PART ONE

NextGen Students and the Research-Writing "Problem"

CHAPTER 1

Min(d)ing the Gap: Research on the Information Behaviors of NextGen Students

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> Information permeates our lives, professional and personal, whether that information comes to us as the intended result of a focused and targeted searching, incidentally as the by-product of other activities, or simply because it is inextricably intertwined with our day-to-day social interaction.
>
> —Gary Burnett and Sanda Erdelez (2010, 44)

The New Digital Scholar and Information Behavior

I assume you are reading this book because you are interested in helping students become better readers, writers, and researchers. Like the authors of other chapters in this book, I wish to focus attention on the sometimes daunting challenge we are faced with when students enter our college writing classrooms, the challenge to help them become academic researchers in the digital information age.[1] This challenge is

intensified by the amount and variety of writing, reading, and researching activity students engage in on the web, and by the information behaviors students have developed as a result of such activity.

Before going further, some clarification is necessary. A good number of readers are likely more familiar with information literacy (IL) than information behavior. Thus, I start this chapter by identifying the difference between IL and information behavior and explain why focusing on information behavior is so important.

Most readers are likely familiar with the definition of IL provided by the American Library Association (1989): IL is "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association). The Association of College and Research Libraries (2000) adds that IL is "increasingly important in the contemporary environment of rapid technological change and proliferating information resources. Because of the escalating complexity of this environment, individuals are faced with diverse, abundant information choices" (Association of College and Research Libraries). In short, IL is a set of skills needed to understand, find, and use information—skills critical to life in the digital age. Viewed this way, IL is a goal, a target, an end result.

Information behavior[2] not only explores these processes, but also questions them. On the surface, information behavior appears strikingly similar to IL. Information behavior, like IL, examines what information is in the first place, how people search for it, find it, and use it. Yet, information behavior focuses first on just that—behavior—and not simply the skills desired of information users in or out of the classroom. Instead, the study of information behavior is concerned with the complex processes and influences on the information seeker. Viewed this way, IL takes on an expanded set of considerations that I believe have yet to be adequately addressed in writing pedagogy. Librarian Natalie Binder (2010) explains that information behavior is about "the real experience of dealing with information, which is not [always] about pursuing the new, but managing what we've got. … I don't seek information. It *happens* to me." Binder believes that we should be less

interested in skills per se and more interested in finding patterns in information to help students move information into a "finer, more precise, more ordered form" (Binder 2010). (For a detailed discussion of searching for patterns in information, see Chapter 11.)

Along these lines, the approach to IL work in the college writing classroom needs to include a richer understanding of information behavior, of research on the research habits of NextGen students. In order to engage students in the information activities appropriate to academic, professional, and social contexts, I contend we must understand what behaviors they have already internalized, the behaviors that shape their research processes. Teaching the new digital scholar is not just focusing on a set of prepackaged skills; it is helping students recognize the intersection of needs, skills, and, most importantly, behaviors.

In this chapter, I explore the impact of the web and other media on the information behaviors of students that find their way into our college writing classrooms. My goal is twofold: to offer readers a foundation for the chapters to follow and to suggest a framework for future research on research, hopefully some of which will be inspired by the chapters in this book. First, I offer an expanded discussion of information behavior theory for those new to it. Second, I situate the digital scholar inside the college writing classroom, chiefly by paralleling the arguments in Scott Warnock's *Teaching Writing Online* (2009). Next, I expand on the notion of information behavior and its perceived value for research-writing. I then offer a synthesis of several recent reports from the United States, United Kingdom, and Australia on computer, media, and web use as well as information behavior. I conclude the chapter by responding to claims from critics of the notion of information behavior and its importance to teachers and librarians invested in transforming the college writing student into a digital scholar.

Good and Bad Behavior

Information behavior, what T. D. Wilson (2010) defines as "how people discover, access, use, store for future use, share, and disseminate

information of all kinds" (34), provides the frame necessary to work with student researchers in the digital age. In fact, I contend that information behavior can do for IL instruction what rhetoric, gender studies, and WAC theory, among other theoretical approaches, did for writing instruction decades ago: enrich the study of writing with theories and perspectives from a variety of fields.

