

Teaching Strategies for the Net Generation

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Abstract:

To date, more than 30 books and scores of articles and chapters have been written on the Net Generation. They describe their distinguishing characteristics from previous generations and their implications for education, the workplace, and the political, social, and economic arenas. The problem is that is no consensus on those characteristics, the birth dates for defining this population, the names for this generation, and whether it is even possible to identify a clear-cut profile. For the 18-years-old to 20-something group of current undergraduate and graduate students in this cohort, general guidelines for teaching strategies have been proffered by a few educational researchers. The purposes of the article are to furnish a clarification of the issues creating confusion for faculty and administrators and to suggest specific directions for future teaching in this digital culture. It will synthesize the research evidence from 10 major national and international surveys of this generation and the latest thinking on their educational implications. The material is organized into four sections: (1) defining this generation by birth date and name, (2) characteristics of Net Geners, (3) teaching strategies for Net Geners, and (4) epilogue.

Key Words:

Net Generation, Millennials, digital natives, multimedia teaching, technology in the classroom, multiple intelligences, learning styles, collective intelligence, social bookmarking, experiential learning, cooperative learning, learner-centered teaching.

DISCLAIMER: Defining (by birth dates) and labeling any group of people and ascribing specific characteristics to them are fraught with problems of misrepresentation and generalization. Several researchers have proffered reasons and particular advantages to identifying this generation as well as others and their distinguishing characteristics (Alsop, 2008a; Junco & Mastrodicasa, 2007; Oblinger & Oblinger, 2005b; Prensky, 2006; Strauss & Howe, 2006; Tapscott, 2009). However, the concept of a clear-cut generation, cohort, population, or tribe has also been challenged (Bonner, in press; Hawkins & Oblinger, 2006; Hoover, 2009; Jenkins, 2007; Montgomery, 2009; Palfrey & Gasser, 2008; Singham, 2009; Vaidhyanathan, 2008; VanSlyke, 2003). Despite the role of the technology in the lives of these students, they are infinitely more complex than any single profile can reveal. They comprise a fluid, messy, and diverse group, where a one-size-fits-all mold ignores their variability in skills, abilities, learning styles, experience, socio-economic levels, ethnicity, nationality, gender, sexual orientation, and class. Acknowledging those limitations, I still think there is legitimacy to suggesting a set of characteristics and cultural trends derived from sound scientific research that can guide future teaching practices for faculty.

Introduction

“Everything Is Boring”

“School is boring. Everything is boring.” Ring a bell? You have probably heard the “b” word from your students and your own kids many times unless you have been living in a snow globe. Who hasn’t? UCLA’s Higher Education Research Institute has conducted a national survey of nearly 250,000 college freshman at more than 500 colleges and universities for the past 44 years. One of their findings is that 40+ % of the students report “they are frequently bored in class” (Pryor et al., 2009). Unless the content is on their radar screens, it’s likely to be rated “boring.” That percentage has remained constant for more than a decade.

Our students are not the only ones bored. A survey of 211 British university students indicated that 59% found lectures boring in at least half of their classes and 30% find most or all of their lectures boring (Mann & Robinson, 2009). The least boring methods were found in seminars, practical sessions, and group discussions, where students could interact and actively participate. The use of PowerPoint® slides was the most important factor contributing to boredom. This has prompted some educators to “teach naked,” that is, without any technology (Young, 2009). However, this “throw the baby out...” mentality doesn’t seem totally warranted.

A Generation “Born with a Chip”

Despite the fact that we know more about our students’ brains and intelligences, how to teach effectively, how students learn, and the technological applications to learning than at any time previously, about 50% of college students are unmotivated, disinterested, and disengaged from classroom instruction now more than they ever have been. While in class, they may IM or text their buddies while taking notes on their PCs, Web-surfing, scanning an iTunes playlist, and reading *The Color Purple* (Carlson, 2005).

Where’s the disconnect? Why are they disengaged? Is this generation of students in school right now really that different from previous generations? Today’s undergraduate and graduate students who are part of this generation comprise the majority of students in higher education. There are nearly 90 million flooding the schools and the workplace, which is almost one-third of the U.S. population. These teen and 20-something individuals have shared several major life events together. They have lived through the first Gulf War, may have served in Iraq and/or Afghanistan, experienced first-hand the expansive growth of the technologies and reality TV, observed the rise and subsequent failure of many dot.com companies, witnessed the 9/11 terrorist attacks, Columbine shootings, Oklahoma City bombing, the O. J. Simpson trial, and the AIDS epidemic, and participated in America’s diversity, multiculturalism, and election of the first Afro-American president.

The burgeoning technology alone has had a profound effect on this generation, unlike any previous one. They were “born with a chip.” Are they significantly different? You bet! These students have grown up with *Sesame Street*, MTV, reality TV, the Internet, PCs/Macs, video games, Facebook, MySpace, Twitter, Flickr, Skype, iPods,

iPhones, PDAs, and TV/DVD remotes as appendages to their bodies. How über cool is that? They carry an arsenal of electronic devices with them. They are key ingredients in their world. Their use of the technology focuses on social networking, music, videos, TV programs, and games. They live in a world of media overstimulation and absolutely love it. As the lyrics to the Peabo Bryson and Regina Belle hit song from *Aladdin* tell us, we are entering:

A whole new world
A new fantastic point of view
No one to tell us no
Or where to go
Or say we're only dreaming ...

