

# CHAPTER 2

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## The Role of Reading for Children and Adolescents in a Digital Age

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### Introduction

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When the first edition of this book was published over a decade ago my emphasis was on the role of “free reading,” or reading for pleasure, in the lives of children and adolescents. While that topic is still relevant, the vast changes in the media landscape add enormous complexity to the issue. Certainly, children are still reading, but much of their reading is done from a screen. With each passing month, those screens have become ubiquitous and more portable than ever. The distinction between reading for school and reading for pleasure begins to blur as stories are used in electronic games in schools and lessons from history classes are incorporated into games that children and teens play at home or at any location of their choice. Product placements are used to advertise products in books that children read for pleasure. A recent book series, *Mackenzie Blue*,

aimed at preteen girls, contains embedded references to brands of candy, drinks, clothing, and other commodities, and the products are used by characters; other marketers are regularly riddling books with products (Nagy, 2009). The frozen-in-mind image of a child reading a book beside a river on a summer day no longer describes how, what, and why children read.

This time, the chapter will explore free, out-of-school reading as well as the implications of the digital platform for reading in the lives of children and adolescents. Still important are questions regarding the onset of reading, the amount that children read, and what that reading contributes to their social and intellectual lives—but there are new questions. When “screen time” competes with book and magazine reading, how attractive are traditional print and illustrations? Does digitalization alter the process of reading in terms of rate, retention, or comprehension?

Will portable digital reading devices spell the end of bound books or stapled magazines? Are multimedia editions of books for children and adolescents more or less satisfying for a young audience? These and other questions will be used to explore the implications of reading in the digital age. While many of these questions lack solid research evidence for answers, the process has begun.

### How Much Do Children Read?

Since the first edition of this volume, the amount of time children spend reading is the only use of a medium that has decreased. In 1999, an analysis of Kaiser Foundation survey data from over 3,000 children and adolescents revealed that respondents aged 2 to 14 reported an overall average of 43 minutes of reading per day, with 21 minutes devoted to books, 15 minutes to magazines, and 7 minutes to newspapers (Roberts, Ulla, Rideout, & Brodie, 1999). In 2010, a report from the same foundation found a decrease of about 5 minutes in overall reading, to 38 minutes per day (Rideout, Foehr, & Roberts, 2010). While the proportion of 8 to 18 year olds who read books has remained stable (46%), the proportion of respondents who read newspapers has decreased (from 42% to 23%), as has magazine reading (from 55% to 35%).

Not all of this reading was done from print sources: Computers bring large amounts of text. About 10% of this age cohort reported reading newspapers and magazines online, at an average of 21 minutes per day. Thus, about two minutes of journal reading has been made up for by reading from a screen. Regardless of the time differences across two decades, reading from print sources occupies the least time in the media diet, dwarfed as it is by over four and one half hours of television content.

Many children choose to not read often or in great quantities. Scholars from a variety of disciplines have studied the amount of time young people read and its effect on cognitive functions. A group of studies involving hundreds of students found that very few pre-school and primary grade children chose to look at books during free-choice time at school (Morrow & Weinstein, 1986). Greaney (1980) found that fifth-grade students spent

only 5.4% of their out-of-school free time engaged in reading, and 23% of them chose not to read at all. Anderson, Fielding, and Wilson (1988) found that students spend less than 2% of their free time reading. Furthermore, as students get older, the decline in reading becomes more pronounced. The decline in reading for pleasure is most pronounced among adolescents. The percentage of young people who read for “at least 5 minutes” the previous day in 2004 was 63% for 8 year olds, but only 34% of 15 to 18 year olds read the previous day (National Endowment for the Arts, 2007).

### What Are They Reading?

Perennial classics such as *The Pokey Little Puppy* by Janet S. Lowrey, S. E. Hinton’s *Outsiders*, and E. B. White’s *Charlotte’s Web* continue to be in the “Top 10” on Publications International’s list of best-selling children’s books of all time since. (Publications International, 2011). At that time, the Harry Potter craze was in full blossom, with librarians breathlessly celebrating the return of reading as a major factor in children’s leisure time. With over 400 million copies sold, the series clearly ranks as the most popular in history. In 2005 and 2006, news reports mentioned a British survey that claimed that 59% of a sample of children said that they had never read a book before Harry Potter and that a larger percentage said that reading them helped them in school. Attempts to verify this and other investigations result in a diagnosis of a kind of media virus; while the press reported research results, sources merely quoted each other. Primary data were nowhere in evidence. All of this attention was accompanied by severe criticism from religious groups who feared that the primary outcome of reading the books was a preoccupation with witchcraft and magic.

Whatever the ultimate legacy of J. K. Rowling’s Harry Potter books, the impact has faded. No new “superstars” of children’s literature have emerged. Rowling has declared that the series has ended; only the last book in the series remains to be filmed. Critic A. S. Byatt (2003) said of the world of Harry Potter, “It is written for people whose

imaginative lives are confined to TV cartoons, and the exaggerated (more exciting, not threatening) mirror-worlds of soaps, reality TV and celebrity gossip” (p. B1). Other critics have leveled similar critiques, saying that the books are popular because they are so television-like. Things happen to Harry, his family, and his friends that have no implication for others in the world. Regardless of critics’ attacks, several generations of young readers are likely to continue their enjoyment of the world of Hogwarts.

