

Teaching and Learning with the Net Generation

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A decade ago, the first wave of the Net Generation began to enter college, forcing educational institutions to deal with a new population of learners with unique characteristics. With the Net Generation representing nearly 7% of the population today (Bartlett 2005) and with nearly 49.5 million students enrolled in schools in 2003 (Enrollment Management Report 2005), responding to the specific needs of this generation of learners is becoming increasingly important. The challenge of evolving pedagogy to meet the needs of Net-savvy students is daunting, but educators are assisted by the fact that this generation values education. These students learn in a different way than their predecessors did, but they do want to learn. In this article we will define the characteristics of Net Geners' learning styles and discuss how educators can make the most of these particular traits.

Net Geners Want to Learn . . .

One key characteristic of this generation is that they are very education oriented. Educational pressure begins early for Net Geners; college-directed goals take hold as early as the first year of high school. Net Geners state that their efforts in high school are a direct reflection of the type of college to which they plan to gain admission. Older generations often take as true the stereotypes of teenagers as obsessed with clothing, relationships, and friends. Indeed, most teenagers do feel caught between the competing interests of mastering schoolwork and socializing with their peers. Yet many parents of Net Geners say that their children are spending most of their nights doing school assignments rather than engaging in social activities (Whitney-Vernon 2004), and the 2004 Trends can report finds that the number one thing that Net Geners aged 12-24 are saving for is college tuition (Marketing Magazine 2005). A survey of 100,000 Canadian teens reports that teens express far greater concern about education than adults in the survey expect them to feel. The report concludes that many teens are so worried about school and postsecondary careers that "Saturday nights are about doing homework" (Whitney-Vernon 2004, 4). This generation is extremely goal-oriented, and achieving their career ambitions entails a good education. Happily for educators, Net Geners' learning goals do not change in college. Most can be expected to continue to sacrifice weekends to study, to regard the consequences of poor grades seriously, and to attend classes regularly. Even if only in order to enable future success in their chosen careers, Net Geners, on the whole, want to do well in college.

. . . But Net Geners Learn Differently

Although they value education highly, Net Geners learn differently from their predecessors. This generation is unique in that it is the first to grow up with digital and cyber technologies. Not only are Net Geners acculturated to the use of technology, they are saturated with it. By the time he or she has reached 21 years of age, the average NetGener will have spent

- 10,000 hours playing video games,
- 200,000 hours on e-mail,
- 20,000 hours watching TV,
- 10,000 hours on cell phones, and
- under 5,000 hours reading (Bonamici et al. 2005).

Having been raised in an age of media saturation and convenient access to digital technologies, Net Geners have distinctive ways of thinking, communicating, and learning (Oblinger and Oblinger 2005; Prensky 2006; Tapscott 1998).

Independence, Autonomy, and Learning

Net Geners tend toward independence and autonomy in their learning styles, which impacts a broad range of educational choices and behaviors, from "what kind of education they buy" to "what, where, and how they learn" (Carlson 2005, ¶4).

This makes Net Geners more assertive information seekers and shapes how they approach learning in the classroom. These students make conscious choices about what learning techniques work best for them, which can include reading lecture notes online, viewing interactive media such as PowerPoint presentations or digital images, or working in groups.

Such an assessment is supported by educators and scholars whose findings indicate a greater desire for active, engaged learning experiences among Net Gen students. Oblinger and Hagner (2005) observe that Digital Age students express a need for more varied forms of communication and report being easily bored with traditional learning methods. Glenn (2000) notes that Net Geners need self-directed learning opportunities, interactive environments, multiple forms of feedback, and assignment choices that use different resources to create personally meaningful learning experiences, while Hay (2000) finds that Net Geners want more hands-on, inquiry-based approaches to learning and are less willing simply to absorb what is put before them. What explains these shifts in learning styles? Tapscott (1998) argues that this more independent learning style has grown out of the ingrained habits of seeking and retrieving information from the Internet, which marks a striking contrast to previous generations of students, who tended to acquire information more passively from authority figures.