Unlike IL, which has been relegated to "skill set" status, information behavior is treated much the same way that writing researchers treat their subject: as a dynamic, evolving, and recursive process. Barbara Wildemuth and Donald Case (2010) explain information behavior research this way:

> As a person finds useful [or not useful] information and applies it to the current goal, the goal itself may shift (or not). The person's ideas about the problem change as he or she learns more. Other external events may occur that affect the importance of the problem to the information seeker. These and other possible changes [affect] information behaviors as they occur … [and call] for the use of different research methods. (24)

For these reasons, information behavior researchers rely on multiple methods to study the roles, locations, and tasks of information users, research that places users at the center of information and explores their relationship with it. Researchers Gary Burnett and Sanda Erdelez (2010) describe information behavior as such: "Information behavior emerges as a visible link that users cling to as they navigate through the landscape of new information worlds with overlapping and constantly intersecting contexts" (45). Much like writing researchers have expanded the range of their inquiry over the past 50 years to much more than the written product, information behavior research studies "have unquestionably expanded well beyond a focus limited to information seeking activities" (Burnett and Erdelez 2010, 47). It seems

time *and timely* to expand the ways in which we study the research-writing processes of students.

Why Research Research?

In his testimony in front of the U.S. House of Representatives Subcommittee on Telecommunications and the Internet, Sir Timothy Berners-Lee (2007), often credited as the founder of the internet, commented on the future of the World Wide Web: "The web takes the openness" of earlier technologies—postal mail, telegraphs, telephones, even roads and railroads—and moves it "one step forward and enables a continually evolving set of new services that combine information at a global scale not [previously] possible" (Berners-Lee 2007, 3). Web-based technologies and services now combine information for a truly global audience. Moreover, NextGen users of these technologies and services are now recognized by the ways in which they have become immersed in them. "Since the advent of the World Wide Web in the early 1990s, the 'Digital Generation' has been at the epicenter of major tectonic shifts," writes Kathryn Montgomery (2009), professor of communication at American University. She continues, "Never has a generation been so defined in the public mind by its relationship to technology. … As active creators of a new digital culture, these youth are developing their own web sites, diaries, and blogs; launching their own online enterprises; and forging a new set of cultural practices" (2). The cultural practices are significant, including the practices of information, particularly with the web as *the* information interface.

In her book *Generation Digital: Politics, Commerce, and Childhood in the Age of the Internet,* Montgomery (2009) provides what might be the most complete account of the rise of the internet and its impact on the lives of young people. Synthesizing the research, scholarship, and news reports since the first days of the web and cataloging these texts in an index close to 100 pages long, Montgomery claims that the internet's educational promise helped drive its rapid expansion into American life. The chapters in this book approach the study of the web

from a similar perspective—that the web continues to shape education in profound ways, particularly the teaching and learning of research-writing. However, the authors collected here argue that we must better understand the ways in which NextGen students work with information in the digital age if we are going to best leverage the web to fulfill this promise.

The authors collected here recognize the role the web plays in the information landscape, particularly for students. Montgomery writes that "young people have not simply adopted the Internet, they have *internalized* it" (2009, 8) and they are the "*defining users* of digital technologies" (107). If we agree that today's students are defined by a web they have internalized, then studying the web's impact on their writing *and* research behaviors seems critical. Just how critical? Just how much does the web define our students today? Recent reports have the percentage of teenagers spending time online at higher than 90 percent, with many teens online not just every day, but several times a day (Montgomery 2009, 138). Defined indeed.

Teaching Researching Online

Writing teachers, among others, must intensify their engagement with research-writing scholarship if they hope to accurately understand and appreciate the writing and information behaviors of NextGen students. Scott Warnock (2009) urges this engagement in the afterword to *Teaching Writing Online*:

> Think about it. Arguments rage about the quality of the e-writing our students regularly engage in during their online experiences on social networking sites like Facebook and MySpace, with text messaging, or in the blogosphere; yet to me it's plain that no matter how we define it, they write a lot more than my generation did. They are writing all the time, almost frantically using textual language to communicate with one another, and coming up with remarkably clever ways to communicate their message … We, as writing

> teachers, are highly empowered in this environment to help channel the natural writing that students are doing anyway into a class experience. (179–180)

Though Warnock is writing these ideas in support of what he labels a "progressive" approach to remaking writing classes for online delivery, his claims are just as relevant for restructuring the approach to helping students develop research and information skills for the digital age, working from information behaviors out (Warnock 2009, x).

Warnock emphasizes that students today write more than those from previous generations. I believe they also seek out more information and seek it out more often than earlier generations of researchers did. Think about how you conducted most of your research during your K–12 and your college years, and long, planned trips to the stacks in the library likely fill your memory. Now, think about how you seek out information today. If you are like me, then you still love the time you spend in the stacks. But you also conduct much of your research on the open web, and this type of research has brought out its own set of information behaviors, ones for which students often have tremendous aptitude.