The technologies provide a window into this world. The students' world is not better than or inferior to ours; it's just different. When the students cross the threshold of the classroom door, they enter culture shock. They're numb with understimulation. How can any professor possibly compete with their world? They can't. Therein lies the disconnect and it will worsen as their stimulation accelerates with the cultural manifestations of the technology in the future. That's the problem. How do we address it?

The purposes of this article are to furnish a clarification of the issues creating confusion for faculty and administrators and to suggest specific directions for future teaching in this digital culture. It will synthesize the research findings on this generation and the latest thinking on their educational implications. The material is organized into four sections: (1) defining this generation by birth date and name, (2) characteristics of Net Geners, (3) teaching strategies for Net Geners, and (4) epilogue.

Defining This Generation by Birth Date and Name

Although the birth dates used to define this generation have varied in different surveys, there seems to be some agreement in the literature—typically between 1982 and 2003 (standard error of ± 2 years). Those students are now 6 to 27 years old. That translates educationally into 1st grade through graduate school. My focus here is on 18-year-olds to 20-something undergraduate and graduate students. However, some authors have lumped them into much narrower (1978–1984) (Martin & Tulgan, 2001) and wider ranges (1976–2003) (Cameron, Wilcox, Reber, & Shin, 2008), and everywhere in between (Greenberg & Weber, 2008; Tapscott, 2009).

The name for this generation has been even more contentious. Authors and researchers have used a variety of terms in their articles and books. The book titles alone reveal this variation, for example, Millennials, Generation Y, Trophy Kids, Net Generation, and Digital Natives, to cite just a few. This has produced considerable confusion and much debate over the most appropriate label. Here are the top 10 proposed names or monikers and their rationales:

1. *Millennials*: Howe and Strauss (2000) indicate that the students actually coined that term themselves to disassociate themselves from Gen X. These authors also

use 1982–2001 for 18 childhood years for the high school graduating class of 2000 as they entered the new millennium.

2. *Generation Y* (or *Gen Y*): This term appeared first in an editorial by Nader (2003) in *The Age* to refer to teenagers born between 1977 and 1978. They are now considered part of Generation X. It was derived simply from the succession of one generation to the next—the demographic cohort following Gen Xers. (*Note*: This logic has already been applied to naming the Next Generation after this one, *Generation Z* [Tapscott, 2009].) Gen Y turned out to be a pejorative label which many teenagers found offensive. It says nothing about their distinguishing characteristics or behaviors.
3. *Echo Boomers*: This term relates to the size of this generation and its relation to the Baby Boomers. The Baby Boom has an echo and it's even louder than the original (Tapscott, 1997, 2009). They are the offspring of those Boomers. The “echo boom” of more than four million births occurred between 1989 and 1993. The current cohort is now the second largest demographic in the U.S.
4. *Net Generation* (or Net Geners): This term was coined by Tapscott (1997). It is linked directly to the (Inter)net and the emerging digital technology of the 1990s with which this generation grew up. They never knew a world without computers and the Internet.
5. *Trophy Generation* (or Trophy Kids): This term is derived from competitive sports and the practice where no one loses and everyone receives a “trophy” (actually a certificate) for participating (Alsop, 2008b; Tulgan, 2009). In other words, everyone wins and should be recognized for their efforts. There is a perceived sense of entitlement by members of this generation. These students are success-driven with a pressure to excel in school, sports, hobbies, and just about everything they do (Alsop, 2008b). They assertively seek constant feedback, responsibility, and involvement in decision making (Alsop, 2008a).
6. *First Digitals*: This term is associated with the Digital Revolution during the 1990s. This generation is the first to grow up immersed in everything digital.
7. *Dot.Com Generation*: This term characterizes the students who received intensive education in information technology prior to entering the university in 2000 (Stein & Craig, 2000).
8. *Digital Aborigines*: Tarlow and Tarlow (2002) draw on the aborigines' view of the world that all things are connected and analyze this generation's behaviors from an anthropological perspective
9. *Nexters*: Zemke, Raines, and Filipczak (1999) use this term in their book to refer to this generation. It might be considered a slang version of Next Generation.
10. *Digital Natives*: This term coined by Prensky (2001a, 2001b, 2006) explains a lot about these students' characteristics in the context of the growing technology in the 1990s, but has also been fraught with considerable controversy. They are branded as “digital natives” because “digital” is their native language. They are “native speakers” of the language of computers, video games, and the Internet and have spent their entire lives surrounded by computers, cell phones, and all

the gadgetry of the digital age. As you walk across campus, you will notice that these teen and 20-something students have wires coming out of every part of their bodies. Attached to those wires are MP3 players, iPods, Zunes, Zens, iPhones, RAZRs, BlackBerrys, or the latest techy gizmo or thingamajig (Junco & Mastrodicasa, 2007; Mastrodicasa, 2007; Oblinger, 2008a). (Note: Palfrey and Gasser [2008] use “the first generation of digital natives” in the title of their book, but claim “generation” is an overstatement and inappropriate term; they prefer “population”).

Professors are the people without the wires. Prensky (2001a) calls them *digital immigrants* because many of them still have one foot in the past and “digital” is their second language, as they continue to learn and sometimes struggle with it on the fly. For example, immigrants may still print out an e-mail, print a document to edit it, or phone someone to see if he or she received their e-mail. Do you know any colleagues like that?