Other educators, however, object to the pressure to reshape higher education to meet Net Generation expectations. Naomi Baron, for example, asserts that the move to incorporate technology, reduce lecture time, and reshape assignments to engage impatient Net Geners merely caters to a lack of discipline. For Baron, "at some point, what we are doing is killing higher education" (quoted in Carlson 2005, "Not So Different?", ¶6). Baron's observations may have some merit. Higher education in the United States has a respected democratic tradition that has developed over two centuries of practice; unlike many peer institutions in other countries, universities in the U.S. have been (relatively) responsive to new developments and willing to meet the changing needs of the student. Yet while education can be altered and even improved by incorporating greater autonomy in learning, the educational system may be ill-served by rushing to meet the perceived needs of the Net Generation. While they are frequent users of electronic tools, Net Geners typically lack information literacy skills, and their critical thinking skills are often weak (Oblinger and Oblinger 2005). They may be digital natives, but they do not necessarily understand how their use of technology affects their literacy or habits of learning. For educators, providing the technological bells and whistles needed to engage Net Geners may not be as effective or as critical as improving their information literacy and critical thinking skills.

In the same vein, educators may not serve their students well by satisfying another typical Net-Generation learning need: their self-reported preference for immediacy. Net Geners' use of the Internet for immediate access to information has taught them to expect immediate answers. This conditioning has made them, on the whole, less likely to accept delayed gratification in learning, both in the classroom and outside it. Hay (2000) offers a story that illustrates these points. In an elementary school classroom, during a lesson on Australia, one of the children asked, "What do kangaroos eat?" The teacher, admitting that she did not know and assuring her students that she would get back to them later with an answer, was met with one student getting up from his seat and offering to find the answer online, "real quick" (9). Instructors typically find it difficult to resist this desire for immediate answers in the face-to-face classroom. Many institutions are attempting to reconnect Digital-Age students with traditional classroom practices through technology, and a substantial number of universities (over 150, according to Carnivale and Young 2006) now require students to buy laptops. This strategy can undoubtedly benefit Net Geners, giving them the Internet access they crave.

Some educators worry that it can also work against effective teaching as professors vie with the Internet, instant messaging, and computer games for students' attention during class (Carnivale 2006). However, such worries may be more a function of educators' beliefs and assumptions about learning, springing from their own learning styles, than a reflection of Net Generation practices and beliefs. The well-known educator Seymour Papert has pointed out for many years that computers and technology can be powerful teaching tools, but their potential is not fully exploited by educators who use them as isolated tools, disconnected from the processes of student life and learning (Papert 1993). To Net Geners, who have "grown up digital," the social interaction and structure of the classroom is more important than the potential distractions of the Internet. This is best articulated by Ben McNeely (2005), himself a member of the Net Generation, who says that students of his generation "like the social interaction that comes from being in class with their peers" (44). For them, McNeely feels, "relationships are a driving force in the learning process [and] . . . learning through social interaction is important" (2005, 44). McNeely quotes Arman Assa, an MBA student and president of the

Mac Users Group at North Carolina State University, who says that technology in a class is not bad for the classroom; rather, it should “simply augment what is there” in terms of interaction, teaching, and learning (2005, 45). This discussion suggests that educators can best serve the needs of Net Generation learners and meet teaching goals by modifying pedagogies to accommodate Net Geners' need for independence and autonomy in learning.

Media, Multitasking, and Learning

Net Geners' habituated use of media in many different formats highlights another clearly notable characteristic of their learning style. Multitasking is an integral part of the Net Generation lifestyle (Oser 2005). As a landmark survey found, Net Geners between 8 and 18 report using multiple media simultaneously, using computers and the Internet at the same time as video games, print media, music, and the phone (Kaiser Family Foundation 2005). Another study found that younger Net Geners (aged 6-14) pack 8.5 hours of media usage into 6 hours (Kaiser Family Foundation 2005). Accustomed as they are to multiple stimuli, Net Geners report being bored in the traditional classroom, even as older educators bemoan Net Geners' short attention span. Baron explains that

students have a very short attention span in part because of the media that we as teachers and parents have encouraged them to spend their time with, and in part because we haven't taught them to have longer attention spans. (quoted in Carlson 2005, "Millennials and 'Me'", ¶5)

Net Geners, however, typically do not accept the notion that the problem is a lack of attention span. They maintain instead that a lack of time compels them to multitask. It is important for educators to understand that, at least sometimes, when Net Geners complain that a particular subject seems unnecessary, they may not be expressing a lack of interest. Rather, the range of activities demanding the time and attention of young people may make them less patient with lessons that do not directly apply to their chosen careers. Multitasking, Net Geners claim, simply helps them get everything done. Whatever the motivation, educators must contend with the fact that multitasking is a way of life for many of today's students.

