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Generational Differences

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CONTENTS

ABSTRACT

Generational differences are the subject of much popular speculation but relatively little substantive research. Among the speculations are suggestions that instructional designers should take generational differences into account when developing instruction and that games and simulations will be more effective learning environments with today's younger generation than they have been with earlier ones. This review examines the evidence in both the research and popular literature that supports (or fails to support) these speculations. Most of the popular literature on the subject of generational differences appears to rest on limited data, almost always conducted by survey methods characterized by a lack of reliability and validity data. The most recent research based on rigorous analysis of previous psychological studies does yield some evidence of substantive generational differences, especially between those generations born before and after 1970. Recommendations for further research in this area include examining generational differences across the whole spectrum of socioeconomic status and in international contexts, as well as implementing innovative design-based research approaches to accommodating generation differences in the process of instructional design.

KEYWORDS

Educational technology research: Research focused on describing, predicting, understanding, and designing effective applications of technology to serve the goals of education, training, and performance support.

Generational differences: The theory that people born within an approximately 20-year time period share a common set of characteristics based on the historical experiences, economic and social conditions, technological advances, and other societal changes they have in common; the term first came into popularity in the 1960s when it was used to distinguish the rebellious Baby Boomer Generation from their parents.

Instructional design: The systematic process of analyzing, designing, developing, implementing, and evaluating instruction; also known as instructional systems design.

INTRODUCTION

Generational differences, especially the differences between generations defined variously as the Baby Boom Generation, Generation X, and the Millennial Generation, are widely discussed in the popular press as well as in a few scholarly publications. Business entrepreneurs as well as social pundits have speculated that the various generations of students enrolled in today's higher education institutions as well as the different generations of employees in the corporate workplace require a different approach to education and training. Extensions of this speculation are that instructional designers should take generational differences into account when developing instruction and that generational differences represent a meaningful variable for research designed to examine the differential efficacy of various applications of educational technology. The purpose of this chapter is to review the research and popular literature that support (or fail to support) this speculation.

Definitions of Generations

The nomenclature used to label various generations is not standardized because the different researchers and consultants exploring and writing about generational differences have come up with a variety of different names to label the specific generations. In addition, there is significant disagreement among the various authors about which span of years should be encompassed within any one generation. Table 25.1 presents a comparison of the different labels given to various generations as well as the different chronological schemes used to assign people born in any given year to one of the generations defined by the sources listed in the first column. As illustrated in the table, some authorities state that Generation Y workers were born as early as 1978 (Martin and Tulgan, 2002), whereas others (Howe and Strauss, 2000) have established a start date as late as 1982. Interestingly, both of these sources (Howe and Strauss, 2000; Martin and Tulgan, 2002) define the end date for Generation Y as 2000. The focus of this review is on the three middle generations (Boomer, X, and Millennial), because members of these three generations will be in higher education and the workforce over the next 15 years. For purposes of this review, the generations will be labeled and delineated as illustrated in Table 25.2; however, other synonymous terms for the three major generations are used in various sections of this review, especially when referring to specific literature resources that employ alternative terms.

Do Generations Really Differ?

There is relatively little consensus of opinion and scholarship about whether generational differences exist that are worth taking into consideration in the workplace, colleges, and universities, and other con-

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TABLE 25.1
Generational Labels and Dates Reported in Different Sources

Source	Labels				
Howe and Strauss (2000)	Silent Generation (1925–1943)	Boom Generation (1943–1960)	13th Generation (1961–1981)	Millennial Generation (1982–2000)	—
Lancaster and Stillman (2002)	Traditionalists (1900–1945)	Baby Boomers (1946–1964)	Generation Xers (1965–1980)	Millennial Generation; Echo Boomer; Generation Y; Baby Busters; Generation Next (1981–1999)	—
Martin and Tulgan (2002)	Silent Generation (1925–1942)	Baby Boomers (1946–1960)	Generation X (1965–1977)	Millennials (1978–2000)	—
Oblinger and Oblinger (2005)	Matures (<1946)	Baby Boomers (1947–1964)	Gen-Xers (1965–1980)	Gen-Y; NetGen; Millennials (1981–1995)	Post-Millennials (1995–present)
Tapscott (1998)	—	Baby Boom Generation (1946–1964)	Generation X (1965–1975)	Digital Generation (1976–2000)	—
Zemke et al. (2000)	Veterans (1922–1943)	Baby Boomers (1943–1960)	Gen-Xers (1960–1980)	Nexters (1980–1999)	—

