 7.1). In the fiction genre, males tend to choose more science fiction, comedy, sports, war, and spy stories, while females generally choose more romances, horror/ghost, school, and poetry books (Pritchard, n.d.). For each of these preferences, libraries of free e-books are available. For example, Baen (www.baen.com) makes available on the Web more than 70 current science fiction books in multiple formats (Figure 7.2), and Harlequin (www.eharlequin.com/cms/index.jhtml) publishes romance serials weekly in HTML format on the eHarlequin Web site. Both publishing houses make books available at no cost to the reader.

Figure 7.1. The USGS Publications Warehouse offers several online publications.

The screenshot shows the USGS Publications Warehouse website. At the top is the USGS logo with the tagline "United States Geological Survey". Below the logo is the text "Publications Warehouse | USGS Library Online Catalog". The main content is divided into two sections: "General Information Products [Online]" and "General-Interest Publications [Online]".

General Information Products [Online]

- GIP 24-E, Ride The Rockies**
<http://pubs.usgs.gov/gip/2004e02/>
 Geology highlights along the Ride The Rockies 2004 route.
- GIP 5, Ground-Shaking Hazard from Earthquakes**
<http://pubs.usgs.gov/gip/2003r01/>
 U.S. Geological Survey Earthquake Hazard Map for the United States showing earthquake ground accelerations (horizontal) having a 10 percent probability of being exceeded in 50 years for a firm rock site condition.

General-Interest Publications [Online]

- Acid Rain and Our Nation's Capital**
<http://pubs.usgs.gov/gip/01cdrain/>
 This booklet focuses on acid rain and its impact on our Nation's capital. Rain in Washington, D.C., has an average acidity of 4.2, about as acid as a carbonated drink and more than ten times as acid as clean, unpolluted rain. This booklet will define acid rain, explain what effects it has on marble and limestone buildings, and show, on a walking tour, some of the places in our Nation's capital where you can see the impact of acid precipitation.

Figure 7.2. The Baen Free Library features science fiction books.

The screenshot shows the Baen Free Library website. At the top is the Baen logo and the text "Baen Free Library". Below the logo is a navigation menu with the following items: Home, What's New, The Series, The Authors, The Books, Prime Palaver by Eric Flint, * Reader Software, HTML Download, Microsoft Reader Download, Palm, Poin and Window CE.

Titles Index

1832	Med Ship
1833	Mother of Demons
A Hymn Before Battle	The Mountains of Mourning
Agent of Vega	Mutineer's Moon
An Oblique Approach	Northworld
Anti-Grav Unlimited	Oath of Swords
The Apocalypse Troll	Odyssey
Bedlam Boyz	Old Nathan
Beyond World's End	On Basilisk Station
Black on Black	Pandora's Legions
Born to Run	Paying the Piper
Changer of Worlds	The Philosophical Strangler
The Course of Empire	Planets of Adventure
The Creatures of Man	

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Incorporate Large-Print Materials

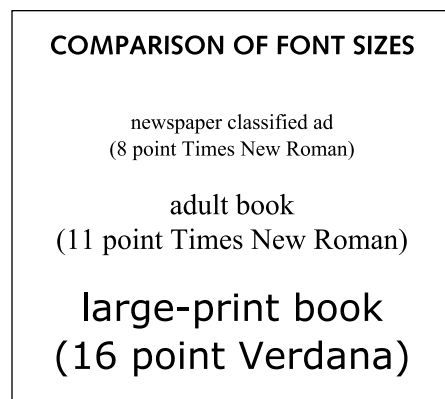
Students who struggle with reading, regardless of the reason, can benefit from changing to larger font sizes as a reading scaffold. While the use of large-print text has usually been associated with assisting the special needs of students with visual impairments or older people, the benefits gained with large print are actually applicable to students who may not have a learning disability, specifically the reluctant and remedial readers.

Students in all grades, especially those susceptible to visual stress, have been found to make more errors on the smaller rather than on the larger text. From this, Hughes and Wilkins (2000) concluded that the reading development of some children could benefit from a larger text size and spacing than is currently the norm. Reading miscues, including misreading syllables or words; skipping syllables, words, or lines; rereading lines; and ignoring punctuation cues were found to be virtually eliminated when students read large-print books. According to Elizabeth Lowe (2003), incorporating large-print text into reading programs for struggling readers has resulted in significant sustained improvement in word recognition and accuracy, comprehension, and fluency—the three forms of disabilities in reading.