For the preteen reader (aged 9–12), Creative Juices (2009) still lists several classics as best sellers. Among them are C. S. Lewis’ *Narnia* series, Laura Ingalls Wilder’s *Little House in the Big Woods* and its sequels, and Caroline Keene’s *Nancy Drew* and sequels. Thirteen to 15 year olds are reading Katherine Paterson’s *Bridge to Terabithia* and *The Great Gilly Hopkins*. Both teens and preteens are reading Stephenie Meyer’s *Twilight* series, as well as viewing the popular films based on the books. Vampires have a long shelf life for teens and young adults. According to culture critic Karen Valby (2008),

There are young girls and grown women alike wearing homemade T-shirts with slogans like “I Love Hot Guys With Superpowers (and Fangs)” and “I Love Vegan Vampires.” There are gleeful members from the online community *Twilight* Moms, who Meyer had breakfast with that morning despite being at a signing until 1 a.m. the previous night, and grandmothers who say if they knew how to use a computer they’d start their own fansite too. There are women who’ve quit their day jobs and now make a living online selling *Twilight*-inspired T-shirts and jewelry, and a teenage girl clutching a letter for Meyer that says the books persuaded her not to take her own life. (p. 12)

## Benefits of Reading

Children whose parents read to them tend to become better readers and to perform better in school than those who are not read to (Snow, Burns, & Griffin 1998). Other family activities such as telling stories and singing songs also encourage children’s acquisition of literacy skills (Moss & Fawcett, 1995). A large

body of research revealing the effectiveness of reading aloud in helping children to become effective readers was emerging during the first edition of this volume. Children who are frequently read to before first grade will then “read” their favorite books by themselves by engaging in oral language-like and written language-like routines (Teale, 1995). For most children at this age, emergent reading routines include attending to pictures and occasionally to salient print, such as that found in illustrations or labels. A few begin to attend to the print in the main body of the text, and a few make the transition into conventional reading with their favorite books. Another investigation in this tradition found that first graders who were read to from children’s trade books outperformed controls on a number of measures of reading comprehension (Feitelson, Kita, & Goldstein, 1986). In a review of research on play, the authors cite a number of renowned scholars and authors, including Goethe, E. B. Browning, G. B. Shaw, and many others, who report vivid memories of their parents’ reading to them and the impact of these read-aloud experiences on their literary accomplishments (Singer & Singer, 1990).

Trelease’s (1995) review of reading research revealed that in a number of investigations, competent early readers were read to as young children. The U.S. Department of Education (1985) study “Becoming a Nation of Readers,” a review of over 10,000 research findings, stated that “the single most important activity for building the knowledge required for eventual success is reading aloud to children” (p. 247).

Not every investigation has found positive results of reading aloud, especially if the reader was a teacher. Meyer, Stahl, Wardrop, and Linn (1994) completed a longitudinal investigation of two large cohorts of K through second-grade students and found that among kindergarten students, there was a *negative* relationship between reading aloud by kindergarten teachers and students’ reading achievement, and there was no relationship for first graders. This was explained in terms of a displacement effect, where teachers who read the most spent the least amount of time teaching activities positively correlated with reading. For parents, no relationship between reading

aloud and reading achievement in their children was found, but there was a positive association between time spent with print and reading achievement.

Parents' reading to children has been found to have benefits that transfer into reading achievement as measured by in-school assessments. A longitudinal study of a large sample of children from preschool to Grade 3 found that children's early exposure to books was related to their development of vocabulary and listening comprehension skills and that these language skills were directly related to their reading in Grade 3 (Sénéchal & LeFevre, 2002). A secondary result was that parents teaching children about reading and writing words was related to the development of early literacy skills, and these skills predicted reading ability in Grade 1. A meta-analysis of 20 published studies of parental involvement in reading found significant effect sizes suggesting that parents of children in kindergarten through Grade 3 can help their children learn to read (Sénéchal & Young, 2008). Parents are most helpful when they are trained to teach specific skills to their children.

Stanovich and Cunningham (1993) studied 268 college students and found that exposure to print predicted differences in knowledge in a variety of subject domains, after controlling for individual differences on four indicators of general ability. Although correlational, the results provide strong evidence that exposure to print sources of information is an independent contribution to the acquisition of content knowledge.

As Cullinan (2006) pointed out in an extensive review of the outcomes of reading, reading to children does not by itself automatically lead to literacy. The causal factor seems to lie in the talking between adults and children that occurs during story reading. Asking questions, pointing out relationships, and providing the names of things are examples of interactions that lead to literacy. Successful outcomes of reading involve interactions in which readers and listeners actively construct meaning based on texts.

The bulk of research on the outcomes of reading aloud to children suggest that it leads to free reading by children and begins a life-long

process of reading for pleasure. The benefits of adult literacy have their seeds in young children and parents or caregivers engaging in reading and talking.

### Mythic Dimensions of Reading

Reading has traditionally introduced children to the realm of myth. Every culture has myths that serve to entertain and to instruct; the heroic stories of any culture convey the norms and values of a people by illustrating their highest and lowest aspirations through the activities of heroes and villains. Just as characters like Hestia, in the Greek myths, embodied the characteristics of home and hearth, classical children's characters also celebrate key values and goals. Certainly, the 20th-century hero Tom Swift represented innovation and intelligence, along with the courage to employ his inventions to positive goals. Frontier stories of Davy Crockett and Daniel Boone reflect the strong individualism of the pioneer.