Some experts have taken issue with Prensky’s digital divide or generation gap and stereotypes of the two groups. Consistent with my disclaimer, VanSlyke (2003) argues that such a categorization of “natives” versus “immigrants” homogenizes the characteristics of the members within each group. The composition of each group is far more diverse in abilities, attitudes, values, and demographics than Prensky suggests. Not all students fit Prensky’s mold; for example, many do not have PCs at home or have an interest in playing video games. “Not all technology-assisted learning needs to fit the stereotype of the digital native” (p. 6). Further, digital immigrant professors do not need to speak a new “language” in order to be effective. Some are excellent teachers who have adopted learner-centered methods with and without computers. The incorporation of technology in the learning process should be context-specific.

Jenkins (2007) expresses similar concerns about Prensky’s categories. He says that “digital natives” implies all students share a common body of technology knowledge that they have all mastered. In fact, the term masks their different degrees of access to and comfort with the emerging technologies. Also, rather than focusing on the inadequacies of the “digital immigrants,” he argues we should recognize what they bring with them from the old world which is still valuable. Actually, a significant percentage of professionals working in Silicon Valley are “immigrants” who can probably out-compute most of the “natives.” Prensky’s digital and cultural divide between these groups also short circuits thinking about meaningful collaborations across these generations.

Another problem with Prensky’s “digital native” characterization is that it is not typical of all students. There is a digital divide or participation gap within the U.S. and in other wealthy countries (Jenkins, 2007; Palfrey & Gasser, 2008). For example, Sax, Ceja, and Terenishi (2001) conducted a study of 272,821 freshmen and found that, after controlling for income, Afro-Americans and Latinos were less likely to communicate via e-mail than Whites and Asian-Americans. People with lower incomes have lower rates of Internet use and broadband access (Horrigan, 2006; Horrigan & Rainie, 2005). Finally, students with higher incomes are more likely to use computers to conduct research, create projects, and analyze data than students with lower incomes (Junco & Mastrodicasa, 2007).

Further, the native-immigrant dichotomy and Prensky's descriptions do not generalize outside the U.S. In developing countries, the technology is less prevalent, electricity often scarce, and literacy rates low (Palfrey & Gasser, 2008). The birth-based definitions and trends as well as the corresponding technological advances are not applicable to most European, Eastern European, and Asian countries. The 1980s and '90s were periods of rapidly falling birthrates. Only Russia experienced an "Echo Boom" similar to that in the U.S. The child poverty rates were still quite high in many Western countries during those years. In addition, the economies and socio-economic structure in those countries limited the access, purchase, and use of the technologies to middle-class and wealthy families. Probably only a few of the characteristics of the Net Geners presented in the next section would apply to the students from those families (Palfrey & Gasser, 2008). The profile is neither national nor international or global as far as the survey evidence collected so far tells us.

After this review of names, the one name that seems the simplest, most descriptive, least controversial, and easily understood, and reflects the profound influence of the Internet on these students' lives is: *Net Generation* or *Net Geners*.

Characteristics of Net Geners

Over the past decade as the Net Geners were maturing, graduating high school and college, and entering graduate school or the workforce, they were surveyed and studied by several researchers. In fact, this generation has been scrutinized, interviewed, surveyed, poked, and prodded more than any previous generation. Their impact on education at all levels has been a major interest of researchers and educators. Now the eldest members are graduating college and attending graduate school or entering the workforce in droves. The greatest concerns of employers are very similar to those of educators—trying to understand them, to maximize their performance, and to manage their professional and personal styles alongside other generations of workers.

To date, more than 30 books have been written on the Net Generation which report the results of several of those surveys and other research and describe their characteristics. Those works are distinguished by their perspectives and implications of the research results and characteristics for practice. There are three target applications addressed: (1) *education* (Bonner, in press; Howe & Strauss, 2000; Junco & Mastrodicasa, 2007; Oblinger & Oblinger, 2005b; Pletka, 2007; Palfrey & Gasser, 2008; Strauss & Howe, 2003, 2006; Sturgess, 2008), (2) the *workplace* (Alsop, 2008b; Chester, 2002; Degraffenreid, 2008; Elliott, 2009; Erickson, 2008; Gravett & Throckmorton, 2007; Lancaster & Stillman, 2003; Marston, 2007; Martin & Tulgan, 2001; Orrell, 2008; Sujansky & Ferri-Reed, 2009; Tapscott, 1997, 2009; Tulgan, 2006, 2009; Underwood, 2007; Zemke, Raines, & Filipczak, 1999), and (3) the *political, social, and economic impact* (Bauerstein, 2008; Greenberg & Weber, 2008; Hicks & Hicks, 1999; Mesch & Talmud, 2009; Montgomery, 2009; Strauss & Howe, 1992; Tarlow & Tarlow, 2002; Twenge, 2007; Winograd & Hais, 2008).

Several sets of characteristics have been reported based on independent national and international surveys. For example, Strauss and Howe (2006) described seven peer personality traits of this generation: special, sheltered, confident, team-oriented, conventional, pressured, and achieving, which collectively define a common persona

that results from sharing important events in the generation's history. They acknowledge that not everyone shares that personality, although everyone has to deal with it. Similarly, Junco and Mastrodicasa (2007) consider the risk of generalizations with their profile of driven, social, experiential, and multitaskers, yet argue for the value of the major characteristics as a guide for practices in higher education. Tapscott (2009) lists eight Net Gen "norms" (distinctive attitudinal and behavioral characteristics that differentiate this generation from all previous generations): freedom, customization, scrutiny, integrity, collaboration, entertainment, speed, and innovation.