TABLE 25.2
Generational Labels and Dates

Label:	Mature Generation	Boom Generation	Generation X	Millennial Generation	Generation Z
Date:	1925–1945	1946–1964	1965–1980	1981–2000	2001–present

texts. For starters, as noted above, notable differences can be found in the labels used for the generations by different researchers and experts as well as across the spans of years used to delineate the different generations. In addition, Lancaster and Stillman (2002), among others, have made a distinction between people born on the edges of various generational spans and those caught between two generations by labeling them *cuspers*. Lancaster and Stillman (2002) maintained that the Traditionalist/Baby Boom cuspers were born between 1940 and 1945, Baby Boom/Generation X cuspers were born between 1960 and 1965, and the Generation X/Millennial cuspers were born between 1975 and 1980. The existence of cuspers further limits the generalization of generational traits to individuals based on their categorization with regard to generation.

Despite the lack of consistency in nomenclature and chronology, most authorities agree that a great deal of variance exists among the distinguishing characteristics within any given generation; thus, it is inadvisable to assume that if a person was born in 1985 then that person would have most of the characteristics of a Gen Y person or that someone born in 1960 (and thus a late Boomer) would be not as technologically sophisticated as a person born into Gen X or the Millennial Generation. In other words, it is definitely unjustified to make assumptions about any one individual based on that person's membership in a chronological generational cohort.

Indeed, birth years are only one factor to consider in distinguishing among generations, and a relatively minor one at that. Instead, most experts have argued that generations are shaped much more by history than by chronological dates. According to Howe and Strauss (2000), three attributes that more clearly identify the nature of a generation than years of birth are:

- *Perceived membership*—The self-perception of membership within a generation that begins during adolescence and coalesces during young adulthood
- *Common beliefs and behaviors*—The attitudes (toward family, career, personal life, politics, religion, etc.) and behaviors (choices made in regard to jobs, marriage, children, health, crime, sex, drugs, etc.) that characterize a generation

- *Common location in history*—The turning points in historical trends (e.g., from liberal to conservative politics) and significant events (e.g., the Vietnam War) that occur during a generation's formative years (adolescence and young adulthood)

Many of the theories and conclusions about generation differences reported in popular books such as those written by Howe and Strauss (2000) as well as the information found in research papers are based on survey data collected from young people from middle and upper middle socioeconomic groups. No national surveys related to generational differences that cut across the full range of socioeconomic status (SES) groups can be found in the literature. In addition, the majority of the research papers and other literature sources are focused on people who will enter colleges and universities and eventually pursue white-collar or knowledge-worker careers. Virtually no literature can be found that specifically addresses the generational differences among those who will not enter higher education or who are more likely to assume blue-collar jobs. In addition, the literature is remarkably ethnocentric, taking a perspective that ignores generational differences in cultures other than those associated with Western capitalism.

As an example, a survey conducted by Universum Communications (see http://www.universumusa.com/) involved 37,000 "soon-to-graduate college students of the millennial generation" (Stone, 2006, p. 1) from 207 colleges and universities in the United States. According to the survey conducted in the spring of 2006, the career goals of today's Net Gen college graduates are "to balance their personal and professional life (59 percent), pursue further education (46 percent), build a sound financial base (32 percent), and contribute to society (27 percent)." Whether these types of career ambitions would surface among non-college workers in the same Millennial cohort has not been addressed, nor have researchers investigated the ambitions of people in developing countries by generational membership.

The most frequently cited sources for issues related to generational differences are the works of Neil Howe and William Strauss, authors of a series of popular books that includes:

- *Generations: The History of America's Future, 1584 to 2069*
- *13th Gen: Abort, Retry, Ignore, Fail?*
- *The Fourth Turning, Millennials Rising: The Next Great Generation*
- *Millennials Go to College: Strategies for a New Generation on Campus*
- *Millennials and the Pop Culture*

Their most controversial projection is that the Millennial Generation will be the most successful generation since the so-called greatest generation that fought World War II. Howe and Strauss (2000, p. 4) predict a rosy future for Generation Y:

> As a group, Millennials are unlike any other youth generation in living memory. They are more numerous, more affluent, better educated, and more ethnically diverse. More important, they are beginning to manifest a wide array of positive social habits that older Americans no longer associate with youth, including a new focus on teamwork, achievement, modesty, and good conduct.