It is because of the power of myths that feminists have sought to discover female heroes who represent strong, intelligent responses to human problems. The Nancy Drew stories that served as summer reading for many baby boomers featured an intelligent female hero, but one who still lived and worked in a man's world. Judy Blume's books, including *Hello, God, It's Me*, *Margaret*, were a departure radical enough to get them excluded from many school and public libraries. Blume's books, while still maintaining the innocence of pre-adolescents, also portrayed girls as sexual beings. In this manner, myths show a young reader who and what is valued in a society, and when conflicting subcultures emerge, myths may be a source of deep concern to those who hold power.

Can other children's media such as comics and TV programs serve mythic functions? Joseph Campbell (1949) observed that there are some key fixed elements of mythic stories. Mythic heroes must respond to a *call to adventure* and *cross thresholds*, often overcoming a *guardian*. With the help of *assistants*, they overcome a series of *tests* leading to the *supreme ordeal* to achieve a reward. They then make a return journey where there is a *reemergence* in their now peaceful everyday world.

In a comic series like *Superman* there are signs of this mythic pattern. Most of the stories begin with a call to action; Superman reads a newspaper headline announcing the theft of uranium, for example. Superman is often tested—“that’s kryptonite, not uranium!” Helpers may come, in the form of his colleagues Lois Lane and Jimmy at the *Daily Planet* newspaper—“Lois, see what you can find out about these thugs!” Guardians (Lex Luthor’s henchmen) are confronted. The supreme ordeal is confronted: “I will put on a lead suit, which will let me get past the kryptonite and into their lair!” The mythic pattern may break down here, at the reemergence stage. As comic book author Joel Grineau (1997) pointed out, in comics “there is rarely that last return home, the final loss of powers, and restoration of the world to its former, better condition. Why? The first axiom in comics is that characters rarely stay dead or retired” (p. 2). Unlike the Japanese manga comics, it is bad form to terminate the ongoing adventures of an American hero.

The *Superman* story has biblical elements as well. Like Moses, the young Superboy was discovered and raised by parents who were not biologically his after traveling a great distance (in Superboy’s case, in a starship from his home planet). The hero was discovered to have super powers that must be used for leading people to a safe and good place.

While the reader often sees Superman as drab reporter Clark Kent in his restored everyday world, the comic cannot make a story out of such a humdrum life. But within any one comic, a critical mass of mythic elements seems to be present. A typical story concludes with the elements of reemergence and restoration, at least until the next issue. Children’s books can certainly also qualify as mythic, especially those that, like the Harry Potter books, offer a story of triumph over adversity. Many popular children’s books are simply good narratives, with no mythical dimension at all.

Animated television characters, even those based on books, operate in only a partial realm of myth. While there are obstacles to overcome, the most typical mythic elements present are *tests* or action-packed events, few

of which lead up to the conquest of a dark force and a return to the everyday world.

The functions of reading mythic stories include the vicarious experience of adventures that, in real life, might prove dangerous. Children meet and experience the thoughts of complex characters who embody many dimensions of people they will meet in life. Mythic stories tell children how we should act toward one another. Good stories help children to discover what and who their culture loves and hates, and they are a non-negotiable, irreplaceable part of growing up.

### Who Is Reading Aloud?

According to U.S. Department of Education (2006) statistics, there is reason for optimism regarding the amount of reading in the family: The practice is on the increase. The percentage of prekindergarten children ages three to five read to by a family member (three or more times in the week preceding the survey) increased from 78% in 1993 to 86% in 2005. The percentage of children whose family members frequently told them a story rose from 43% to 54%.

Also according to the U.S. Department of Education (2006), all children were more likely to have an adult read to them frequently in 2005 than in 1993; however, the increase among poor children (from 68% to 78%) was greater than the increase among middle income children (from 87% to 90%). Despite the greater increase for poor children, middle class children were still more likely than poor children to have a family member read to them frequently in 2005 (as was also the case in 1993). For example, in 2005, a greater percentage of middle or upper income children were read to than poor children (90% vs. 78%). However, in 2005, there were no measurable differences found between middle income and poor children for the other literacy-related activities (e.g., teaching them numbers, letters, or songs). The percentage of children who engaged in literacy activities in 2005 varied by parents’ education and race/ethnicity. Children whose parents had at least a high school diploma or equivalent were more likely to be read to and taught letters, words, or numbers than those children whose

parents had less than a high school diploma. White children were more likely than Black or Hispanic children to have a family member read to them.

### What Kind of Families Read Aloud?

Since the average child spends eight times the number of hours outside of school as she spends in school, it is important to stress that the home as teacher is likely to be a stronger predictor of admiration for reading than is the school. A longitudinal investigation by Weigel, Martin, and Bennett (2010) on the role of family assets and lifestyles found that among a number of family descriptors studied (presence of technology, family stress, etc.), the most important predictor of preschool children's emerging literacy skills was that the more regular the routines in the household, the more likely parents were to engage their children in literacy enhancing activities and, in turn, the higher the children's print knowledge and reading interest. This was the case both initially and a year later. Similarly, a study of over 400 K through first grader's home environments found that household order (but not a household free of noise) was associated with early reading skills among children whose mothers were of above-average reading ability (Johnson, Martin, Brooks-Gunn, & Petrill, 2008). *Order*, as defined in this research, is simply a measure of physical clutter in the home.

Social class is, not unexpectedly, a strong factor in the home environment of young readers. A longitudinal U.S. Departmental of Education study of the relationships among reading aloud and oral communication between parents of children (birth to 4 years) found that when the daily number of words for each group of children was projected across four years, the four-year-old child from the professional family would have heard 45 million words, the working-class child 26 million, and the welfare child only 13 million (Trelease, 2006). According to a reviewer, "If No Child Left Behind expects the teacher (of the welfare child) to get this child caught up, she'll have to speak 10 words *a second* for nine hundred hours to reach the 32-million mark by year's end" (Trelease, 2006, p. 15).