What do we know about this generation that can direct your efforts to provide effective instruction in higher education? What is it about these current undergraduate and graduate students that are so different to warrant a close examination of how you teach? Why should you change your teaching methods? Specifically, how do you change? What do you change?

This section synthesizes the survey research evidence from multiple sources and extends the work by the preceding authors in an effort to answer those questions. Understanding the Net Generations is the first step. Their characteristics are clustered into two categories: (1) access and use of technology, and (2) learner characteristics. Descriptions of those characteristics are provided next.

Access and Use of Technology

According to a survey of 7,705 college students in the U.S., Junco and Mastrodicasa (2007) found the following characteristics of Net Generations (except where noted):

- 97% own a computer
- 94% own a cell phone
- 99% use the Internet for research or homework (Pryor et al., 2009)
- 89% begin their search of everything with search engines like Google (OCLC, 2006)
- 76% use Instant Messaging (IM) logged on 35 hrs./wk., chat 80 min./day, and 15% logged on 24/7
- 87% read news Websites (Pryor et al., 2009)
- 34% use Websites as their primary source of news (40% use TV with 15% watching *The Daily Show* and 5% *The Colbert Report*)
- 57% are media creators (Oblinger, 2008b); 35% own a blog and 57% read blogs (Pryor et al., 2009)
- 49% download music using peer-to-peer sharing (15% download movies and 16% download software)
- 92% multitask while IMing
- 75% have a Facebook account
- 56% own an MP3 player (iPod, Zune, Sansa, or similar music/video device)

Learner Characteristics

Among the various sets of characteristics presented in the literature, 20 common-denominator characteristics emerge that have a direct bearing on learning. The

descriptions below synthesize pertinent research evidence based on the following 10 surveys over the past decade:

- EDUCAUSE (Frاند, 2000; Oblinger, 2008b; Oblinger & Oblinger, 2005b)
- College Students' Perceptions of Libraries and Information Resources Survey (Online Computer Library Center [OCLC], 2006)
- Greenberg Millennials Study (Greenberg & Weber, 2008)
- Higher Education Research Institute (UCLA) American Freshman Survey (Pryor et al., 2009)
- National Center for Education Statistics (NCES & Kridl, 2002)
- Net Generation Survey (Junco & Mastrodicasa, 2007)
- The Net Generation: A Strategic Investigation (Tapscott, 2009)
- Nielsen NetView Audience Measurement Survey (Cashmore, 2009; Ostrow, 2007)
- Pew Internet and American Life Project (Horrigan, 2006; Horrigan & Rainie, 2005)
- Technological preparedness among entering freshman (Sax, Ceja, & Terenishi, 2001)

The educational implications of the characteristics are discussed.

1. Technology savvy: Having grown up with the technology, the Net Geners' familiarity with most forms of gadgetry listed previously is second nature. They have spent their entire lives surrounded by all of the toys and tools of the digital age (Carlson, 2005). The technology affects everything they do and buy. They expect information to be at their fingertips. Their experience with the technology has enabled them to master complex tasks and make decisions rapidly (Junco & Mastrodicasa, 2007; Prensky, 2006).

However, they are not necessarily "net savvy" (Lorenzo & Dziuban, 2006). They are exposed to tons of information, but lack an understanding of how to find, evaluate, use, and present that information. They need to be taught information literacy and strong critical thinking skills (Oblinger & Hawkins, 2006; Rockman & Associates, 2004). A digital divide exists based on machine vintage, connectivity, online skills, autonomy and freedom of access, computer support, and interest in using the technology (Hawkins & Oblinger, 2006; Oblinger, 2008a). For those students who are neither tech nor net savvy due to class, nationality, or other factors that limit access, special instruction or training sessions should be provided to give them opportunities to be brought up to the same level of their more proficient peers.

2. Relies on search engines for information: About 89% of Net Geners begin searches for everything with search engines like Google (OCLC, 2006). They have an "ease-of-use" mentality. Their high comfort level with the technology has fostered a false sense of ability, such that they routinely overestimate their skills at finding and evaluating online information (Manuel, 2002).

The search process is even more meandering and interactive than previously (Bodi, 2002). An Online Computer Library Center (OCLC) (2006) survey of 394 undergraduate and graduate students from six countries indicated that 94% consider search engines to

be a good or perfect fit for their lifestyle, while 63% consider online or physical libraries to be a fit. While the libraries' resources are considered more accurate and trustworthy than search engines, they fall far short of students' expectations of speed, convenience, ease of use, cost-effectiveness, and reliability (OCLC, 2006).

3. *Interested in multimedia*: They are accustomed to entertainment, speed, and accessing music, videos, games, and information their own way. They prefer interactive media rather than passive TV. For example, online games provide that interactivity; they have experience with massively multiplayer games, such as World of Warcraft, and participate in virtual worlds, such as Second Life (Gibson, Aldrich, & Prensky, 2007). These virtual worlds are immersive, animated, and 3D environments (Oblinger, 2008a).

They also move seamlessly between real and virtual worlds. They are *nomadic*—they get whatever they want whenever and wherever they want it (Abram & Luther, 2004; Tarlow & Tarlow, 2002). It's theirs for the taking. Many will obtain their music, videos, ringtones, and software free, illegally, online rather than buy it. Leveraging these media in the classroom is critical to connecting with their culture.