Interestingly, Baron maintains that educators bear significant responsibility for this problem. In attempting to accommodate the learning styles of the Net Generation, educators often encourage their students to use various media in their work while failing to teach the equally important benefits of slowing down, focusing, and contemplating material deeply. As a result, she claims, administrators are giving up on a core lesson: teaching students how to think on their own and to communicate their ideas clearly. "We have told them, 'We want to hear what you have to say, your opinion matters, nothing you can say is wrong—we can only just sort of add to it,'" Baron says. "There is a growing assumption that what matters is how you express yourself, not whether anyone can understand what you have expressed" (quoted in Carlson 2005, "Millennials and 'Me'", ¶7). While appealing to the media proficiencies of Net Generation students can yield the short-term advantages of increased student engagement, such a shift often caters to those students who seek to complete work with a minimum of effort (Carlson 2005). The dilemma in this case arises from pedagogical strategies that effectively conflate knowledge with mere information management while failing to tap into the positive potential of the Net Geners' orientation towards learning.

Meanwhile, classroom practices designed to accommodate emerging learning styles are gaining a foothold at all levels. Educators across the country are increasingly moving from the traditional lecture to discussion-based classes that allow for more individual expression. Use of teamwork and reliance on experiential learning have become the norm rather than the exception in classrooms today. Universities encourage faculty to combine the traditional lecture format with techniques that prompt active interaction with students. Promotional materials for colleges and universities illustrate this trend; a new marketing campaign at our university ([William Paterson University](#)), for example, uses billboards and posters featuring a student proclaiming, "I believe in conversations, not lectures." The prominent place of the term "information literacy" in conversations about pedagogy is yet another example of this shift in focus (National Education Association 2005). Clearly, universities seek to attract students by accommodating their self-perception as learners who acquire information by developing their own questions, systematically evaluating sources, and selecting evidence to support their answers (Howard 2006).

In light of the benefits that can arise from accommodating Net Generation learning styles, educators should formulate strategies that meet students halfway while avoiding the pedagogical pitfalls noted by Baron and other concerned critics. The good news is that over the past decade, educators have begun to move toward the development of such pedagogies, often adapting traditional teaching strategies to take advantage of the benefits of technology to engage Net Geners. [WebQuests](#), for example, use the Internet to promote the development of “higher level thinking” and to “develop small group skills in collaborative learning” (Zheng 2005, 55). Originated by Bernie Dodge and Tom March in 1995, the WebQuest is characterized by what Dodge (2001) calls the deep learning that involves constructing new knowledge through a critical thinking process. WebQuests are not only easy for instructors to use, but they have proven very successful at engaging Net Geners. (More information on the usage of WebQuests can be found at [WebQuest news](#)).

WebQuests are an example of “learning by doing,” a learning style that many say characterizes the Net Generation (McNeely 2005; Prensky 2006; Shutt [n.d.](#)). Several characteristics of Net Geners’ learning discussed in this paper, such as their consistent multitasking, need for instant gratification, and need for independence and involvement in the learning process, can be harnessed by the use of pedagogical strategies that emphasize learning by doing through technology. One example is the use of blogs, long a staple of Net Geners’ lives, in the classroom. Darren Kuropatwa ([2006](#)) describes one use of blogs in his high school class. His assignment calls for students to act as scribes, recording what is learned each day:

Write a brief summary of what we learned in class today. Include enough detail so that someone who was away sick, or missed class for any other reason, can catch up on what they missed. Over the course of the semester, the scribe posts will grow into the textbook for the course; written by students for students. Remember that as each of you write your scribe posts. Ask yourself: "Is this good enough for our textbook? Would a graphic or other example(s) help illustrate what we learned?" And remember, you have a global audience, impress them. ("Harnessing the Power of Pedagogy," ¶4)

The assignment begins with a volunteer who then chooses the next scribe; the instructor’s role is simply to update a post called The Scribe List daily. The assignment is powerfully successful, according to Kuropatwa, in engaging students in learning through several different mechanisms. It undoubtedly succeeds because using blogs in this manner not only engages students through the Internet but also builds upon their social and relational focus.