An investigation of children's interest in books analyzed children and parents from 29 kindergarten classrooms in terms of their interest in books and aspects of their home environments (Morrow, 1983). Children with a relatively high interest in books came from homes with significantly more books than those of children lower in book interest, and they were more likely to have visited libraries, owned library cards, and been read to by parents.

Parents' education level has been found to strongly influence the amount and quality of children's reading, but the relationship is strongly mediated by other factors (Myrberg & Rosen, 2009). Using structural equation modeling to estimate the effects of parent education on 10,000 third graders' reading ability in Sweden, Myrberg and Rosen (2009) found substantial effects of parents' education, but nearly half of these effects were mediated by other variables. These included the number of books in the home, but also the child's reading ability entering school, which was in turn strongly predicted by the amount of reading aloud in the home. Educated parents had many books in the home and read them to their children early in life, with positive results among preschool children.

### Intervention Facilitates Reading at Home

Despite research suggesting differences in ethnicity and social class in reading in the home, there is clear evidence that intervention programs can improve the reading-aloud patterns of any family. Mendez (2010) reported the results of an intervention developed to promote parent involvement with children attending Head Start preschool programs and with their teachers. In a small southern city, 288 predominantly African American families received an intervention designed to promote reading aloud, among other activities. Results showed an increase in the frequency of reading aloud as compared to parents who did not receive the program. Parent-teacher relationship quality was significantly correlated with parents' participation in the intervention. Program participation and the parent-teacher relationship were

correlated with higher levels of children's school readiness abilities. Children in the intervention condition showed stronger end-of-year receptive vocabulary and parent-rated social competence as compared with children who did not receive the treatment.

An investigation of intervention with an older sample (fourth grade) of primarily low income Hispanic families concluded that a summer reading intervention program increased the amount of summer reading by children, particularly if parents accompanied their children to several literary events (Kim & Guryan, 2010). There was no significant increase in reading comprehension from June to September, however.

Since the first edition of this volume, a number of factors have facilitated new directions in research on reading outcomes. President Bush signed the No Child Left Behind act into law in 2001, which contained mandates regarding teacher and school effectiveness. The resultant preoccupation with evaluation resulted in press releases stating that an enormous number of elementary and secondary students in American schools did not perform to the standards dictated by the law. One of the trends that emerged from this downturn was that schools and, later, researchers began investigating methods to improve reading scores. Free, or outside of school, reading was one target for investigators. Some research in the past decade focused on the relationships among free reading and performance in school.

New technologies were also a factor in shifting research questions. As computers in the home (and in public libraries and other shared environments) became more available, stories to be read or printed from computers became more common. In-school reading and reading for pleasure began to blur, at least from the perspective of reading research. Scholars from a variety of nations have collaborated on research on the relationships among demographic and family variables, realizing that many of their problems were shared.

An example of this kind of approach is an investigation that provided computerized storybooks for 5-year-old immigrants from low income households in the Netherlands who

were at risk for reading difficulties in the language of instruction in their schools (Verhallen & Bus, 2010). Books with both still and video images were effective in increasing vocabularies, but video books were more effective in the acquisition of expressive vocabulary. Computerized "talking books" have also been used to target at-risk populations of 5 and 6 year olds (Wood, Pillinger, & Jackson, 2010). Lower-achieving children who used computer-generated talking books in conjunction with adult interaction while reading gained phonological awareness more than did children who used the electronic books alone.

### **Reading as Children Mature**

A survey by Nipold, Duthie, and Larson (2005) of two groups of students, in Grade 6 and Grade 9, investigated the role of reading among all leisure activities preferred by students of these ages. For both age groups, reading was only moderately popular; as an activity, it ranked below watching TV, running, swimming, shopping at the mall, and talking on the phone. Reading became less popular by ninth grade; only 30% of boys and 44% of girls listed reading as a part of their leisure activities. In terms of time spent reading, average estimates were approximately 20 to 30 minutes per day, with girls of both age groups reporting more time. In terms of what they like to read, for all students combined, the most popular reading materials were magazines, novels, and comics; least popular were plays, technical books, and newspapers. Older students showed a stronger preference than younger ones for magazines, and girls showed a stronger preference than did boys for poems.

Self-reports from a sample of junior high school students reflected a decline in reading for pleasure as children matured (Zender-Merrell, 2002). Only 12% of eighth-grade students reported reading seven or more books in the past three months, as compared to 22% of sixth graders. Almost a third (30%) of eighth graders reported having read no books in that period, as compared to only 15% of sixth graders. In a survey of seventh- and eighth-grade students, respondents reported frequent free reading before seventh grade but

virtually no reading not required by teachers after that. In another investigation, recreational reading ranked lowest in leisure activities after Grade 7 (McCoy, 1991).

Cummings and Vandewater's (2007) analysis of survey data from a large sample of 10 to 19 year olds revealed differences between adolescent players and non-players of video games in time spent reading. On average, gamers (36% of the sample) played for an hour on the weekdays and an hour and a half on the weekends. Compared with non-gamers, adolescent gamers spent 30% less time reading and 34% less time doing homework. Among gamers (both genders), time spent playing video games without parents or friends was negatively related to time spent with parents and friends in other activities. This effect is more pronounced for males, since only 20% of players were female. Only reading for pleasure and homework were displaced by game-playing; time spent with friends and family was not affected by playing.