Secondary sources such as Forrester Research, an independent technology and market research company, have extrapolated from Howe and Strauss and other pollsters to make optimistic conjectures about the work habits of Generation Y (Schooley, 2005, Executive Summary):

> The "Millennials"—born between 1980 and 2000—have an innate ability to use technology, are comfortable multitasking while using a diverse range of digital media, and literally demand interactivity as they construct knowledge. Millennials lack the workaholic drive of their burned-out predecessors, but they compensate by using many technologies—often simultaneously—to get the job done quickly and have a personal life as well.

Of course, some critics take issue with such optimistic predictions, especially with the generalizations made from limited survey data by Howe and Strauss. Brooks (2000, p. 1), a reviewer for *The New York Times*, wrote:

> Now if you're going to get through this book, you can't hurl it against the wall every time Howe and Strauss make a huge generalization about an entire age category, because you'll either knock down your house or tear your rotator cuff. This is not a good book, if by good you mean the kind of book in which the authors have rigorously sifted the evidence and carefully supported their assertions with data. But it is a very good bad book. It's stuffed with interesting nuggets. It's brightly written. And if you get away from the generational mumbo jumbo, it illuminates changes that really do seem to be taking place.

O'Neill (2000; see also http://www.millennialsrising.com and www.fourthturning.com) also criticized Howe and Strauss:

> This latest book, like the others, mixes statistics from responsible data-collectors such as the Institute for Social Research with results from scientifically unrepresentative surveys of 200 high schoolers in Virginia and from postings on their websites.

Twenge (2006, pp. 6–7) criticized the optimistic conclusions drawn by Howe and Strauss:

> My perspective on today's young generations differs from that of Neil Howe and William Strauss, who argue in their 2000 book, *Millennials Rising*, that those born since 1982 will usher in a return to duty, civic responsibility, and teamwork. Their book is subtitled *The Next Great Generation* and contends that today's young people will resemble the generation who won World War II. I agree that in an all-encompassing crisis today's young people would likely rise to the occasion – people usually do what needs to be done. But I see no evidence that today's young people feel much attachment to duty or to group cohesion. Instead, as you'll see in the following pages, young people have been consistently taught to put their own needs first and to focus on feeling good about themselves. This is not an attitude conducive to following social rules or favoring the group's needs over the individual's. …Our childhood of constant praise, self-esteem boosting, and unrealistic expectations did not prepare us for an increasingly competitive workplace and the economic squeeze created by sky-high housing costs and rapidly accelerating health care costs. After a childhood of buoyancy, GenMe is working harder to get less.

It is difficult to find the details about the surveys upon which most of the popular books about generational differences are based. By contrast, Howe and Strauss (2000), authors of *Millennials Rising,* do provide information about their surveys on the companion website for their book at: http://www.millennialsrising.com/. They report that a total of 202 teachers and 655 students from the class of 2000 completed the surveys upon which their book is based. Some critics have suggested that the fact that all the surveys were conducted in Fairfax County, Virginia, an affluent suburban area just outside Washington, D.C., limits the generalizability of the optimistic conclusions that Howe and Strauss have drawn to less affluent areas of the country. Howe and Strauss have defended their results as follows (http://www.millennialsrising.com/survey.shtml):

> Comprising the western suburbs of Washington, D.C., Fairfax County (with a total population of one million, including 170,000 school-age kids) has one of the largest

TABLE 25.3
Generational Differences on 12 Criteria

Views toward	Boomers	Gen Xers	Millennials
Level of trust	Confident of self, not authority	Low toward authority	High toward authority
Loyalty to institutions	Cynical	Considered naive	Committed
Most admire	Taking charge	Creating enterprise	Following a hero of integrity
Career goals	Build a stellar career	Build a portable career	Build parallel careers
Rewards	Title and corner office	Freedom not to do	Meaningful work
Parent–child involvement	Receding	Distant	Intruding
Having children	Controlled	Doubtful	Definite
Family life	Indulged as children	Alienated as children	Protected as children
Education	Freedom of expression	Pragmatic	Structure of accountability
Evaluation	Once a year with documentation	"Sorry, but how am I doing?"	Feedback whenever I want it
Political orientation	Attack oppression	Apathetic, individual	Crave community
The big question	What does it mean?	Does it work?	How do we build it?

