

Radical Change Revisited: Dynamic Digital Age Books for Youth

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Radical change, a theory described in my 1999 book, *Radical Change: Books for Youth in a Digital Age*, was developed in the mid-1990s. It serves as a lens through which to examine, explain, and ultimately, use contemporary literature for youth growing up in the Digital Age. It identifies changes in forms and formats, perspectives, and boundaries in this body of literature—all changes related to the interactivity, connectivity, and access of the Digital Age (see Figure 1).

When I first conceived the Radical Change theory, almost everyone agreed that digital technologies were changing radically, yet almost no one acknowledged the concomitant change in a growing cadre of printed books for youth. Moreover, those who did take note of the changes in books saw little or no relationship between these alterations and the Digital Age in which they were written, illustrated, and published. Consequently, in discussions of the integration of technology in education, printed books were often either forgotten or treated as a completely different, unrelated entity.

As I prepared this reflection on my book, I realized that Radical Change was then and is still the only theory of which I am aware that makes this connection between printed books for youth and the digital environment. [a] Radical Change is what is known as a spatial/temporal theory, rooted in the belief that authors and illustrators are influenced by the time and place within which they write. Bakhtin noted that “for the purpose of his writing, an author must create entire worlds and, in doing so, is forced to make use of the organizing categories of the real world in which he lives” (Clarkand & Holquist, 1984, p. 278). Radical Change theory fits this tradition. It recognizes that temporal and spatial relationships in the digital world have “resulted in historically manifested narrative forms” (Holquist 1990, p. 113)—in this case interactivity, connectivity, and access in books for youth.

McLuhan (1964/1994) was prescient in describing and modeling how the influence of media (although not digital) could transform a book from a passive to an engaging medium. Landow (2006) was one of the first scholars to see how hypertext embodies Roland Barthes’s conception of the “writerly” (more involving) rather than the “readerly” (less involving) text.

Figure 1. Key Definitions

Connectivity refers to connections of hypertext like links in resources, as well as the sense of community or construction of social worlds that emerge from changing perspectives and expanded associations in books and other resources or in relation to resources in the real world.

Interactivity refers to dynamic, nonlinear, nonsequential, complex books and other resources and associated learning and information behaviors.

Access refers to the breaking of longstanding information barriers, bringing entrée to a wide diversity of formerly largely inaccessible opinion and sophistication in books and other resources and related opportunities in society.

The Digital Age principles of interactivity, connectivity, and access that now characterize many books for youth are influenced by digital technologies and have altered the reading experience. Indicators of these principles in books include the following: graphics in new forms and formats; words and pictures reaching new levels of synergy; nonlinear or nonsequential organization and format; multiple layers of meaning from a variety of perspectives; cognitively, emotionally, and physically interactive formats; sophisticated presentations; abundant connections; and unresolved storylines. Manifestations of these and other indicators, however, have matured considerably in the ensuing decade and are continuing to appear in more and more sophisticated forms and formats, promoting more and more active engagement of the user/participant/reader, just as is happening with other dynamic media.

Two issues have been raised fairly often since the publication of *Radical Change*, so before continuing this reflection, I will address them. *Radical Change* theory identifies and describes those books with Digital Age characteristics, which have increased and continue to increase annually in number, variety, and sophistication, but which by no means constitute the majority of the 5,000 or so books published for youth each year. The fact that many books do not have these characteristics is one reason that a theory is useful to educators in locating those that do. In addition, although I make the case that these dynamic books hold a special appeal for Net Generation youth, I do not negate the value of more traditional reading experiences; nor do I deny that books with these features have existed prior to the Digital Age. A few authors were quite radical for their times (e.g., Lewis Carroll).

In the remainder of this reflection, I describe some of the more dramatic developments in books and look briefly to the future. Then I discuss the implications of these changes for teacher education and for curricular applications and student learning.

Digital Age Books as a Dynamic Medium

Information Books

More than a decade ago publisher DK, Inc. (now owned by Pearson), was a stand-out innovator in information books for youth. Their books reflected the nonlinear, nonsequential characteristics of digital media. They adopted design characteristics of digital hypertext, presenting pictures and text in juxtaposition that required, or at least promoted, a hypertextual approach to thinking and reading. Peter Kindersley, company founder, set out to demonstrate that visual information is as important as verbal, especially for readers with dyslexia (which Kindersley had encountered in his youth). In the early 1990s, DK books (along with the Cole/Degan Magic School Bus series) were the rare digitally designed information books. Now, this style of organization has become so common place in information books for youth that it is hard to find books that have not adopted it.