In 2007, National Endowment for the Arts issued a report linking flat or declining national reading test scores among teenagers with the slump in the proportion of adolescents who said they read for fun (Rich, 2008). According to Department of Education data cited in Rich's (2008) report, just over a fifth of 17-year-olds said they read almost every day for fun in 2004, down from nearly a third in 1984. Nineteen percent of 17 year olds said they never or hardly ever read for fun in 2004, up from 9% in 1984. (It was unclear whether they thought of what they did on the Internet as reading.)

There are gender differences in what adolescents read, similar to those evident in childhood (Parkhurst, 2008). Boys read much more nonfiction than do girls, who prefer fiction. Comprehension of nonfiction is important for teens, but the books that they choose tend not to provide the experience with sustained text that will promote growth in ability to handle more complex text structures and text types (Sullivan, 2004). Parkhurst (2008) noted that nonfiction books checked out by boys include books that are largely photographs and drawings—of World War II fighter planes, for example—and that many of these books are full of pictures, with little

sustained text. He also cited a large body of research that suggests that humorous fiction is read by boys, but that there isn't much age-appropriate humorous fiction available for them. That category is occupied by movies.

As every parent knows, adolescence is characterized by social interaction with friends. Whether in person, on cell phones, or on computers, adolescents spend most of their leisure time communicating with peers and boyfriends or girlfriends. In a typical week, high school students will spend twice as much time with their peers as with adults (Csikszentmihalyi, Larson, & Prescott, 1977). Data from several longitudinal studies confirm that initial membership in a peer group that is academically and reading-oriented is correlated with higher grades, more time spent on homework, and more involvement in extracurricular activities (Steinberg, 1996). Just as peers influence adolescent musical and clothing tastes, whether young people read for pleasure and, if so, what they read, are certainly woven into the fabric of peer culture.

### Reading From Electronic Media

No matter how much time children and adolescents spend with computers, they are doing some kind of reading. Whether they use (or misuse) a search engine to locate information for a term paper, modify their profiles on Facebook or other social media, or text message friends, they are decoding texts and encoding sentences. According to the 2010 Kaiser Foundation report, they spend, on average, nearly two hours using computers every day (Rideout et al., 2010). No responsible educator would argue that Internet reading is the same experience as reading a story or a novel. Internet texts are skimmed, hypertext links carry the reader to new texts, and rarely is information conveyed in serial fashion.

A study of 700 children in 6th through 10th grade in Detroit found a large amount of Internet reading among a variety of other reading media within the sample (Rich, 2008). The only kind of reading, however, that related to higher academic performance was frequent novel reading, which predicted better grades in English and higher overall grade point averages. But critics of Internet reading who point

to the superiority of fiction in terms of concentration and reflection ignore the realities of child and adolescent reading choices. They don't always choose stories or novels; they read magazines, comics, and many literary forms less complex than novels.

Donald J. Leu (2007a), director of the New Literacies Research Team at the University of Connecticut, argued that Internet reading is a fundamentally different, not inferior, form of information processing than reading from print texts. Because Internet reading is not what is tested in NCLB standardized reading assessments, skillful web readers do not necessarily perform well on those tests. Leu argued that skillful Internet reading always begins with a question framed by the reader, as opposed to with "Once upon a time." A growing body of research suggests that this process of beginning with a question to be answered facilitates any type of reading for information by children in the elementary grades (Taboada & Guthrie, 2006).

In one investigation, Leu (2007a) and colleagues mounted a web page that contained incorrect information about a fictitious creature (Pacific Northwest Tree Octopus). A seventh grade class was asked to evaluate the information and, if they deemed it valid, to recommend it to another class doing research on endangered species. All but one student recommended the website as valid information. Unsophisticated Internet readers lack critical skills to evaluate information, and they are inefficient searchers; they typically take many more "clicks" to locate information than capable readers, and they do not understand which information to ignore. Leu (2007b) believes that because of NCLB, schools have stressed phonemic awareness, phonics, vocabulary, and comprehension as isolated skills and ignored more general strategic skills necessary for Internet comprehension.

Reading from computers, while demanding particular search skills, relies on the basic reading skills traditionally taught in schools. But the digital world clearly represents new opportunities for reading. The Disney Corporation recently offered 500 age-appropriate digital books (eBooks) for downloading. Scholastic will soon add eBooks to a line of short films based on books from their collection. Digital

versions of print books, eBooks offer several features not found in print books. Pages can be located instantly, without the reader having to turn individual pages. They often come with games, instant pronunciation guides, and dictionaries. Many feature animation, sounds, and other media. They can be CD-ROM storybooks or books downloaded from the Internet onto computers or portable reading devices.

Portable reading devices have become popular in the past five years among children and adolescents. They offer portability, and the digital versions are much less expensive than are paper books. Many are available for downloading free from virtual libraries. While the reading devices now available are somewhat fragile for young children, downloading onto more durable laptop computers may present a practical solution. Since 2007, Amazon's Kindle has been the most popular eBook reader, with bundled software that allows users to purchase, download (wirelessly), and read books from Amazon.com. Later models allowed the software to be loaded onto cell phones and music devices like Apple's iPod. With a current price just under 300 dollars, it has dominated the emerging market with virtually no competition. A new tablet computer, the Apple iPad, was released in the spring of 2010 and presents serious competition for Kindle. It runs iPad-specific applications as well as those written for the iPhone and iPod touch pad, including an eBook reader application. The iPad allows users to play games, surf the Internet, and create content using a touch screen keypad. The iPad retails for more than twice as much as the Kindle, but it has more applications. It also offers a larger reading surface than other readers on the market.