4. *Creates Internet content*: They are not only avid users of the technology, with 90% using the Internet to assist with homework; they also contribute to its content. About 57% design and write Websites, post blogs with pictures and original artwork, and make videos for YouTube daily.

The Web 2.0 evolution has produced social bookmarking, which permits students to tag, comment, evaluate, and collect published works (Polin, 2007). It fosters direct peer-to-peer engagement to create, share, and interact via networks such as Flickr, del.icio.us, and Digg.com. The students are major contributors to the Internet by developing, consuming, commenting on, and rating Web material.

5. *Operates at "twitch speed"*: This generation grew up with the quick pay-off world of video games, MTV, the Internet, and ultra-fast speed of action films (Prensky, 1998, 2006). They are used to the instantaneity of hypertext, downloaded music, iPhones in their pockets, a library of resources on their laptops, and IMing (Prensky, 2006). They prefer random access, graphics-first, active, connected, fun, and fantasy activities (Foreman, 2003; Prensky, 2006). They have adapted to speed and even thrive on it. That translates into their "need for speed" in everything they do by themselves and in their relationships. Either their environment must change to accommodate their speed or they will change or leave their environment and go somewhere else.

6. *Learns by inductive discovery*: They prefer to learn by doing rather than being told what to do or reading text or manuals. They are kinesthetic, experiential, hands-on learners. They must be engaged, constantly connected with first-person learning, games, simulations, and role playing (Junco & Mastrodicasa, 2007; Oblinger & Oblinger, 2005a; Tapscott, 1999). Multiplayer virtual environments allow students to play roles of experts (as avatars), such as physicians, astronauts, and physicists, that otherwise would not be possible in the real world (Oblinger, 2006, 2008a; Rauch, Cohodas, & Wang, 2009). They are what Jenkins (2006b) calls a *participatory culture*; they are not spectators.

7. *Learns by trial and error:* With their Nintendo mentality, they will jump right in and do what is necessary to solve a problem using trial and error, failing, starting over, and so on; they'll just play with the software, hitting the keys until they figure it out (Prensky, 2006). They will seek help only if they can't come up with the answer. Learning on a PC or Mac is like the games they're used to playing.

8. *Multitasks on everything:* They can naturally do several tasks easily at the same time. The Net Geners can move quickly from one activity or medium to another, such as using IM, chatting with their friends on a cell or smart phone or iPhone, and e-mailing all at once, while surfing the Net and watching TV or doing homework (Junco & Mastrodicasa, 2007; Prensky, 2006; Roberts, 2005). Mixing play and work is common. It's part of their lifestyle.

9. *Short attention span:* Again the Net Geners are used to speed in everything they do and touch. They must be actively engaged, doing some task, and having fun doing it, or boredom and impatience take over. Play is work and work is seen in terms of games with achievement, winning, and beating the competitors. They are used to immediate results and pay-offs for performance. That satisfies their need for feedback and instant gratification (Prensky, 2006).

10. *Communicates visually:* They are visually literate, comfortable in an image-rich rather than text-only environment. Many don't like to read books, especially textbooks, although they do it when required (Vaidhyanathan, 2008). They perceive print as expensive, boring, and a waste of time (Gomez, 2007). Instead, they prefer visuals, graphics, and images of any kind, such as icons, videos, and photos.

They communicate visually by capturing images with mobile phones or video cameras, then sharing them through MySpace, Facebook, or similar social media (Oblinger, 2008a). They post photos on Flickr and videos on YouTube or UthTv. Video network sites, such as YouTube, vids.myspace.com, and Google, AOL, MSN, and Yahoo!, are booming, particularly Veoh (Ostrow, 2007). Social bookmarking permits them to share images in a peer-to-peer world (Polin, 2007).

Online virtual and augmented reality environments provide animated and 3D experiences (Rauch et al., 2009; Yair, Mintz, & Litvak, 2001). Photovoice can promote dialogue and knowledge about important issues through online large and small group discussion of photographs (Perry, Dalton, & Edwards, 2009; Wang & Burris, 1997). Although Net Geners are visually oriented, they are able to weave together images, text, and sound easily as well as move between the real and the virtual instantaneously (Frاند, 2000; Manuel, 2002; Oblinger, 2008a).

11. *Craves social face-to face interaction:* Relationships are a high priority in the Net Geners' lives. Despite the hours that they spend in TMing and social media communications, they also gravitate toward activities that promote and reinforce in-person conversation, interaction, and collaboration (Howe & Strauss, 2000; Junco & Mastrodicasa, 2007; Manuel, 2002; Ramaley & Zia, 2005; Windham, 2005).

Some students view class as a social opportunity. They go to class to chat with each other (orally and online), not necessarily to listen to the professor, although they may do both, which is rude and often annoying to him or her. They want to interact not only with

fellow classmates, but also the authority figures in their lives, such as professors, librarians, and their parents (Falciani-White, 2008).

12. Emotionally open: They express their feelings easily. They are open to meeting new people, sharing personal information, and digital storytelling online in blogs, wikis, Facebook, MySpace, or other social media (Junco & Mastrodicasa, 2007; Lenhart, Rainie, & Lewis, 2001; Oblinger, 2008b; Oblinger & Oblinger, 2005b). They also want the opportunity to express their opinions and ideas in class or small group discussions and Q & A sessions.