Fiction for Older Youth

Virginia Euwer Wolff is an author of fiction whose work clearly changed with the development of the Digital Age. She created her first two books for young adults in the late 1980s in a traditional linear style. However, soon she turned to more radical writing. The first two novels in a planned trilogy, *Make Lemonade* (1993) and *True Believer* (2001) were written in the now increasingly common form of free or blank verse. Wolff arranged the words on the page to reflect the emotions and cadence of the teen protagonist.

Other novelists have taken this a step further and arranged the words in their books to form pictures on the page. For example, Hesse (1997) in *Out of the Dust* arranged words like piano keys during a particularly dramatic event involving piano playing. Numerous poets for youth regularly create words that form pictures (see, e.g., James Stevenson's works).

In 1998 Wolff in *Bat 6* pioneered the style of writing with multiple voices and multiple perspectives (22 to be precise). Her technique has since been widely adopted. Other Digital Age forms and formats that have become prevalent include text that is formatted to appear as letters, journal entries, diaries, emails, or instant messages. The Internet is not the only medium where young readers can access multiple presentations, multiple perspectives, and multiple layers of reading choices.

Picture Books for All Ages

Picture books for all ages have incorporated many of the Digital Age changes. In *Radical Change*, I identified Macaulay's (1990) *Black and White* as a prototype of this genre. Since then, picture books have incorporated dozens of digitally designed variations, although perhaps none with the timeless sophistication and complexity of *Black and White*. Varying font size and shapes are exceedingly commonplace – the size of the font along with color may be used to convey emotions, importance, and direction. Often, a remarkable synergy is created between words and pictures. Visual perspectives from numerous points of view (in the past children's books used only midrange perspectives) take the young reader on journeys reminiscent of the movement within video games. Characters exit the story and speak to the reader. Some take control of writing the story (e.g., a cat named Chester in Watt, 2007).

Paper-Engineered Books

Many pop-up books requiring physical interaction are more accurately called “paper engineered” because of the immense artistic talent involved and the complexity of their design. I expressed ambivalence in *Radical Change* about whether pop-ups were merely toys or serious books influenced by the digital environment. That ambivalence disappeared in the past decade – the literary value of paper-engineered texts goes far beyond toy status.

Sendak, Yorink, and Reinhart’s (2006) expertly paper-engineered picturebook, *Mommy?*, is a 21st century version of Sendak’s *Where the Wild Things Are* (1963). Both tell the story of a small child’s quest for approval from his mother or for his mother’s love. Through engaging with the complex manipulatives, the young reader is actively involved in the protagonist’s search. Of course the premise in the Sendak et al. book, mommy as monster, is also a much more sophisticated and ambivalent presentation of the subject content, with an ending left to the imagination of the reader.

Graphic Novels

I find that no change has been more dramatic than that of the graphic novel. McCloud (1993) demonstrated that comics, as a serious medium, demand complex, cognitive, interactive attention from the reader, who must create the part of the story/text that falls in the gutter between panels. My discussion of graphic novels occupied less than two full pages of text in *Radical Change*, even though they had been around in young adult literature as a serious format for a while. If written today, my discussion of this format would comprise at least one entire chapter, for with the interactivity and graphic dominance of much digital media, this print format has mushroomed. Graphic novels have become a form of print book that appears in all genres of literature for youth, from the Baby Mouse books by Jennifer and Matthew Holm to serious historical nonfiction and multilayered fictional work. Often traditional printed books become movies and video games and vice versa. Now novels are sometimes retold in another print format, the graphic novel—a sign of the format’s popularity.

The Dynamic Hybrid Book

One last dramatic Digital Age change in relation to books has occurred since the publication of *Radical Change*. It is a recent development, not yet widespread, although Kathleen Burnett and I forecasted it in 1999, based on the work of French philosophers Gilles Deleuze and Felix Guattari. For want of a better term, I am referring to it as a dynamic hybrid book. One of the first such hybrid examples I noticed was *Cathy’s Book* (Stewart & Weusnabm, 2006). Phone numbers and Web site addresses are sprinkled throughout the text and must be accessed in order to solve the mystery of a missing boyfriend posed in the book.