Source: Debard, R.D., in *Serving the Millennial Generation: New Directions for Student Services*, Debard, R.D. and Coomes, M.D., Eds., Jossey-Bass, San Francisco, CA, 2004, pp. 33–45. With permission.

and most renowned school systems in the nation. Its student population is ethnically diverse—67 percent Caucasian, 13 percent Asian, 10 percent Hispanic, 8 percent African-American, and 3 percent other. Three of every ten students live in homes where a language other than English is spoken. Though Fairfax County is relatively well-to-do, with a median household income nearly twice the national average, eighteen percent of all students are eligible for free or reduced-price school lunches, nine percent live in households with annual incomes under $25,000, and five percent live beneath the official poverty line.

Whereas Howe and Strauss have focused on high-school students, others have focused their generational research on higher education students. In 2005, Diana G. Oblinger, Vice President of EDUCAUSE, a non-profit organization focused on improving the application of information technology in higher education, and James L. Oblinger, Chancellor of North Carolina State University, coedited a book titled *Educating the Net Gen* (see http://www.educause.edu/educatingthenetgen). The editors and the various authors of the chapters in this book argue that the current generation of students entering higher education has information technology skills that exceed those of the faculty members who will be teaching them, a trend that demands significant changes in the way that programs, courses, and learning environments are designed and implemented. Oblinger and Oblinger (2005, p. 2.5), however, admitted that the technological sophistication of today's Net Gen students may be somewhat superficial:

Having grown up with widespread access to technology, the New Gen is able to intuitively use a variety of IT devices and navigate the Internet. Although they are com-

fortable using technology without an instruction manual, their understanding of the technology or source quality may be shallow.

Debard (2004) has summarized the values of Boomers, Gen Xers, and Gen Yers that he thinks have implications for higher education administrators and faculty (see Table 25.3); for example, Debard maintained that members of the Millennial Generation have high trust in authority and are primarily rewarded by work they consider meaningful.

Although it is obvious that some in higher education are taking generational differences seriously, others view efforts to adjust teaching and other campus activities to the needs and preferences of the new generation of students with skepticism. Academic critics of optimistic predictions about the Millennial Generation may be closer to the realities of higher education challenges today than pollsters and pundits such as Howe and Strauss (2000). In 2006, *The Chronicle of Higher Education* published a special supplement focused on the relationship between school and college. The cover of the March 10, 2006, supplement reads as follows:

The facts are stunning. More than 40 percent of students arrive on college campuses needing remedial work. Only about half of the high school graduates who enter college have pursued a college-preparatory curriculum. Colleges and universities spend billions of dollars a year trying to bring those unprepared students up to speed. But most of those institutions play only a minor role in the movement to reform the schools. The whole nation is suffering as a result. America is fast losing its lead in critical fields.

A similarly dismal picture of the lack of preparation that America's students entering colleges and universities today exhibit was presented by Hersh and Merrow (2005) in a two-hour PBS television special and book that have the same title, *Declining by Degrees: Higher Education at Risk*. The book and video present interviews and extensive data that undermine the argument that the Millennial Generation is well prepared and motivated to succeed in higher education.

Taking an innovative approach to generational research, Twenge (2006) presented convincing evidence that most of today's American young people (which she labels Generation Me or GenMe) have been raised to think that they will be highly successful, even stars, although the reality is that they will find it more difficult than ever to get into and afford the best colleges, find a high-paying and personally rewarding job, and buy a decent home. Whereas most other generational researchers have taken a cross-sectional approach to their research wherein they distribute surveys to or conduct interviews with members of different generations at the same point in time, Twenge (2006) has painstakingly analyzed the results of studies that involved school children, adolescents, and college students completing well-designed, validated questionnaires in the 1950s, 1960s, 1970s, 1980s, 1990s, and today. This enabled her to compare, for example, the attitudes of the Baby Boomer Generation expressed when they were adolescents with the attitudes of GenMe expressed during their adolescence. A sample of her findings derived from data collected from 1.3 million young Americans since the 1950s include:

- In 2002, 74% of high-school students admitted to cheating whereas in 1969 only 34% admitted such a failing (p. 27).
- In 1967, 86% of incoming college students said that "developing a meaningful philosophy of life" was an essential life goal whereas in 2004 only 42% of GenMe freshmen agreed (p. 48).
- In 2004, 48% of American college freshmen reported earning an A average in high school, whereas in 1968 only 18% of freshmen reported being an A student in high school (p. 63).
- In the 1950s, only 12% of young teens agreed with the statement "I am an important person" whereas by the late 1980s, 80% claimed they were important (p. 69).
- In the 1960s, 42% of high-school students expected to work in professional jobs, whereas in the late 1990s 70% of high schoolers expected to work as professionals (p. 78).