13. Embraces diversity and multiculturalism: The Internet fosters diversity. The Net Geners' exposure and connection to the whole world through global communications have given 72% a tolerance, appreciation, and sensitivity for multiculturalism and 79% the ability to work with diverse people (Pryor et al., 2009). They are not only open to racial, ethnic, sexual orientation, and gender diversity; they support gender equality, gay rights, racial blending, and immigration (Greenberg & Weber, 2008). One-third of Net Geners is non-white (18% Hispanic, 14% Afro-American, 5% Asian) and many are biracial or multiracial.

14. Prefers teamwork and collaboration: As stated above, the Net Geners have strong social tendencies and a need for interpersonal interaction, both online and face-to-face (Junco & Mastrodicasa, 2007; Ramaley & Zia, 2005; Strauss & Howe, 2006; Tapscott, 2009; Windham, 2005). They prefer to work in teams rather than alone. Collaboration enables their "collective intelligence" to emerge through the pooling of knowledge, research, arguments, and insights from diverse groups of people (Jenkins, 2006a).

Collaborative activities can include creating skits, demonstrations, and parodies with music and videos to illustrate concepts and processes (Berk, 2001, 2002, 2003, 2007, 2008a, 2008b, 2009a, 2009b). Photovoice is another collaborative online strategy for both large and small group discussion (Perry et al., 2009). Social bookmarking with blogs and wikis is also gaining traction as a method to facilitate online collaboration among students and between students and the professor (Mindel & Verma, 2006). Websites such as Flickr and del.icio.us have become very popular. Students can schedule meetings with their friends online using Wiggio, which allows them to send mass TMs and voice mails. Collaboration on exercises and projects is a natural activity for them, whether it's the spontaneity of improvisation or the structure of cooperative learning (Berk & Trieber, 2009).

15. Strives for lifestyle fit: Net Geners want flexibility in their lives. Many are nontraditional students who attend college part-time, work full- or part-time, may be a single parent, have dependents other than a spouse, and/or are financially independent (NCES & Kridl, 2002). During the 1999–2000 academic years, 73% of the undergraduates met at least one of those criteria. Other Net Geners have graduated college and entered the workforce. Lifestyle fit is extremely important. They want their school or job requirements to fit their lifestyle rather than build their family and personal lives around those requirements (Alsop, 2008a).

16. Feels pressure to succeed: They feel pressure from their Boomer parents to succeed at whatever goals they set (DeBard, 2004). They are goal-oriented—setting

college, career, and life goals. Some even have five-year plans and are considering how they will balance their school and/or work with family commitments. Being able to accomplish these goals and efficiently do what needs to be done is more important than accumulating a bunch of facts (Frاند, 2000). They focus on short-term achievement and grades at the expense of critical thinking skills and deep learning. They have been made aware of how challenging and competitive the job market is going to be, especially to prepare for job descriptions that don't exist yet and to adapt when chosen career paths cease to exist (Carlson, 2005).

17. Constantly seeks feedback: This characteristic is part of the "Trophy Kid" mentality (Alsop, 2008a). The Net Geners want to be recognized for their efforts and achievements. Receiving regular and, of course, speedy feedback on their performance is important at school. They prefer objective methods of assessment and explicit guidelines on how to make As (Lowery, 2004), which are inconsistent with most performance assessments.

18. Thrives on instant gratification: The speed with which the Net Geners operate in every aspect of their lives has provided them with instant gratification. Their needs online are met and satisfied quickly. However, when they carry this need into other areas, such as school, the gratification with their work isn't so instant. Grades on tests and assignments are not posted with the same rapidity as an Amazon purchase or MapQuest directions. Their lack of patience can create frustration and boredom.

19. Responds quickly and expect rapid responses in return: It's all about speed, efficiency, and "don't waste my time." Since the Net Geners operate at "twitch speed" and multitask as a way of life, they expect everyone else to respond quickly to all communications (Frاند, 2000; Junco & Mastrodicasa, 2007). They respond quickly to your TMs and e-mails (Carnevale, 2006); you should afford them the same courtesy by responding within a few hours or no later than 24 hours, if possible. They have zero tolerance for delays. If they are punctual and respond immediately to requests, so should you.

20. Prefers typing to handwriting: Taking notes in class the old fashioned way is not the Net Geners' way. They want to type notes, communications, essays, and term papers on their PC/Mac or iPhone. That is what they are used to doing. The advantages of Word far outweigh any alternative of verbal print communication (Frاند, 2000).

Teaching Strategies for Net Geners

The preceding 20 characteristics are typical of most Net Geners, according to the surveys. Understanding these characteristics of your students is essential to connect with them. You need to know their culture as well as the latest technologies. Get to know your students one-on-one and as a group to build rapport, trust, and credibility. Consider their interests, intelligence strengths, learning styles, and the way they think.

The next step is to leverage their characteristics, behaviors, and habits to design and custom tailor your teaching strategies for them. Consider each characteristic and how one or more teaching techniques can draw on their specific interests, intelligences, and learning styles. You should be sensitive to their individual strengths and

weaknesses and try to build on the former before helping them to compensate for the latter. Your strategies involve a one-size-fits-one approach.