A much more grandiose venture is referred to as a multiplatform book by its publisher, Scholastic, Inc.. The book includes trading cards (except in the library edition) that turn into game pieces when a code found on each is entered on a Web site. The next step is participation in an online game that extends over the course of 10 books and will result in the awarding of \$100,000 in prizes to a selection of young readers who solve the mystery described in the books. The first book in the series, *A Maze of Bones*, was issued in September 2008. To fully experience this dynamic book one must move back and forth between digital and print media. Players are also assigned to a team, so it is easy to imagine a huge connected worldwide scramble to read the books and move to the next

step of the mystery. The interactivity, connectivity, and access of the digital environment explain why this type of hybrid reading activity will likely succeed. This type of synergy that is growing up between printed books and digital media is another reason that the Digital Age book is a part of technology integration in classroom instruction.

Radical Change Theory and the Future

Radical Change Theory will continue to be useful in predicting the changes in books for youth. Interactivity, connectivity, and access will continue to be the principal driving forces in the digital environment that explain innovations in reading and information resources for youth. The question must be raised, however, as technology advances, whether the content of the book will gradually morph into residence on a handheld digital media device. In *Radical Change*, I pondered the answer to “why handheld [printed] books?” In my original response, I named the opportunity for a depth of examination and reflection on ideas, the portability and availability of books, and the careful editing and review process that precedes development of a literary piece for youth. I do not see how any of these characteristics are precluded by the latest versions of portable electronic book readers. The latest versions are far too expensive for general consumption, but assuming they were not, they allow for the reflection, portability, availability (download via Bluetooth), and same careful preview and review process. Electronic paper is close to perfection. The aesthetics of holding a cloth bound book are missing, but a simulation of the experience is getting close.

Already a large number of books for youth are available in e-book format. Many of them require specific handheld readers that will not work with other publishers' books. There are generic readers, but they are still quite expensive and not many digital books for youth are currently available in a compatible format. Of course, there are many multipurpose digital devices such as Palms and smart phones that will accommodate books – there are just not a lot of books for youth available for them yet either. I do believe we are on the verge of a breakthrough with the format.

Certain print book aesthetics would be difficult (but perhaps not possible) to emulate in e-book format. The 2008 Caldecott Award for the most outstanding picture book for children published in the United States was presented to Brian Selznick (2007), author and illustrator of a radical book, *The Invention of Hugo Cabret*. It is hundreds of pages longer than an ordinary picture book. Approximately 300 of its 533 pages are wordless black and white sketches that tell the story, not illustrating the text but replacing it. Selznick noted that he thinks of the book as somewhere between a graphic novel, a picture book, and a film (All About Adolescent Literacy, 2007). Each sequence of drawings can itself become a miniature silent movie if the reader employs a flipbook technique. This latter feature that requires a physical interaction with the book would not be the same in digital form, nor would paper-engineered books or picture books of various shapes and sizes be the same on a handheld digital device.

The International Children's Digital Library (ICDL; see <http://www.icdlbooks.org/index.shtml>), however, has successfully retained the original artwork and format of highly visual children's books, which can be read in one of five free online viewers. The ICDL did not exist when *Radical Change* was published but it will continue to expand in the future, because it is more successful online than on a portable device. As of 2008 this Web site, created by faculty and child consultants at the University of Maryland and sponsored by the National Science Foundation, the Institute for Museum and Library Services, Microsoft Foundation, Adobe Systems, Inc., and numerous book publishers, had 2,657 books in 48 languages and had been visited by more than a million people in 166 countries. Are these print books? They are originally

print books that have been scanned in with sophisticated digital equipment. This type of digital library will continue to coexist with highly visual books in a format that is independent of a computer for both practice and psychological reasons, but the ICDL enormously increases accessibility to books in many countries and cultures that no U.S. library could possibly afford.

It is likely that—as much of the information formerly provided in books is now mostly in digital form—formats that can be easily transported *will be* (when economically feasible) and that those that cannot be *will remain* in print form. This would not discount the usefulness of Radical Change theory in the least, nor the existence of printed books, nor of physical space libraries.

Cross-Disciplinary Implications of Radical Change Research

Radical Change theory was devised to explain books for youth and then expanded to explain youth behavior in relation to digitally designed books and other digital media. The research conducted with Radical Change during the past decade has focused specifically on Digital Age books and related reading behaviors, which, not rooted in any one discipline, has cross-disciplinary implications and cross-media relevance.