- In a recent poll, 53% of GenMe mothers agreed with the statement that a person's main responsibility is to themselves and their children rather than making the world a better places, whereas only 28% of Boomer mothers agreed (p. 78).

Turning to the corporate world, a veritable cottage industry has sprung up around the theory that managers should attend to generational differences and make changes to their management styles and other business practices accordingly. Among the major providers of consulting services focused on generational differences are:

- Eric Chester (2002), author of *Employing Generation Why?* (http://www.generation-why.com/)
- Lynne Lancaster and David Stillman (2002), authors of *When Generations Collide* (http://www.generations.com/)
- Carolyn Martin and Bruce Tulgan (2002), authors of *Managing the Generational Mix* (http://www.rainmakerthinking.com/)
- Claire Raines (2003), author of *Connecting Generations: The Sourcebook for a New Workplace* (http://www.generationsatwork.com/)

Summing up generational differences at work and the implications for corporate business managers, Lancaster and Stillman (2002) also described a set of distinguishing characteristics among the three generations of interest in this review (see Table 25.4). Unfortunately, as with the predictions made by Howe and Strauss (2000), little substantive research backs up the generational distinctions that Lancaster and Stillman (2002), Chester (2002), Martin and Tulgan (2002), and Raines (2003) make for managers and trainers in the corporate world.

DISCUSSION

One of the most frustrating aspects of the research focused on cognitive, affective, and psychomotor differences among the Boomer, X, and Millennial generations is that for the most part it is based on small, highly selective surveys rather than national datasets that cut across important variables such as socioeconomic status and level of education. Some critics have been especially critical of the data used by Howe and Strauss (2000) for making their optimistic predictions about the Millennials, maintaining that their data are

TABLE 25.4
Lancaster and Stillman's Generational Differences

Factor	Baby Boomers	Generation Xers	Millennial Generation
Attitude	Optimistic	Skeptical	Realistic
Overview	They believe in possibilities, and often idealistically strive to make a positive difference in the world. They are also competitive and seek ways to change the system to get ahead.	The most misunderstood generation, they are very resourceful and independent and do not depend on others to help them out.	They appreciate diversity, prefer to collaborate instead of being ordered, and are very pragmatic when solving problems.
Description	Numbered at 80 million, the largest of the groups, Boomers were born between 1946 and 1964. They were influenced by Martin Luther King, JFK, Gloria Steinem, and The Beatles. Places such as the Hanoi Hilton, Woodstock, and Kent State resonate for this group. Television changed their world dramatically. In general, they can be described as optimistic. This was the generation that believed anything was possible—that they really could change the world.	Born between 1965 and 1980, this relatively small (46 million) segment of the workforce saw the likes of Bill Clinton, Al Bundy, Madonna, Beavis and Butthead, and Dennis Rodman make headlines during their formative years. Their world shape changed to include the former Soviet Union, Lockerbie, Scotland, and the Internet—in fact, this is the generation that, more than any other, is defined by media and technology. For Gen-Xers, the watchword is skepticism—this group puts more faith in the individual, in themselves, than in any institution, from marriage to their employer.	The youngest members of what will be the next Boomer wave, some 76 million Millennials were born between 1981 and 1999. Although they are just starting to trickle into the workforce, this group grew up with everybody from Prince William to Winky Tinky, Felicity, Marilyn Manson, Venus and Serena Williams, and Britney Spears. They have already lived through Columbine, the Columbia Space Shuttle disaster, and September 11. Stillman and Lancaster describe this group as realistic, confident, and pragmatic. Raised by optimistic Boomers, Millennials feel empowered to take positive action when things go wrong.
Work habits	They have an optimistic outlook. They are hard workers who want personal gratification from the work they do. They believe in self-improvement and growth.	They are aware of diversity and think globally. They want to balance work with other parts of life. They tend to be informal. They rely on themselves. They are practical in their approach to work. They want to have fun at work. They like to work with the latest technology.	They have an optimistic outlook. They are self-assured and achievement focused. They believe in strong morals and serving the community. They are aware of diversity.