Children enjoy reading eBooks. A small sample of six to nine year olds was given eBooks loaded with traditional stories in children's centers and asked to rate them on several dimensions of use (Bellaver, 2006). The majority of children found them easy to use and adapted to them without difficulty, but they did not use the dictionary software that came with the machines. One major goal of the research was to determine whether eBooks could help to alleviate the "backpack syndrome" where children have endured back injuries from carrying

textbooks and readers. In a second investigation, 20 fourth graders used eBooks in a classroom setting, and the majority reported that the books were more fun to use than traditional books and that, given the opportunity, they would read more frequently using the new medium (Bellaver, 2007). When given comparable paper and electronic opportunities, kindergarten and first-grade students preferred to wait for a chance to use the electronic version, even if a print version was available immediately (Mitchell & Fox, 2001).

In terms of basic reading processes, one investigation found that eBooks with animated cues (dictionaries, highlighted words, etc.) significantly improved vocabulary acquisition in a sample of third graders (Higgins & Cocks, 1999). Korat and Shamir (2008) found that children ages five to six reading eBooks (as compared to adults reading equivalent books aloud) significantly improved phonological awareness and word recognition regardless of the students' low socio-economic status. Weber and Cavanaugh (2006) found similar gains in these skills for gifted children who read eBooks.

Parents and preschool children reading eBooks together have been observed to have productive conversations, with high levels of abstraction, of the type seen in print co-reading, particularly when the child determined which story path to take when the digital book offered a choice (Fish, Shulman, Ackerman, & Levin, 2002).

Nearly every investigation of children reading from eBooks mentions an inherent problem with them: distraction. Because many of them offer games and other extras, children interrupt reading and become distracted by features not directly related to understanding the content. Since most of the preliminary studies were done in a school or laboratory setting, there is little data about how these devices are employed for free reading—but there may be less motivation for readers to continue through a book in a focused manner. In some studies, children in experimental groups were given eBooks with automatic “pop-up” dictionaries, while control groups were given print dictionaries. Children with print dictionaries were rarely observed using them. Each medium, then,

features inherent trade-offs in terms of how readers come to use them.

### Consequences of Not Reading

The National Endowment for the Arts (NEA) (2007) report on reading cited survey data that suggest that declines in reading have civic, social, and economic implications. According to the report, “advanced readers accrue personal, professional, and social advantages. Deficient readers run higher risks of failure in all three areas” (p. 6). Nearly two thirds of employers ranked reading comprehension as “very important” for high school graduates. Yet 38% consider most high school graduates deficient in this basic skill.

Poor readers also suffer in the health care system. Marwick (1997) documented longer hospital stays and higher incidences of illness for poor readers than for minimally literate patients, primarily because they were unable to follow directions for therapy and medication. Beyond these specific areas, Edwards (1979) presented evidence that the cultural disadvantages that accrue from the lack of stimulation offered by reading can result in adults who are generally less socially connected and satisfied at the end of their lives than are capable readers.

It is not surprising that children who have difficulties in reading in the early grades perform poorly in subsequent secondary and college environments (Kamil, 2003). Adults who read poorly also suffer in the search for employment. A large organization reported that only 16% of applicants for an entry-level position could pass a basic reading comprehension test; the majority who failed were denied employment (Perry, 1988).

The majority of prison inmates are functionally illiterate, as are 85% of adolescent offenders in the United States, according to actual proficiency tests (National Assessment of Adult Literacy, 2003). While there is no evidence of a causal relationship between functional illiteracy and crime, inmates have a 16% chance of returning to prison if they receive literacy help, as opposed to 70% if they do not. One reason for this difference is that poor readers are less likely to enroll in vocational programs while incarcerated than

are readers. Increasingly, due to changes in workplace technology, many rehabilitation programs are centered on information technologies, which are near impossible for less capable readers to participate in.

Newspaper readership is in decline, and it has been for at least two decades. Although statistics differ across agencies reporting readership, all converge in a drop of from 1% to 2% for each year since 1980 (Step, 2003). The decline is most pronounced among young adults (18–34), as well as among Asian, Black, and Hispanic readers. Television network news viewing follows a similar pattern. The share of the total viewing audience has declined by 51% since 1980, characterized as an ever-graying audience with a median age of nearly 60 (Project for Excellence in Journalism, 2006). News reading and viewing by adolescents has always been the gateway to adult news consumption, but there is no cohort preparing for a lifetime awareness of current events. These trends are alarming, and they are more or less pronounced in Europe and South America. A three-country survey of 3,500 teens and young adults concluded that regular newspaper readers are more informed, engaged, and connected to community than non-readers (World Association of Newspapers, 2008).

Since 2005, the amount of time young people (8–18) spend reading magazines or newspapers in print in a typical day has declined by seven minutes, from 19 to 12 minutes per day (Rideout et al., 2010). Some adolescents now spend time reading magazines and newspapers online. In a typical day, 10% of young people report reading magazines or newspapers online, and those who report online reading spend an average of 21 minutes per day doing so.