Teacher Education

Although almost all teachers now receive some kind of instruction in how to integrate technology into their classroom teaching, few teachers are taught to think of Digital Age characteristics of books that would make good partners with technology. Abele (2003), at Capella University, did a dissertation study titled *Responses to Radical Change Children's Books by Preservice Teachers*. Her findings were as follows:

The reading attitudes of the preservice teachers were affected positively by the [Radical Change] books, and more time was spent reading for enjoyment. The participants also described a higher level of interaction required by the reader than with more traditional children's books. This interaction was welcomed by the participants and valued as an effective part of future teaching. The results of this study also revealed that reading is a social experience, best shared with others for more pleasurable involvement (Abele, 2003, Abstract)

The results of this research would suggest that preservice teachers can make the link between Digital Age books and the types of experiences that attract students to computers and other technologies and that this link could extend the preservice teachers' ability to connect with Net Generation learners and make their learning more relevant to their lives. New teachers could enter the classroom armed with an additional digital tool. Because Radical Change is a cross-disciplinary theory and because it can be used to identify books in any discipline (200 of them were annotated in Appendix A of *Radical Change*), its inclusion in technology-related teacher education courses and in reading-related preservice courses, could be beneficial in science, mathematics, social studies, English, and the humanities.

Cross-Disciplinary Classroom Instruction

The bottom line of the research in this area is that, given a choice, many children will select the books that emulate their preferences in dynamic media and that, despite its less linear and often more sophisticated presentation, they can and do comprehend what is presented. Establishing that children can and do comprehend nonlinear, nonsequential

text has been important, as most of the teaching of reading and writing to date has been so firmly linear.

The traditional way of teaching reading has been strictly linear (unless one counts the back and forth children do searching pictures for clues of what the words might mean). Hassett (formerly Hammerberg, 2001), who investigated the reading and writing of early elementary school age children, concluded that, in fact, their natural way of approaching both functions is "hypertextually." After studying texts identified by Radical Change she proposed something she termed "shared and interactive writing" that builds upon children's natural inclinations. Her work suggests that even very young children possess the same affinity for nonlinear design in their books that has been noted in the digital media.

Another researcher, Pantaleo, has firmly established both the affinity and the ability of young children to read, comprehend, and enjoy digitally designed and quite sophisticated print books. Between 2003 and 2008, Pantaleo published 24 articles describing research with elementary school children in first to fifth grades that focused on Digital Age books and their influence on reading and writing, a number of which incorporated Radical Change theory. (See her Web site for a list of these articles: <http://www.educ.uvic.ca/Faculty/pantaleo/writing.htm>.) All of her research is qualitative, with analysis of both oral transcripts and written responses from the children who participated in a number of different classrooms and schools. Conclusions from four of her studies having cross-disciplinary implications and cross-media relevance can be found in the [appendix](#).

Pantaleo's conclusions are rich in instructional opportunities that stimulate thinking and learning across disciplines and across media. Her work shows that writing often emulates reading. So the study of literary hypertextual writing in books might have a crossover to the plethora of writing online.

One relatively subversive thought is that in schools, where some of the new media most favored by youth are not allowed, the excitement of Radical Change books with Digital Age features might serve as an alternative lure for young learners, or at least they might decrease the disconnect between their outside-of-school and in-school life that exists for many youth.

In her research studies, Pantaleo discussed another Radical Change assumption, that adults and youth are partners in the digital world. Her description of the role of the teacher is one of partner with the children in constructing meaning. She mentioned in one study that when reading the transcript of one of her own classroom discussions she realized she had missed some salient opportunities to foster children's thoughts by talking too much herself.

Two final words on classroom instruction: The same principles of technology, pedagogy, and content knowledge that apply to the use of technology in the classroom should apply to the technology-influenced books, when the books are used to capitalize on their Digital Age characteristics. Finally, Appendix D in *Radical Change*, "Using Radical Change with Readers" offered some ways to help students recognize and work with Radical Change characteristics in books.