Source: Adapted from Lancaster, L.C. and Stillman, D., *When Generations Collide. Who They Are. Why They Clash. How to Solve the Generational Puzzle at Work*, Collins Business, New York, 2002 (excerpted from D'Addono, 2004).

primarily drawn from interviews and focus groups involving young people, conducted at times in the presence of their parents. Furthermore, they are criticized that their convenience samples have largely been drawn from wealthy suburbs in Northern Virginia near Washington, D.C., where the authors themselves live. Critics maintain that the research conducted by Howe and Strauss does not reflect regional differences sufficiently, much less issues related to socioeconomic status, race, culture, and other important factors.

Regardless of whether the survey samples are representative of the general population of the United States, it is important to remember that the data from these surveys are all based on self-reports rather than behavioral observations or other measures. In addition, the vast majority of the cases presented in the popular books about this topic are anecdotal in nature, frequently reflecting stereotypes reported in the news or represented in popular media. For example, television programs such as NBC's *Dateline*, CBS's *60 Minutes*, and ABC's *20-20* regularly feature stories about generational differences such as the impact of the Baby Boomers' pending retirement on younger generations or the phenomenon of "helicopter parents" who hover over their Millennial children.

Speaking about what would become known as the Baby Boomer Generation in 1959, Clark Kerr, President of the University of California at Berkeley said that "employers are going to love this generation. …They are going to be easy to handle. There aren't going to be any riots" (quoted in Manchester, 1974). Kerr's naïve optimism about the Baby Boomers illustrates the danger of predicting the behavior of future generations. Many members of the Baby Boomer Generation protested, and even occasionally rioted, about civil rights, the Vietnam War, feminism, and the environment (Gillon, 2004). Arguably, the optimistic predictions made about the Millennials by Howe and Strauss (2000) and others may be just as mistaken as Kerr's errant prophecy.

Clearly, more rigorous research is needed to test whether the generational differences described by Howe and Strauss (2000), Lancaster and Stillman (2002), and others hold up when specifically looking at people living in the lower middle and lower socioeconomic groups, especially with respect to the more than 35 million American living below the poverty line. Race and gender are other individual differences that most of the researchers and self-professed authorities represented in the generational literature address inadequately. In addition, research about generational differences in other cultures, if it has been done at all, cannot be found in English language publications.

The best contemporary research on this topic comes from Twenge (2006), who devotes considerable attention to race and gender, although unfortunately she also largely ignores socioeconomic status. With respect to race, her analysis of numerous studies conducted between the 1950s and today led her to the conclusion that GenMe "will continue the shift toward equality across races" [and] "that race will become less important as a defining characteristic" (p. 214). With respect to gender, she predicted that women will soon be the majority of young professionals such as doctors and lawyers whereas engineering and physics "will remain majority male" (p. 215).

Generational differences are weak as a researchable variable in a manner similar to learning styles. A recent review of the learning styles literature conducted in England (Coffield et al., 2004) throws grave doubt on the validity and utility of employing learning styles as a basis for accommodating students of any generation. The reviewers found little rigorous scientific support for the very existence of the more than 70 learning styles models reported in hundreds of published studies from the educational and psychological research literature. According to Coffield et al. (2004), even the most widely studied models have not held up to scrutiny. The same can be said of the vast majority of scholarship focused on generational differences.

CONCLUDING REMARKS

The bottom line on generational differences is that educational technology researchers should treat this variable as failing to meet the rigor of definition and measurement required for robust individual differences variables. The gross generalizations based on weak survey research and the speculations of profit-oriented consultants should be treated with extreme caution in a research and development context. Twenge's (2006) work appears to provide the most solid foundation for distinguishing between two major generations: the large Baby Boomer Generation that was born before 1970 and Generation Me that was born after 1970.

That said, there may be merit in examining the preferences of today generation of college students and workers for instructional designs that utilize video games, instant messaging, podcasts, and other cutting-edge technologies in higher education and the workplace; for example, there is growing evidence that video games do more good than bad with respect to cognitive outcomes (Gee, 2003), a finding that some still find heretical. Today's younger university students and workers have spent large amounts of their free time playing video games, and survey results indicate that today's students and workers alike prefer to be engaged in learning via games than by traditional classroom instruction. Nonetheless, similar to generational differences, this is an area in need of more substantive research for it to be assumed. It is recommended that design-based research approaches would be most amenable to future inquiry in this area because such approaches seek to solve real-world problems related to teaching, learning, and performance support as well as to identifying reusable design principles (van den Akker et al., 2006). Both are sorely needed at the intersection of generational differences and educational technology.

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* Indicates a core reference.