Warnock reminds us of what we all know quite well: Students are writing all the time. Any teacher who has spent time working with students knows that students are always plugged in, and most of them are writing in multiple applications at any one time—their Facebook, email, twitter, CMS, and IM windows popping with activity. Just as students are writing all the time, they are reading all the time—conducting informal research, if you will, through their favorite websites and blogs, tagged pages, and RSS feeds (though studies have shown that students do not view these activities as "research"[3]). In fact, the Pew Internet & American Life Project study of teens' internet use finds that

- 62 percent get their news and information on current events online;
- 31 percent get their health and medical information online;
- 37 percent participate in video chats;

- 27 percent record and upload video to the internet; and
- 13 percent stream video live to the internet for other people to watch. (Lenhart, et al. 2010, 26–28; Lenhart 2012, 1)

Students are certainly engaged in a wide variety of types of writing and researching both in and out of school, including composing research papers. A recent study by the Writing in Digital Environments (WIDE) Research Center at Michigan State University of more than 1,300 students enrolled in first-year composition courses at seven higher education institutions found that students believe the academic paper and the research paper are more valuable to them than 26 of the 30 genres of writing in the survey, including many digital writing forms (Grabill and Pigg, et al. 2010, 6).

Warnock acknowledges what most of us readily concede: Today's students are often incredibly clever with the writing and researching they do. Text messaging, as Warnock indicates, is often cited as an example of the decline in writing skills. Viewed another way, however, text messaging—a writing activity that 82 percent of students not only engage in, but also spend an hour and a half on average doing every day—is incredibly relevant for the teaching of writing and could be an opportunity to engage our students in new, exciting ways not only in the teaching of writing, but also the teaching of research skills (Clark and Dugdale 2008, 34; Rideout, Foehr, and Roberts 2010, 3). In fact, the WIDE study found that texting is the most popular and valuable genre to students (Grabill and Pigg, et al. 2010, 5–6). Still, many teachers choose to ban cell phones from the classroom. This technology is viewed as a potential disturbance, not the instructional resource it could be.

Warnock believes that writing teachers are naturally situated to help channel the web into research-writing pedagogy. While they may be familiar with the writing students do on today's socially constructed and organized web, many teachers have yet to acknowledge and adequately address in their curricula the information behaviors and research practices students have developed on it. My experience and

research (2007, 2011a, 2011b) suggests that most approaches to teaching students to become better researchers ignore behavior and resist the familiar, instead opting for what Randy Garrison and Norman Vaughn (2008) call "holding onto past practices that are incongruent with the needs and demands of a knowledge society" (ix). The continuing prevalence of the one-shot library instruction session in first-year writing pedagogy is as incongruent as it is ineffective.

Theodore Roszak (1994) claimed nearly two decades ago that "we suffer from a glut of unrefined, undigested information flowing in from every medium around us" (in Warnock 2009, 162). Considering the web is the medium most common to our students—the place where they receive "a full third of words and more than half of bytes" of their information—then it only makes sense to work closely and intentionally with the web as *the* information source for student writers (Bohn and Short 2009, 8). The web—not only the closed and controlled space of the web-based academic library, but also the unrefined, uncontrollable yet familiar space of the open web—is *the* site to research their information behaviors. It is time to understand what student writers do in this space and to join them there.

Stepping Back to See the Big ~~Picture Monitor~~ Screen

I am not saying that those in and out of education are unaware of the dramatic changes in computer use and information behavior. Professional organizations including the National Council of Teachers of English (NCTE) and the International Reading Association (IRA) have considered the affective value of the web. In its statements on a "Definition of 21st Century Literacies" (2008a) and a "21st Century Curriculum and Assessment Framework" (2008b), NCTE identifies six literacies critical for 21st-century learners, including the ability to manage, analyze, and synthesize *multiple streams of simultaneous information* (emphasis added).

A third NCTE report based on a survey of more than 900 members confirms its position on the critical nature of students' ability to manage information. In the 2009 report "Writing Between the Lines—and

Everywhere Else," respondents indicate that "the ability to seek information and make critical judgments about the veracity of sources" and "the ability to read and interpret many different kinds of texts, both in print and online," which 95 percent and 94 percent of respondents cite, respectively, were the two most important 21st-century literacy skills (1). Whereas nearly all respondents identified the pressing digital information need, only two-thirds of them responded that they have made changes to their curricula in order to prepare students to be 21st-century literate. The chapters in this book form a collaborative response to the digital information need.

The massive amount of information available to and surrounding students on the web has the attention of not only professional organizations like NCTE and IRA, but also campus leaders and education reformers. Three well-known university presidents along with two respected professors of education debate in *Newsweek* the future of higher education. When the five contributors are asked about online learning, it is interesting to note that their responses do not focus on online courses or programs, but on the rapid expansion of the web and specifically the amount of information now available to and now challenging students. Elaine Tuttle Hansen, president of Bates College, comments that online learning is "one way colleges and universities have managed to begin … to address some of this explosion of knowledge" to which Diane Ravitch, professor of education at New York University and former assistant secretary of education, responds, "the explosion of knowledge may require more education and more time for education, not less" and will require what Robert Zemsky, professor of education at the University of Pennsylvania, labels stronger skills of critical inquiry (Rosenberg 2009, 33).