If young people are gleaning information from the Internet, blogs, and other electronic sources, what do we know from the perspectives of psychology, media research, computer science, and other disciplines that may help us to predict the possible outcomes of digital consumption of news and information? What will generation M know? Will digitally delivered information result in a general lack of world knowledge? Many investigations have found that adult news readers learn and retain more information from print than from

broadcast news (Findahl & Hoijer, 1985; Stauffer, Frost, & Rybolt, 1981), but the intensity of this difference may be mediated by differences in how the information is retrieved (Leshner & Coyle, 2000). Print has been found to be superior to online information in terms of comprehension of stories and retention of facts (Eyetrack III, 2006). Television and Internet use are not highly correlated with current events knowledge; newspaper reading is (Amadeo, Torney-Purta, & Barber, 2004). Early research on websites attractive to young web surfers, designed to increase levels of political knowledge, reveals no gain in knowledge (Sherr, 2005).

## Multitasking

*Multitasking* means doing several things at once. A recent survey revealed that 61% of a large sample of 8 to 18 year olds is surfing the web or watching television “most” or “some” of the time they are doing homework (Kaiser Family Foundation, 2005). Media multitasking has increased so much since 2000, for example, that media exposure (time spent with one or more media) must now be separated from media use (time spent with one medium) to predict cognitive and behavioral outcomes of these activities.

There is evidence that young adults in the workplace are also multitasking. Continuous partial attention (CPA) scanning is a designation that means simultaneously monitoring incoming information from two or more channels for an important or interesting opportunity. First mentioned in an address at the 2006 ETech conference by former Microsoft executive Linda Stone, the process is in evidence when users open two or more laptops, writing on one, for example, while monitoring e-mail or the Internet for interesting content (Torkington, 2006). Her contention was that CPA is rapidly increasing and that it leads to distraction and loss of focus, or in her words “Constantly being accessible makes you *inaccessible*” (Levy, 2006). Research on the outcomes of these and other patterns of knowledge is emerging in several disciplines. The emphasis of this section is on how patterns of information seeking in the print and digital universes affect the information that people possess.

An investigation of multitasking by college students offered strong evidence that the practice impairs learning new information (Foerde, Poldrack, & Knowlton, 2007). Performing a classification task with auditory distraction reduced knowledge of how to perform the task a short time later in college students. Two kinds of memories appear to dwell in two different areas of the brain. The two systems that are often defined in opposition to each other are a declarative memory system, thought to depend on the hippocampus, and a procedural learning system, thought to depend on the striatum. Declarative memory represents memory of facts and events, whereas procedural learning encompasses a variety of motor and perceptual skills. Using magnetic resonance imaging to examine subject's brain activity revealed that, for the task learned without distraction, the hippocampus was involved. For the task learned with the distraction, the hippocampus was not involved—but the striatum was, which means that while subjects could learn the task, they could not recall details of procedures, or how they did it.

A research team at Stanford University found that college students who are frequent multitaskers are more susceptible to interference from competing stimuli than are users of one medium at a time (Ophir, Nass, & Wagner, 2009). Using a trait index of multitasking and a series of simple experimental tasks, they were surprised to find heavy media multitaskers performed worse on a test of task-switching ability than did non-multitaskers. They reasoned that these differences were likely due to a reduced ability to filter out interference from irrelevant tasks. According to one of the authors, Eyal Ophir, in a Stanford press release “Multitaskers couldn't help thinking about the task they weren't doing. The high multitaskers are always drawing from all the information in front of them. They can't keep things separate in their minds” (Gorlick, 2009). In light of the difficulty in information processing in evidence in this research, the conclusion is that reading while gaming, instant messaging, or using cell phones will detract from the ability to process and recall information from computer screens for people younger

than college students. Yet that is the very landscape where adolescents dwell.

### **What Children and Adolescents Say About Reading**

In 2008, representatives from the publishing and public opinion research industries studied 501 young people aged 5 to 17 regarding the place occupied by reading, computers, and other activities in their leisure time (Scholastic & Yankelovich, 2008). In their answers to interviewers' questions, these children and adolescents reported that reading is fully integrated into, not an alternative to, the digital world. Among the findings was that over 75% of young people aged 5 to 17 agreed with the statement, “No matter what I can do online, I'll always want to read books printed on paper,” and 62% of them said they preferred to read books printed on paper rather than on a computer or a handheld device. The majority of the sample had read all or part of a book on a digital platform, but only 12% had read on a handheld device. Despite their preference for print books, across all age groups, over two thirds of the sample believed that within the next 10 years, most books that are read for fun will be read digitally—either on a computer or on another kind of electronic device.

About 9 in 10 children in the Scholastic and Yankelovich (2008) survey agree that they need to be strong readers to “get into a good college and to get a good job,” but as in most investigations, daily reading declines after age eight—and this is most pronounced in boys. By age 15, only 21% of boys report that reading is “extremely important.” Of 9–17 year olds, the predominant reason for not reading more is that “It's hard to find good books for boys and girls my age” (p. 18). The blogosphere is a place where it is possible to listen to children talk about reading in their words. For the past several years, CNN has invited readers as young as 5 and as old as 9 to provide video reviews of popular children's books (CNN.com, 2008). While younger children may react to a book by saying that it is “weird and happy!” the reviews also reveal that children are still reading in depth and reacting emotionally to what they

read. In one review, an eight year old named Andrew reacts to Nikki Giovanni's *Rosa*, about the life of Rosa Parks, by saying "Parts of it are kind of boring, and the pictures are dark and gloomy, but I think that parents should read it to their children who are too young to read alone." The message—that Black people won their rights by fighting for them—is very important. Blogs by children, particularly if they are well monitored and secure from predators, are just one more example of the symbiosis of the print and digital domains.