The Synergy of Digital and Print Media

According to Jenkins (2006), we live in a convergence culture, and among the convergences are the old media and the new. In some instances this convergence can reap benefits for all involved. Earlier in this reflection was the example of a convergence of print and Internet use necessary to solve a mystery strung out over 10 books, all by well-known authors for youth, making it more than a game. Another example, mentioned in *Radical Change* is the online role-playing MOOs (Multi-Object Oriented) and MUSHs (Multiuser Shared Habitats) based on Anne McCaffrey's novels plus various other connected Web sites. (For The Worlds of Anne McCaffrey approved fan web sites see http://annemccaffrey.net/index.php?page_id=21.)

The principles upon which *Radical Change* is based well explain how this offline/online synergy has grown and developed. The Harry Potter books (the best selling series of print books in the history of children's publishing) precipitated the largest online literary community in Internet history, a community of intense book discussion, role playing, and creative writing. Jenkins (2006) documented this drama in his chapter, "Why Heather Can Write?" (pp. 169-205). The literary communities (noted by Pantaleo as encouraged in a classroom by sharing and discussion of *Radical Change* books) became a worldwide social network stemming from a print medium. *Radical Change* predicts even more synergy of media as the Digital Age principles mature. This type of synergy created by shared interactivity, connectivity, and access between the print and digital environments makes all types of media involved dynamic.

Note

[a] Another theoretical explanation for some of the changes identified by *Radical Change* and applied to books for youth is postmodernism. For a discussion of the similarities and differences between the two, see Dresang (2008).

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Appendix

A Summary of Pantaleo's Research Conclusions

Reading:

- Young readers thoroughly **enjoyed** the books with **Digital Age characteristics** (Pantaleo, 2004; Pantaleo, 2007a).
- “**Outside of school**, most students encounter **print and digital texts** that **embody Radical Change characteristics** such as MSN messaging, blogging, video and computer games” (Pantaleo, 2007b, pp 24-25).
- Young **children can handle** quite **sophisticated** visual and narrative **devices** (Pantaleo, 2004; Pantaleo, 2005; Pantaleo, 2007a).
- **Readers make choices** as they read and, as is evident in the transcript excerpts, transact with the verbal and visual texts **in various nonsequential ways** (Pantaleo, 2004; Pantaleo, 2005).
- Although readers should always be actively involved in the construction of meaning while reading, **Radical Change** identified **texts require a greater degree of reader participation in the creation of meaning** (Pantaleo, 2004; Pantaleo, 2005; Pantaleo, 2007a).
- Marked **similarities exist between** the children's **interactions** during Radical Change identified **books** read-aloud sessions **and** characteristics of what

- web-based interactions** offer, e.g., nonlinear, nonsequential strategies; interactivity with **blurring between reader and writer** (Pantaleo, 2005).
- **Results document the connectivity and interactivity** described in Dresang's (1999) Radical Change Theory **for both book and reader** (Pantaleo, 2004; Pantaleo, 2007a)
 - Connectivity refers to the increased sense **of** community created by these books, because the **forms and formats encourage sharing among readers** (Pantaleo, 2004; Pantaleo, 2007a).
 - **Radical Change texts** are ideal for rereading to children because the polysemous texts **afford multiple opportunities for** meaning making and **interpretation** (Pantaleo, 2004; Pantaleo, 2005).
 - **Radical Change characteristics give agency** to readers (Pantaleo, 2004).
 - The children's **literary understanding** about the ways that stories "work" **was extended** [Comment: Reminiscent of Papert's (2005) admonition that computers can be used to teach children to think about thinking] (Pantaleo, 2004; Pantaleo, 2005).
 - "Students are immersed in a plurality of texts and **educators need to acknowledge and use students'** out-of-school **experiences with** texts that have **multiple reading, writing and viewing pathways**" (Pantaleo, 2007b, p. 25).

Writing:

- **Children** learned and **used** the **metalinguage of Radical Change** to talk about selections of literature and their writing as well as movies, television shows, art work, video games, and Internet sites that displayed Radical Change characteristics (Pantaleo, 2006).
- **Children are socialized into** a certain (linear) **way to write**, but when exposed to other possibilities their own creative products reflect breaking the mold (Pantaleo, 2006; Pantaleo, 2007b).
- Writing **after exposure to Radical Change texts showed skillful interruptions** and disruptions in each narrative (Pantaleo, 2007a).
- **Writing** incorporated Radical Change characteristics as well as other familiar literary forms but also **showed signs of** ability to actively produce **original thinking** (Pantaleo, 2007b).

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