The respondents acknowledge the information explosion and the need for educators to react to this explosion, yet they concede, in the words of Lee Bollinger, president of Columbia University, that we do not fully "understand, however, how the web is going to reshape what we do" (Rosenberg 2009, 33). The web has led some educators to rethink how they see knowledge and information. But I do not think

most educators have a rich understanding of the amount of information our students are exposed to and the behaviors they are using to try to manage it. More importantly, I believe that most have held on to teaching practices and curricula no longer relevant for the new digital scholar.

Fact, Fiction, or Fantasy

Think about the measurement 3.6 zettabytes. Think about 34 gigabytes. They sound like numbers out of a science fiction movie. However, the numbers are much more fact than fiction. Roger Bohn and James Short (2009), researchers from the University of California, San Diego (UCSD), have found that American households in 2008 combined to consume more than 3.6 zettabytes[4] of information (Bilton 2009). Even more interesting, Bohn and Short note that information consumption earlier predicted not to reach 1 zettabyte worldwide by 2010 was more than tripled by 2009, and this was in the U.S. alone (2009, 8). According to Nick Bilton (2009) from the *New York Times* website, this number is "roughly equivalent to the capacity of 5.1 million computer hard drives, or all the hard drives in Minnesota." The UCSD researchers put it like this: "If we printed 3.6 zettabytes of text in books, and stacked them as tightly as possible across the United States including Alaska, the pile would be 7 feet high" (Bohn and Short 2009, 13).

Specific to the focus on digital information characterizing this chapter and much of this book, Bohn and Short (2009) suggest in *How Much Information?* that this 3.6 zettabytes breaks down to 34 gigabytes and 100,500 words per person per day, an estimated 350 percent increase in information consumption over the last three decades. "This doesn't mean we read 100,000 words a day," notes Bohn, "it means that 100,000 words cross our eyes and ears in a single 24-hour period" (Bilton 2009). In fact, these 34 gigabytes and 100,000-plus words take us, according to the UCSD researchers, a combined 11.8 hours a day

to consume when all of our multitasking behaviors are included (Bohn and Short 2009, 13).

The findings from UCSD are supported by a report published by the Kaiser Family Foundation. In *Generation M2: Media in the Lives of 8- to 18-Year-Olds*, Victoria Rideout, Ulla Foehr, and Donald Roberts (2010) studied more than 2,000 students nationwide and found that media use for tweens and teens has increased by 1 hour and 17 minutes since 2004 to a total of 7 hours and 38 minutes a day. When multitasking behaviors are accounted for individually, this number rises to 10 hours and 45 minutes a day, a more than 2-hour increase from just 6 years ago, and a number that does not include time spent texting, using the computer for school purposes, or even talking on a cell phone (Rideout, Foehr, and Roberts 2010, 11; Rubin 2010).

Whether the UCSD number of close to 12 hours a day or the Kaiser figure of nearly 11 hours is more accurate,[5] the numbers confirm what Bates College president Hansen believes—students today are being bombarded by a lot of information, and this information is consuming much of their waking time (Rosenberg 2009). Moreover, as the lines between media become even harder to distinguish and as the computer becomes even more the "epicenter of media multitasking" for our students, it only makes sense that the information from the web is *the* information standard (Rideout, Foehr, and Roberts 2010, 23–24). If the computer is the information epicenter for students, then we must appreciate and work with this in our curriculum design and classroom practice. As Bollinger suggested (Rosenberg 2009), we must reshape what we do, and I believe that includes reshaping college writing, the teaching of which still often relegates research to second-class status.

Consuming Mass Quantities

Before discussing in more detail the information behaviors associated with the web, I want to discuss information consumption in general and information production, particularly in terms of writing. As one would expect, information consumers, including our students, right

now give TV most of their attention, at 45 percent of their information time, with computers coming second, at 27 percent. TV accounts for close to half of information *time*, but less than a third of total information *exposure*. In fact, more than half (55 percent) of information exposure comes through interactive technologies, specifically computers and video games, which account for a little over a quarter (27 percent) of total information time (Bohn and Short 2009, 8). As one would also expect, reading print texts continues to decline in both information time and exposure, coming in at under 10 percent in both categories. "Print media [use] has declined consistently," notes Bohn, "but if you add up the amount of time people spend surfing the web, they are actually reading more than ever" (Bilton 2009).