Larger font sizes and spacing actually cause the eyes to move more slowly while reading, allowing students to track their reading more easily (Bloodsworth, 1993) and giving them more processing time. Fewer words on a page means struggling readers have less to visually process per page, but it still allows the student to make progress with comprehension, tracking, and fluency, with fewer decoding errors. Additionally, having fewer words on the page lowers anxiety levels concerning the text in struggling readers (Thorndike Press, 2004).

Font size, paper and ink colors, and formatting are all factors that affect the readability of text material (Fiske, 1994). Books in digital format can easily accommodate a change in typeface, text color, and background color.

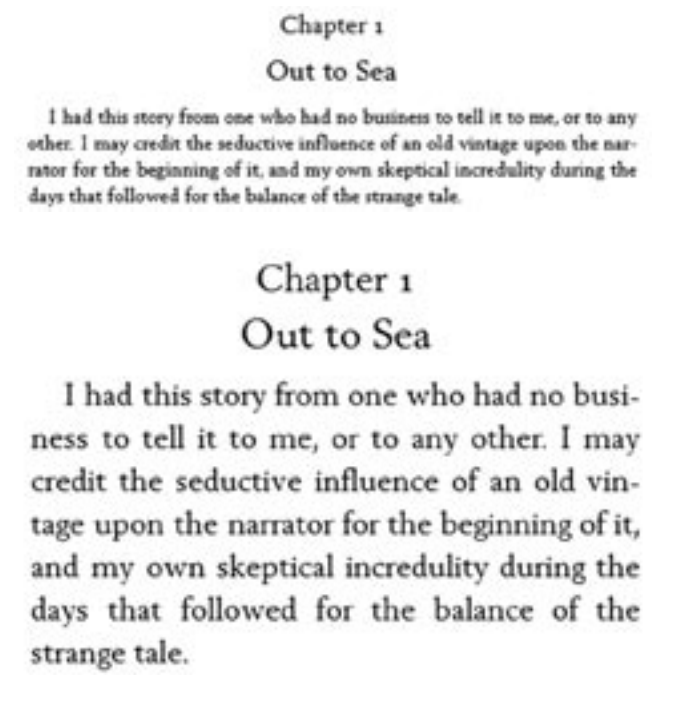
Figure 7.3. Larger font sizes can make reading easier for struggling students.



Today's computers can produce a wide range of font sizes from 1 point to 1,638 points. The term *point* refers to the height of each letter. One inch is 72 points. Therefore, a point size of 18 equals one-quarter of an inch, and 36 points equals a half-inch. A size of 10 to 12 points is typical for adult books; a newspaper's classified ads are often printed in 8-point type. A good size for reluctant readers is 14 to 16 point type (Figure 7.3).

E-books are a great source for large-print books, with the added benefit that students can select the size of print they prefer. The size of e-book text can be changed either by enlarging the text or by "zooming" or magnifying the display. Notice the differences between the smallest versus the largest text display sizes with MS Reader in Figure 7.4.

Figure 7.4. A comparison of small text display and large text display.



Engage Multiple Modalities

The Family Literacy Foundation (2002) states that studies show one of the most important things that can be done in preparing children for success in school and reading is to read aloud to them: reading aloud helps build listening, vocabulary, memory, and language skills and helps children learn information about the world around them. A reluctant or remedial reader may be troubled when reading a certain passage, but display good comprehension after listening to the same passage.

Kress (2003) in his book *Literacy in the New Media Age* advocates for a more multimodal approach to literacy instruction. This approach should include audio and image presentation, as today's students live in an age when text has evolved with new media forms, such as those displayed on computers and handheld computing devices.

E-book resources and applications that engage multiple modalities include text-to-speech programs, Web sites with multimedia Flash books, video through the Internet, and digital audio books. See chapter 6 for more information.

Teach Important Vocabulary

Vocabulary refers to the words we must know to communicate effectively, and it plays an important part in the reading process. Vocabulary is critical to reading comprehension; students can't understand what they're reading without understanding the meaning of the words. As students learn to read and progress, they must learn the meaning of new words.