In order to provide you with an array of options, I have assembled an inventory of generic teaching strategies you can use to address the 20 Net Generational learner characteristics described previously. You probably have used many of these methods already. They apply to most all content areas, disciplines, and educational levels. The strategies are listed in Table 1.

Table 1: Match of Teaching Strategies to 20 Net Generational Learner Characteristics

Net Generational Learner Characteristics	Teaching Strategies
1. Tech Savvy	Incorporate technology meaningfully into lectures, in-class and out-of-class assignments, activities, and demonstrations; try to use <i>music, video clips, video games, blogs, wikis, search engines, and research databases</i> that are animated, image-based, and interactive; consider <i>multiplayer virtual environments and augmented reality</i> for simulations and role playing experiences; these digital tools, which are second nature to them, should be portable and easily accessible, not tethered to a particular location
2. Relies on Search Engines	Provide assignments that draw on the students' search engine skills, but give guidance and structure on how to maximize the value of the search results; give them exercises to <i>think critically</i> about the information and how to use and interpret it; focus on <i>information literacy skills</i> ; link search engines to databases for research projects
3. Interested in Multimedia	Use <i>music, videos, video games, other games, etc.</i> that are student favorites in your lectures and assignments to connect them to each other, to you, and to the content; students can learn from a wide variety of media, often simultaneously (see #1); structure assignments and assessments using <i>e-portfolios</i>
4. Creates Internet Content	Provide students with opportunities to contribute to <i>Websites</i> , write their own <i>blogs, microblogs, and wikis</i> , and also create <i>YouTube videos, podcasts, and videocasts</i> with appropriate content
5. Operates at Twitch Speed	For students to learn as fast as possible with the least hassle, allow them to <i>operate at their speed</i> in as many activities, assignments, and active learning exercises as possible; students should be <i>engaged and participating</i> in their learning, otherwise they can become bored and impatient and, as a consequence, stop going to class

6. Experiential / Kinesthetic	Shorten your lectures, <i>increase group-discussion</i> , and shift your teaching to learner-centered methods; plan <i>games, simulations, improvisations, and role playing</i> with specific learning outcomes in live and virtual (avatar) formats, such as <i>multiplayer virtual environments</i> ; provide hands-on, exploratory, and trial-and-error <i>problem-solving exercises</i> (see #11 & 14); allow students the chance to actively work with a variety of databases in doing research; require students to create their own <i>e-portfolios</i> of their work
7. Trial and Error	Assign problems where students, individually or in groups, can test their own strategies to <i>discover the solutions</i> ; students want to take control of their own learning which may involve unconventional technological methods; encourage <i>brainstorming and think-tank problem-solving and decision making</i> (see #11 & 14)
8. Multitask	Permit students to multitask in class; they can listen to you, type, listen to music, play an on online game, and send an e- mail or IM all at the same time; <i>don't be offended</i> if their attention is divided rather than focused only on you; it may be unreasonable to expect their "undivided" attention unless you have found the right <i>hook</i>
9. Short Attention Span	Students' attention span is a function primarily of their level of interest in an activity; they can play video games for hours; use a <i>variety of strategies</i> that will keep your students <i>engaged in different ways</i> ; move rapidly through content or, better yet, let them <i>move at their pace</i> using the technology
10. Visually Literate	Include graphics, images, and visual representations in your presentations, especially <i>videos from TV, movies, and YouTube</i> , with which students can relate; create class <i>demonstrations with music and parodies of TV programs, movie scenes, and Broadway shows</i> to illustrate a concept, theory, or procedure (a spectacular way to introduce an anxiety-producing, difficult, or boring topic); assign students to <i>develop visual demonstrations with music</i> to be performed in class, videos, or other visual products; use <i>multiplayer virtual and augmented reality experiences</i> which are immersive, animated, and 3D worlds to provide role playing and simulations
11. Face-to Face Interaction	Provide opportunities for students to interact in class in pairs and small groups through <i>active and collaborative learning activities</i> in real and virtual environments (see #14); work with these groups as they are working; schedule regular <i>one- on-one and small group meetings in your office</i>
12. Emotionally Open	Use live and online methods to <i>encourage interaction and opinion sharing</i> , such as discussion, Q & A, collaborative exercises, and <i>digital storytelling</i> through blogs, wikis, and social media networks (see #11 & 14)