Not only are students reading more than ever, but also they are writing more than ever. Two reports on writing and technology, one in the U.K. and one in the U.S., appear to confirm this. The report "Writing, Technology and Teens" co-sponsored by the Pew Internet & American Life Project and the National Commission on Writing finds that teens engage in significant amounts of writing, both in and out of school, with half of the 700 teens in the study reporting that they write in school every day. Interestingly, most students report that much of the writing they do in high school is often very brief and not research-based (Lenhart, et al. 2008, 10). The more than 60 pages of findings in the Pew report lead the researchers to conclude the following: "Teenagers' lives are filled with writing. All teens write for school, and 93% of teens say they write for their own pleasure. Moreover, the vast majority of teens have eagerly embraced written communication with their peers" (i).

The Pew (Lenhart, et al. 2008) findings are supported by a report from the National Literacy Trust (NLT) in the U.K. (Clark and Dugdale 2008) in which more than 3,000 students aged 8 to 16 were surveyed about their writing behaviors, and it should come as no surprise that these students are prolific writers, especially when it comes to computers: 73 percent of respondents regularly composed instant messages, 63 percent contributed regularly on social networking sites,

56 percent maintained a social networking page, and 24 percent were blog owners, findings that lead the researchers to conclude that "young people increasingly use written communication over any other" (Clark and Dugdale 2008, 4, 34). Not only are teens consuming mass quantities of information, but also they are producing significant amounts of new content for the web. For example, findings in the Pew report "Social Media and Mobile Internet Use Among Teens and Young Adults" suggest that 21 percent of teens are remixing content on the web, "taking material they find online such as songs, text, or images and remixing it into their own artistic creations" (Lenhart, et al. 2010, 23).

Additional findings from the NLT study that 49 percent of students in the survey use a computer every day for fun and 18 percent use a computer every day for school confirm the heavy use of computers, use that has 93 percent of U.S. teens and tweens going online and, depending on the report you read, 63–70 percent of them going online every day (Lenhart, et al. 2010, 5–7; Clark and Dugdale 2008, 28–30; Rideout, Foehr, and Roberts 2010, 20). These findings reveal a possible gap or lag, however, in leveraging computer technology in schools in ways that reflect use outside of them. These findings are even more telling when one considers them in light of a national survey conducted by PBS Education (2009) of more than 1,200 K–12 teachers which found that 81 percent of schools have computers and internet access in their classroom (11). Further, they provide at least some measure of support for claims from those like Scott Warnock (2009) and the NLT researchers (Clark and Dugdale 2008), the latter of which write that "it is paramount … the school curriculum reflects and utlises [*sic*] writing forms that young people enjoy and engage with" (8). Comments like these are becoming increasingly commonplace in publications on teaching writing; however, claims to engage students with alternative research-writing pedagogies are much harder to find.

Surf's Up

Understanding the behaviors associated with information is critical to shaping research-writing pedagogy, particularly given the variety of

ways and places students are locating information for academic projects. Primary Research Group (PRG) reports in a survey of 450 undergraduates from across the U.S. the following mean percentages (+/-1 percent) in student responses concerning where most of the information comes from for their research papers:

- General search engines: 42 percent
- Wikis: 9 percent
- Online databases, ebooks, online journals: 24 percent
- Print publications: 16 percent
- Other sources: 8 percent (2009, 26–27)

It is likely no surprise to most readers that students go to Googlepedia[6]—search engines and wikis—for more than half of their information.[7] Looking more closely at student responses by age group, the changes in information behavior become more apparent. For example, students aged 19 and younger reported the highest usage of information from wikis and students 30 and older reported the lowest (Primary Research Group 2009, 26). PRG does find that close to a quarter of students (24 percent) use information from a combination of sources, yet 30 percent use information exclusively from Googlepedia (77). This is not to say that such information lacks value, but this data provides a clear indication that the web has dramatically affected information behavior in terms of the retrieval of information.

Other data in the PRG report shows students have tremendous confidence with their information-seeking and research-writing skills. For example, 93 percent of students respond they are confident or very confident in their abilities to conduct research and write a research paper; 90 percent are confident or very confident in their ability to prepare citations; and 86 percent are confident or very confident in their understanding of plagiarism (Primary Research Group 2009, 124–144). Based on these student attitudes, one could argue that we are successfully preparing our students to research and write. Many contributors to this book are regrettably less confident.