The scientific research on vocabulary instruction reveals that:

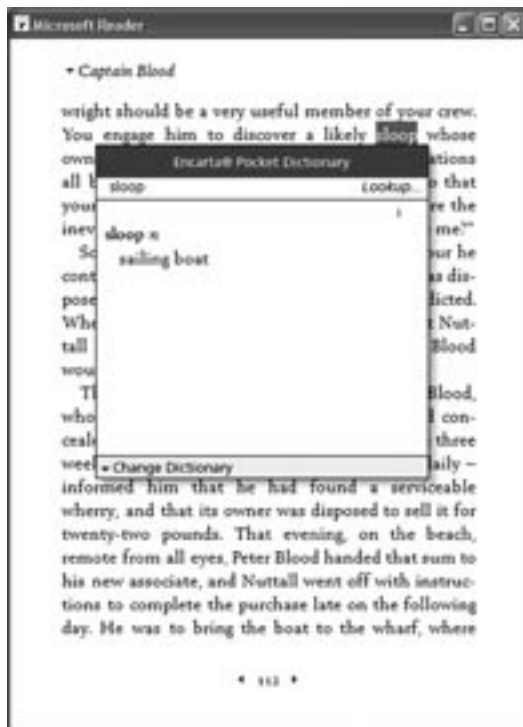
- most of a student's vocabulary is learned indirectly when they hear and see words used in different contexts, and
- some vocabulary must be taught directly, as individual words and with word-learning strategies.

Direct vocabulary instruction aids reading comprehension. Students learn vocabulary best when they are provided with instruction over an extended period of time and when that instruction has them work actively with the words. Even though it can be difficult for students to master the use of dictionaries, glossaries, and thesauruses, learning to use them helps broaden and deepen their knowledge of words. Further, the most helpful dictionaries include sentences providing clear examples of word meanings in context (Armbruster, Lehr, & Osborn, 2003).

E-books provide a tremendous advantage in employing these resources. Many e-book formats allow immediate access to dictionaries and other reference works (Figure 7.5). When students come across an unfamiliar word, they simply click on the word and use an interactive dictionary to look up the definition. A student can also use the word search feature to find a word and see its contextual use. If the student uses the interactive dictionary to look up the definition of a word and the definition uses a word that the student doesn't understand, the interactive dictionary can look up that word instantly from within the definition. Many defined words are also hyperlinked to other definitions as "see" statements.

Using an interactive e-book dictionary, a student doesn't need to take the additional time and effort to leave his or her desk, get another book, riffle through the pages to find the definition, and then double check the word's context. Instead, the student merely clicks on the word for instant vocabulary assistance.

Figure 7.5. A word's definition is quickly accessed in MS Reader with its interactive dictionary.



An Additional Strategy: Read the First Chapter

Kylee Beers (2003) suggests an additional strategy in assisting struggling readers, which is to read to the student the first chapter of a book. Her research indicates that reluctant readers are less reluctant if someone has read them the first chapter or two. A technology support that could assist with this strategy is the Random House book site (www.randomhouse.com), which sells a large number of audio books. The site provides excerpts of the first chapter or two in RealPlayer format for a number of these books. A student can listen to audio excerpts being read by a professional reader. Media specialist Nancy Keane uses book talks to get students interested in books, and has suggestions for more than 60 audio book excerpts that can be used with book talks (<http://nancykeane.com/booktalks/audiobook.htm>).

Conclusion

Students can be reluctant or remedial readers for a wide range of reasons—lack of motivation, materials being beyond their reading level, poor reading skills, low interest in the materials, inexperience with the English language, or even learning or print disabilities. Electronic books can be a tool to assist these readers. E-books can provide to the instructor and the student new options, scaffolds, and resources for reading materials at all levels and for all purposes.

Online Resources

Booksellers and Libraries

Baen Free Library (e-book library of modern science fiction): www.baen.com/library/

E-book Libraries (e-book libraries appropriate for education use): www.drscavanaugh.org/ebooks/ebook_libraries.htm#ChildrensLibraries

eHarlequin.com (romance fiction publishing house): www.eharlequin.com/cms/index.jhtml

United States Geological Survey (digital Earth science nonfiction library): <http://pubs.usgs.gov/products/books/gip.html>

Strategies

E-book Reading Strategies (reading strategies applied to digital text):
www.drscavanaugh.org/e-books/ebrs/intro.htm

Nancy Keane's Book Talks Quick and Simple Site: <http://nancykeane.com/booktalks/>
Ms. Keane provides instructions for having a book talk, online resources, and links to audio excerpts from popular literature.

Put Reading First from the National Institute for Literacy: www.nifl.gov/nifl/publications.html

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Today's children are naturally attracted to technology and we should use that interest to further the aims of education. *The Digital Reader* shows you how to tap that interest with e-books to help more K–12 students read across the curriculum for enjoyment and research and improve their general reading abilities. Order now by phone, fax, or online. Single copy price \$37.95. ISTE member price \$34.15. Special bulk pricing available. Call **1.800.336.5191** or go to **www.iste.org/bookstore/**.