13. Embraces Diversity	Systematically <i>incorporate diversity issues</i> into your content, whether or not your class is diverse; be sensitive to the multicultural composition of your class; <i>create opportunities for your racial, ethnic, and gender mix</i> of students to interact in various activities, especially in group assignments in and out of class
14. Prefers Teamwork	Create a team atmosphere for learning where you are part of the team; plan <i>group projects, peer review, and research assignments</i> ; tap their collective intelligence by enabling them to pool knowledge, research, debate, share opinions, and create new insights through <i>wikis, blogging, podcasts, and e-portfolios</i> ; encourage <i>multiplayer virtual role playing and simulations</i> ; use <i>improvisation and cooperative learning exercises</i> in class; assign out-of-class small group work with an <i>online chat room</i> ; use <i>Wiggio</i> to schedule meetings and group events with students; assign students to create visual <i>demonstrations, videos, or other products</i> to present in class; students will huddle outside of class, pass information around, pull material off the Internet, and interact to teach each other rather than go to class
15. Lifestyle Fit	If you have nontraditional students, <i>be sensitive to their work and family demands</i> in planning your in-class activities; make sure they're worth the trip to class and nonreplicable outside of class; consider their <i>proximity to campus when creating small groups</i> for in-class and out-of-class collaborative learning exercises
16. Pressure to Succeed	Tap students' <i>multiple intelligences and learning styles</i> to give every student the chance to succeed in your course; emphasize <i>critical thinking and deep learning</i> experiences rather than memorization of facts; design <i>appropriate and fair assessments</i> of achievement consistent with your teaching methods; use <i>e-portfolios</i> to track assignments throughout the semester
17. Seeks Feedback	Provide regular and prompt constructive feedback— <i>positive and negative, print, online, and face-to-face</i> ; use <i>clickers</i> to provide you and the students with immediate feedback on in-class activities and assessments
18. Instant Gratification	Consider your students' needs for speed and instant gratification in your <i>turnaround time</i> for grading, returning assignments, posting exam scores on your Web, and other forms of feedback; use <i>clickers</i> ; also teach them <i>self-control and delayed gratification</i> to encourage patience rather than frustration and boredom
19. Responds Quickly	Respond within the <i>same day</i> , if possible, to e-mails and TMs of consequence to the students
20. Prefers Typing	Encourage students to take in-class notes and do in-class assignments on their <i>PCs/Macs or handheld digital gizmos</i> ; require essays, term papers, and research reports and articles

using Word or similar word processing software.

As you digest the strategies in the table, it should become apparent that the role of the traditional, talking-head, “sage on the stage,” or broadcaster (transmitter of information) (Tapscott, 2009) in front of the classroom has shifted to group facilitator, orchestrator of collaborative knowledge creation (Brown, 2008), or “guide on the side” (Carlson, 2005). However, this shift has been occurring for more than a decade, as many professors have been changing from “teacher-centered” to “learner-centered” teaching methods (DeAngelo et al., 2009). The research evidence has also been accumulating on all of the benefits of the latter approach in terms of student success (Cornelius-White, 2007).

The dramatic contrast between these Net Geners and previous generations of students has recently just punctuated the importance of learned-centered techniques blended with the latest technology. If you don’t change and adopt these techniques, the students may not come to class. They need to feel connected to you and to each other, face-to-face and online. Use three forms of communication: one-on-one (e-mail and TM), one-to-many (news groups and message boards), and many-to-many (chat rooms, wikis, and Webcasts) (Skiba & Barton, 2006).

If the students are not given the opportunity to learn using their strengths and learning styles, they will turn off or balk at your methods. For better or worse, you need to pinpoint their individual strengths and then build on them before addressing their weaknesses, such as patience and being contemplative or reflective.

Certainly, straight lecture and textbook readings only do not work with these students. Mix it up; incorporate a variety of strategies (Fournier & Bajt, 2009). The operative words for Net Geners to be successful are digital, visual, speed, hands-on (engaged), multimedia, multitask, interactive, collaborative, feedback, and connected. Engagement is critical, by whatever means you choose to achieve it, even in large, lecture-based courses (Long & Coldren, 2006). Table 1 suggests several in-class and out-of-class, live and online techniques.

Once you have leveraged the elements in your students’ world and have established an in-person as well as virtual connection, you can diversify your methods and content to present elements from *your* world and discipline. For example, using hip-hop music and YouTube video clips with which students can relate to illustrate content points in class will provide the connection; then you can experiment with Mozart and clips from *A Few Good Men* or *The West Wing* to stimulate discussion on other topics (Berk, 2001, 2008a, 2008b, 2009a). This will facilitate a multimedia balance across generations to attain specific learning outcomes. Since audio and video media are still being systematically incorporated, the students will continue to be engaged.

Epilogue

After all that has been written on this topic and now adding this article to that body of work, what can I possibly say or contribute that you don’t already know? Hopefully, this piece clarified and extended the work of my predecessors in a form that fosters a better

understanding of your students and yourself as an educator. Perhaps a few of the suggested teaching strategies will provide useful additions to your current repertoire.

Since you are all at different levels and seasons of your teaching careers, what are the most critical ingredients you need to consider to improve the quality of your teaching for your current students and those to follow? I challenge all of you to make teaching adjustments to meet the instructional needs of your students in order to be more effective teachers in the future. Ruminates over the following elements as you strive toward that goal:

1. The 20 Net Generational characteristics described in this article indicate that these students crave in-class and out-of-class experiences that are active, participatory, visual, collaborative, fast moving, quick thinking, rapid responding, emotionally freeing, and spontaneous. They must be *ENGAGED!*
2. Since your students live in a complicated remixed, mashed-up, digital, mobile, always-on media environment, your classroom should be an *active, collaborative, social, and learner-centered environment*.
3. Plan *memorable learning experiences* that draw on their multiple intelligences and learning styles, which may even include dynamic, animated PowerPoint® lecture segments in the mix. Anything less, they will probably consider *borrrrrring!!* Please don't waste your students' time assigning in-class exercises that could be performed outside of class.
4. Make every effort to *custom-tailor your methods* to fit your students. Every student should have the opportunity to succeed and perform at the highest level in your courses.

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Aligning Teaching Strategies with Standards and Characteristics The trick is to focus on the students's characteristics first and last. After all, teaching is all about the students. The next generation learner. Keynote address presented at the AASCU/EDUCAUSE/University of Central Florida Conference on Students, Technology, and Learning: Strategies for Success, Orlando. Retrieved July 20, 2009, from <http://www.educause.edu>.