A related use of technology to accommodate Net Geners’ learning style is the use of wikis. Wikis, or open-editing sites, are as much a part of the Net Generation’s learning landscape as blogs. Educators are increasingly using wikis as collaborative writing spaces. For example, Teresa Dobson from the University of British Columbia uses a wiki space in a graduate course on technologies for writing as a support for collaborative experiments in composition and "as a prompt for reflection on the nature of online writing and reading" (Lamb 2004, 3). This demonstrates one use of wikis, which can also be used “to change the individualism culture of traditional instruction to one of collaboration and a shared construction of knowledge” (Ferris and Wilder [2006](#), "Teaching and Learning with Wikis," ¶4). As Ferris and Wilder note, the use of wikis as a tool for collaborative writing allows students to learn about creativity, ownership, and copyright in the context technology.

While WebQuests, blogs, and wikis use the Internet, other multimedia resources can also appeal to Net Geners. The increasingly popular YouTube offers a model to one faculty member who employs digital storytelling as a teaching tool. Melda Yildiz, of William Paterson University, has students in a teacher education course produce video documentaries and showcases video projects as a means to engage her students in considerations of multiculturalism, openness to different views of history, and use of multimedia (Yildiz 2007). These examples demonstrate the ways in which educators can use technology and multimedia in appropriate ways to incorporate autonomous learning activities while also ensuring that sufficient classroom time is devoted to fostering information literacy and higher-order critical thinking skills.

Social Interactivity and Learning

For goal-oriented Net Geners, learning is a means to achieving professional ambitions. At the same time, the Internet is a

tool for learning and an essential part of social life. The distinction between Internet tools for fun and for work is thus a blurry one. In an analysis of 19- to 25-year-olds, McMillan and Morrison (2006) found that the Internet featured prominently in the everyday lives of these young people. The phenomenal growth of networking Web sites like [Facebook](#) and [MySpace](#) has tapped into this generation's favorite pastime. Facebook, which has 250 million hits every day and ranks ninth in overall traffic on the Internet (Bugeja 2006), is university based, enabling students across the nation to come together not just for study but also to find out where the next party is being held. Many students view this type of social networking to be important enough that students often sign up before they even begin their freshmen year (*Market Wire* 2006).

To reach the Net Generation more effectively, educators need to consider strategies that exploit the social networking skills students exhibit outside of class. For example, [Brooklyn College's library](#) now has a MySpace [page](#) that library staff uses instead of email to communicate with students, including announcements about events, workshops, and work opportunities (Carlson 2006). While creative and well-intentioned, such efforts have little pedagogic value if they do not invite students to think differently about their use of the Internet and, specifically, how it discourages sustained concentration in many contexts. Toward this end, Michael Kearns, a professor of computer and information science at the [University of Pennsylvania](#), uses Facebook to teach concepts of social networking, demonstrating a more effective appropriation of Net Generation lifestyle to foster critical thinking among his students. In his course [The Networked Life](#), which focuses on the social aspects of computer networks, students create their own Facebook profiles and investigate the connections among their peers, which leads them to deep questions about how social networks tend to coalesce around a small number of privileged members (Read 2004). In turn, the incorporation of e-portfolios in the [Expository Writing Program](#) at the [University of Washington](#) may serve as another positive example; in this initiative, students learn how to reorient their social networking skills in creating online portfolios that illustrate and reflect upon their fulfillment of key learning objectives (Lane 2006). By incorporating the online habits of Net Generation students within the framework of clearly defined pedagogical goals, educators can tap into the distinctive proficiencies of their students while ensuring focused learning and positive outcomes.

Conclusion

Since young people will likely continue to be at the forefront of technological change, Net Geners will continue to have a lot to teach educators about evolving technology. Yet educators must not abdicate their role as authorities directing the learning experiences of their students. Our research observes the existence of a fine line: Educators should continue to find ways to exploit the skills students develop outside of class without accommodating the habits of instant gratification and shallow thinking. To be human is to learn, and we learn from good teachers. Russell Ackoff has often noted that the current education system does not teach students how to learn (Day 2007). Today's digital and computer technologies allow us to remedy this by giving us the tools to teach Net Geners not just what to learn but how to learn.

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