Until this book, considerably less research has existed on actual observations and studies of students' information behavior on the web. In one previous study worth noting, however, Eszter Hargittai, et al. (2010) surveyed 1,060 students enrolled in first-year writing courses about their online research practices, and the researchers compare what students say they do with what they actually do.[8] The researchers recorded the research sessions of 102 first-year writing students, capturing their verbal responses as well as their on-screen movements. Each student was asked to work through 12 scripted information-seeking tasks on the web. In doing so, Hargittai et al. found that students put considerable trust in search engines to return fair and unbiased sources of information, equate name brands of search engines and other sites (SparkNotes, MapQuest, Microsoft, Wikipedia, AOL) with credibility, and often turn to people they trust (family, friends, teachers) in situations when they want to verify information from the web rather than consider the authorship or credentials of the sources they located (Hargittai, et al. 2010, 479–484). These results lead the researchers to conclude that "how users get to a web site is often as much a part of their evaluation of the destination site as any particular features of [or information on] the pages they visit" (486).

A discussion of the new digital scholar would be incomplete without mentioning what might be the most provocative report on the subject: a briefing paper published by University College London (UCL) titled "Information Behaviour of the Researcher of the Future." The UCL researchers—David Nicholas, Ian Rowlands, and Paul Huntington (2008)—identify several computer uses and information behaviors common to young people today, a group they label the "Google Generation":

- Lack of understanding of their information needs
- Preference for basic search engines like Google rather than article databases
- Use of natural language terms instead of subject terms or keywords

- Quick scanning and skimming of information sites
- Little or no evaluation of the quality of the information used
- Cutting and pasting information into their papers without providing the correct citations (12–31)

These behaviors are certainly familiar to readers, and they have been noted in the literature reviews and findings of several recent reports. For example, the "quick scanning of information sites," or power browsing, is an information behavior which many readers have likely observed by watching students conduct research on the web. In fact, research on power browsing indicates that most users "exhibit a great amount of trust" in search engine results, and as a result spend no more than 8 or 9 seconds on a web page. Though users tend to spend only seconds on any given page, the behavior of power browsing now accounts for 14 percent of users' information hours (Bohn and Short 2009, 20; Hargittai, et al. 2010, 470).

Minding the Gap

Researchers are now theorizing "that the ever-accelerating pace of technological change may be minting a series of mini–generation gaps, with each group of children uniquely influenced by the tech tools available in their formative stages of development" (Stone 2010). In a 2010 interview with Brad Stone from the *New York Times* website, Lee Rainie, director of the Pew Research Center's Internet & American Life Project, responds to the "ever-accelerating pace of technological change" this way: "People two, three or four years apart are having completely different experiences with technology. College students scratch their heads at what their high school siblings are doing, and they scratch their heads at their younger siblings" (Stone 2010). *USA Today* writer Sharon Jayson (2010) sees this same trend in her reading of Larry Rosen's (2010) book *Rewired: Understanding the iGeneration and the Way They Learn*, where Rosen argues that a shift from the search engine generation has already occurred. Whereas NextGen

students have not known life without computers, Rosen's iGeneration, according to Jayson, cannot remember a time without either the internet or the affordances of Web 2.0 technologies: "i"ndividualization, "i"nnovation, and "i"mmersion (Jayson 2010).

If we are, as Rainie seems to suggest, scratching our heads on account of the many technologies that NextGen students work with and the behaviors they have formed using the web in the process of finding and producing information, and we are, as Rosen (2010) believes, already bearing witness to a new "iGeneration" that sees these technologies differently and engages in different behaviors with them, then what does this mean for writing teachers down the road? Is it possible to catch up with or even just understand the information behaviors of the new digital scholar? As educators, we have to at least try.

One path to meeting students in the digital information age is through the close study of information behavior as it relates to all aspects of college writing. Information behavior researchers Burnett and Erdelez frame the future of their research this way:

> While the tools through which human users come into contact with information may change—and may raise many interesting questions about the degree to which specific technologies transform our understanding of the contexts of information use and about the degree to which technological innovation and change determine (or, more accurately, influence) information behavior—the particular relationship between such human users and information itself remains the focus of information behavior research. (2010, 46)

Information behavior theory provides writing specialists and others a wide lens to focus research on the new digital scholar, to understand and respond to students' research-writing practices in ways best suited to them.

Through the lens of information behavior and through other lenses offered throughout this book, one point becomes crystal clear: The digital world is shifting around us (Nichols 2009, 528). Even more to the point: For our NextGen students, it already has. As Rideout, Foehr, and Roberts write in *Generation M2*, "The story of media in young people's lives today is primarily a story of technology facilitating increased consumption" (2010, 2). Until we modify research-writing curricula and instructional practices with a broader and deeper understanding of digital worlds, of the explosion in the amount and consumption of information they facilitate, and of the resulting information behaviors for our students, we will continue to reside in separate spaces. And if producing digital scholars is our goal, then move to meet NextGen students on the web in every way—writing, reading, *and* researching—we must.