## Conclusion

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Early in this second decade of the 21st century, it is clear that children are still reading. Reading for pleasure occupies a place in the leisure diets of children and adolescents, although in terms of sheer time, the last place. There is no compelling evidence for media displacement of reading by cell phones, the plethora of games, or the Internet; reading time has been on the decline for decades. What is evident is that multitasking with other media while reading is on the rise, and this may have implications for how stories are enjoyed and understood, and perhaps for the way they will be written by authors in the future. While parents and educators have valid reasons for concern about the rise of screen time, there is also clear evidence that many children are led into new domains of reading that weren't possible by browsing bookstores and libraries. Children talk about books and stories with each other without much interference, and they can be severe critics of what they read.

The digital world brings children new possibilities for seeing and vicariously being in places they could only go in their imaginations a few decades ago. Because of the visual richness of the cyberworld, they have come to expect multimedia and animation where they previously had only their inner voices to enliven their reading experience. It is therefore not surprising that a good deal of their reading has become more film- and television-like, since that is what they expect from storytelling. But the classics of

children's literature still survive. The majority of them were written before the invention of cyberspace, but they have a way of engaging the imagination that isn't possible with Saturday morning cartoons—a medium that surely has declined. There is something about the long ago, far away, mythic interplay of heroes and adventures that fills a child's needs for good stories.

The child who reads on her own in junior high was read to early in her life, beginning long before age two, in an orderly home with regular routines. This pattern served her well in the early elementary grades, where she had the benefit of increased vocabulary, letter and word recognition, and phonic knowledge. The early attachment to reading resulted in reading achievement scores that far surpassed her classmates who weren't read to on a regular basis.

But it is important to stress that this child was no "bookworm." She spent many hours watching television, playing computer games, and communicating with peers on a variety of electronic media. What set her apart from her friends who didn't spend a lot of time reading was that some of the content of the conversations with her friends was about books and short stories, some age-appropriate and some material that would make parents balk. For her, a life-long fabric of reading for pleasure was woven from the threads of her early experiences with reading.

Because of a lack of longitudinal research, what happens next is less clear. We know that the trends in all kinds of reading begin to slide downward after Grade 8, most severely among boys—especially if they are Black or Hispanic. Although adolescents read, their reading begins to divide along gender lines; girls read more fiction and narratives, boys read more action-adventure stories and "how things work" books and articles. Do these content differences have implications for the contribution of free reading to adult social- or work-related skills? Research on how the fruit of reading is incorporated into social and work networks would be helpful in providing insights into the benefits of reading for adults. And we also have very little data on adult free reading, including whether life changes such as divorce or the birth of a child or the death

of a spouse play a role in the amount and kind of reading done by mature people.

There is discomfoting certainty regarding the decline of news reading (and viewing) by boys and girls before and during adolescence. Although many report that they get news from the Internet, evaluations of their knowledge of current events reveals that they don't know very much about the institutions and developments that determine their world. For several decades, the Pew Research Center for People and the Press regularly surveyed adults and adolescents about their sources of news and their knowledge of current events (Pew Research Center for People and the Press, 2010). Of all age groups in the most recent surveys, young people knew the least: Only 15% of 18 to 29 year olds were among the most informed third of the public, compared with 43% of those ages 65 and older.

In the age of information, people know less than they did 30 years ago. This is because of a number of the factors outlined earlier in this chapter, including a sharp decline in news consumption and, in light of the ever-increasing tendency of young people to multitask, the way that information is processed. Pew data and a mountain of earlier research conclude that people who know about their world are more likely to participate in it than are the less informed. How will democracy work if voters are uninformed about issues and positions if they do vote? How will they prevent developing diseases and participate in a complex economy? A number of news organizations are trying to lure young people back to the news, but future research is needed to determine the success of their efforts.

Reading texts from computers and handheld portable devices offers some options not available in a print text. Animated characters, online dictionaries, and sound clips may enhance the reading experience. These electronic books are inexpensive, even compared to paperbacks. Many are free. The number of titles is limitless, and it is growing each week. Yet children have not embraced them. They prefer, so far, reading from books. This may simply represent the novelty of these media. But there is some concern about the experience of reading from screens. The tendency to multitask and the ease of skipping

through text with eBooks offer opportunities for young readers that may alter the way stories are understood and incorporated into the lives of children. In light of the potential for textbooks to be disseminated electronically, research into this domain is sure to come.

Media critic Ken Auletta (2010) argued that a unique competitive environment among Google, Amazon, and Apple will breathe new life into the book business and simultaneously lower the price and increase the availability of every book ever published. While Amazon and Apple dominate the reading device market, Google surpasses both in its vast ownership of content. As competition increases and the price of best-sellers hovers below 10 dollars, consumers expect to pay less for digital copies than for paper and cloth versions. While publishers and bookstores will likely be the casualties of this battle, the ultimate outcome for the consumer will be less expensive books.

We have enough knowledge now to realize that reading must be kept alive—and that takes some effort. Parents should read to their children early and often. Both schools and parents need to find new ways of inviting children to read, especially during long summer vacations. With the vastness of the Internet, parents have unprecedented resources to help children and adolescents discover new books to read “just for fun.” With adult supervision, children should be encouraged to visit blogs where other children talk about reading. The bulk of research summarized in this chapter suggests that keeping reading alive is worth all of our time and energy.

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