Endnotes

1. For more discussion on the challenges of the digital information divide, see Randall McClure (2011a).
2. For a history of information behavior research, see T. D. Wilson (2010).
3. For more discussion on what students do and do not view as research, see Lenhart, et al. (2010).
4. A zettabyte is equal to one billion terabytes, or 1,000,000,000,000,000,000,000 bytes.
5. It should be noted that a 2009 report from the Nielsen Company attempts to contradict the findings from other recent reports on NextGen students' information behaviors and media use. The anonymous authors of the report *How Teens Use Media* believe that "the image of 'typical teen' listening to an iPod, watching TV, texting and browsing the Internet all at the same time … is grossly misrepresentative" (1–2). While the authors are not clear on their research methods, claiming "the data and insights in [the] report are compiled from a range of Nielsen resources" (16), the findings do present a much milder picture of NextGen students.
6. For an elaboration on the term "Googlepedia," see McClure (2011b).
7. For a review of recent studies that analyze source and citation use in research papers written by U.S. college students, see Cooke and Rosenthal (2011).
8. For a similar approach to comparing students' research practices with their understanding of them, see Chapter 6.

References

American Library Association. 1989. *Presidential Committee on Information Literacy: Final Report*. Chicago: ALA. Accessed September 12, 2012. www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm.

Association of College and Research Libraries. 2000. *Information Literacy Competency Standards for Higher Education*. Accessed September 12, 2012. www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm.

Berners-Lee, Sir Timothy. 2007. "Testimony of Sir Timothy Berners-Lee, CSAIL Decentralized Information Group, Massachusetts Institute of Technology before the United States House of Representatives Committee on Energy and Commerce Subcommittee on Telecommunications and the Internet Hearing on the 'Digital Future of the United States: Part I—The Future of the World Wide Web.'" Accessed September 12, 2012. dig.csail.mit.edu/2007/03/01-ushouse-future-of-the-web.html.

Bilton, Nick. 2009. "The American Diet: 34 Gigabytes a Day." NYTimes.com. Accessed September 12, 2012. bits.blogs.nytimes.com/2009/12/09/the-american-diet-34-gigabytes-a-day.

Binder, Natalie. 2010. "[Information needed]: Modeling Information Behavior." The Binder Blog: Talking Tech, Media, Information, and Policy. Accessed September 12, 2012. thebinderblog.com/2010/11/02/information-needed-modeling-information-behavior. [URL no longer available.]

Bohn, Roger E., and James E. Short. 2009. *How Much Information? 2009 Report on American Consumers*. UC, San Diego: Global Information Industry Center.

Burnett, Gary, and Sandra Erdelez. 2010. "Forecasting the Next 10 Years in Information Behavior Research: A Fish Bowl Dialogue." *Bulletin of the American Society for Information Science and Technology* 36 (3): 44–49.

Clark, Christina, and George Dugdale. 2008. "Young People's Writing: Attitudes, Behaviour, and the Role of Technology." *National Literacy Trust (UK)*. Accessed September 12, 2012. www.literacytrust.org.uk/research/nlt_research/261_young_peoples_writing_attitudes_behaviour_and_the_role_of_technology.

Cooke, Rachel, and Danielle Rosenthal. 2011. "Students Use More Books After Library Instruction: An Analysis of Undergraduate Paper Citations." *College & Research Libraries* 72 (4): 332–344.

Garrison, D. Randy, and Norman D. Vaughn. 2008. *Blended Learning in Higher Education: Framework, Principles, and Guidelines*. San Francisco: Jossey-Bass.

Grabill, Jeff, and Stacey Pigg. 2010. "The Writing Lives of College Students." East Lansing, MI: Writing in Digital Environments Research Center. Accessed September 12, 2012. compositionawebb.pbworks.com/f/whitepaper.pdf.

Hargittai, Eszter, et al. 2010. "Trust Online: Young Adults' Evaluation of Web Content." *International Journal of Communication* 4: 468–494.

Jayson, Sharon. 2010. "Tech-Savvy 'iGeneration' Kids Multi-Task, Connect." USAToday.com. February 10. Accessed September 12, 2012. www.usatoday.com/news/health/2010-02-10-igeneration10_CV_N.htm.

Lenhart, Amanda. 2012. "Teens & Online Video." Pew Internet & American Life Project. Accessed November 7, 2012. www.pewinternet.org/~/media//Files/Reports/2012/PIP_Teens_and_online_video.pdf.

Lenhart, Amanda, et al. 2008. "Writing, Technology and Teens." Pew Internet & American Life Project. Accessed September 12, 2012. www.pewinternet.org/Reports/2008/Writing-Technology-and-Teens.aspx.

Lenhart, Amanda, et al. 2010. "Social Media and Mobile Internet Use Among Teens and Young Adults." Pew Internet & American Life Project. Accessed September 12, 2012. www.pewresearch.org/pubs/1484/social-media-mobile-internet-use-teens-millennials-fewer-blog.

McClure, Randall. 2007. "Digital Soapboxes: Understanding the Growing Presence of Advocacy and Commercial Sites on the Web." *Journal of Literacy and Technology* 8 (3): 2–22.

———. 2011a. "The Digital Information Divide." In *Adaptation, Resistance, and Access to Instructional Technologies: Assessing Future Trends in Education*, edited by Steven D'Agustino, 1–18. Hershey, PA: IGI Global.

———. 2011b. "Googlepedia: Turning Information Behaviors into Research Skills." In *Writing Spaces: Readings on Writing*, Volume 2, edited by Charles Lowe and Pavel Zemliansky, 221–241. West Lafayette, IN: Parlor Press.

Montgomery, Kathryn C. 2009. *Generation Digital: Politics, Commerce, and Childhood in the Age of the Internet*. Cambridge, MA: MIT Press.

National Council of Teachers of English. 2008a. "The NCTE Definition of 21st Century Literacies." NCTE.org. Accessed September 12, 2012. www.ncte.org/positions/statements/21stcentdefinition?PHPSESSID=a80d8d2827512d929d0b6a09f40e697c.

———. 2008b. "21st Century Curriculum and Assessment Framework." NCTE.org. Accessed September 12, 2012. www.ncte.org/governance/21stcenturyframework.

———. 2009. "Writing Between the Lines—Everywhere Else." NCTE.org. Accessed September 12, 2012. www.ncte.org/library/NCTEFiles/Press/WritingbetweentheLinesFinal.pdf.

Nicholas, David N., Ian Rowlands, and Paul Huntington. 2008. "Information Behaviour of the Researcher of the Future." *EDUCAUSE*. Accessed September 12, 2012. www.jisc.ac.uk/whatwedo/programmes/resourcediscovery/googlegen.aspx.

Nichols, James T. 2009. "The 3 Directions: Situated Information Literacy." *College & Research Libraries* 70 (6): 515–530.

Nielsen Company. 2009. *How Teens Use Media: A Nielsen Report on the Myths and Realities of Teen Media Trends*. Accessed September 12, 2012. blog.nielsen.com/nielsenwire/reports/nielsen_howteensusemedia_june09.pdf.

PBS Education, and Grunwald Associates, LLC. 2009. "Digitally Inclined: Teachers Increasingly Value Media and Technology." PBS.org. Accessed September 12, 2012. www.pbs.org/teachers/_files/pdf/annual-pbs-survey-report.pdf.

Primary Research Group. 2009. *The Survey of American College Students: Student Library Research Practices and Skills*. NY: Primary Research Group, Inc.

Rideout, Victoria J., Ulla G. Foehr, and Donald F. Roberts. 2010. *Generation M2: Media in the Lives of 8- to 18-Year-Olds*. Menlo Park, CA: Kaiser Family Foundation.

Rosen, Larry D. 2010. *Rewired: Understanding the iGeneration and the Way They Learn*. NY: Palgrave Macmillan.

Rosenberg, Debra. 2009. "What's College for Anyway? A Debate Over the Role of Higher Education." *Newsweek* October 26.

Roszak, Theodore. 1994. *The Cult of Information: A Neo-Luddite Treatise on High-Tech, Artificial Intelligence, and the True Art of Thinking*. Berkeley: University of California Press.

Rubin, Bonnie M. 2010. "Teen, Tween Media Use Rising." ChicagoTribune.com. January 20. Accessed September 12, 2012. articles.chicagotribune.com/2010-01-20/news/1001190509_1_mobile-devices-media-young-people.

Stone, Brad. 2010. "The Children of Cyberspace: Old Fogies by Their 20s. NYTimes.com. January 10. Accessed September 12, 2012. www.nytimes.com/2010/01/10/weekinreview/10stone.html.

Warnock, Scott. 2009. *Teaching Writing Online: How and Why*. Urbana, IL: NCTE.

Wildemuth, Barbara M., and Donald O. Case. 2010. "Early Information Behavior Research." *Bulletin of the American Society for Information Science and Technology* 36 (3): 24, 35–38.

Wilson, T. D. 2010. "Fifty Years of Information Behavior Research." *Bulletin of the American Society for Information Science and Technology* 36 (3): 27–34.