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Millennials' Expectations Regarding Technology Use in Higher Education: Implications for Business Educators

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ABSTRACT

Business educators are increasingly using Web 2.0 technologies as communication tools and in course design. What's largely been missing in discussions of Web 2.0 educational technologies and their adoption among faculty is the perspective of the students themselves. The study reported here investigated student use of Web 2.0 technologies and their expectations for faculty use of the same tools for educational purposes. Findings are based on a survey of over 1700 college-bound high school students who responded to questions about their educational experience with Web 2.0 technologies and their expectations for university faculty. Findings demonstrate that Millennials are connected and mobile, and fully expect university faculty to create hybrid learning experiences that provide content and activities on a digital platform to complement those held in traditional classrooms. Business educators are encouraged to incorporate multiple forms of digital communication when communicating with students and link the use of less familiar technologies such as wikis to students' job-related goals.

Keywords: Millennials, Web 2.0 educational technologies, Social media, Student expectations

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BACKGROUND

Reaching and engaging today's learners, the Millennials, is recognized as one of education's top five challenges (EDUCAUSE, 2011). Business educators are increasingly responding to this challenge by incorporating Web 2.0 educational technologies such as blogs, wikis, and social networks as communication tools and in course design (Granitz & Koernig, 2011). What's largely been missing in discussions of Web 2.0 educational technologies and their adoption among business faculty is the perspective of the students themselves. The study reported here investigated student use of Web 2.0 technologies and their expectations for faculty use of the same tools for educational purposes. The findings demonstrate that Millennials are connected and mobile and fully expect university faculty to create hybrid learning experiences that utilize digital tools. Past research has focused on the learning outcomes which can be achieved in business education with the use of such tools (e.g., Tuten, 2011). The results of this study suggests that utilizing such tools also aids in business educators' abilities to meet the expectations of students while also pushing students to experience new technologies.

Educators have been planning for and managing their relationships with Millennials and their 'helicopter parents' for quite some time now, making shifts to online learning environments, collaborative projects, simulations and other action-learning approaches, and reflection-oriented assignments (Matulich, Papp, & Haytko, 2008). These techniques were thought to bridge the gap between faculty teaching styles and Millennial learning styles, enabling faculty to respond to the unique needs of Millennial students. A decade ago, Howe and Strauss (2000) warned educators of the learning idiosyncrasies of Millennials describing them as sheltered, narcissistic, easily stressed, and ill-equipped to make decisions sans-parents. Millennials were also thought to feel confident in their own abilities, to be socially-oriented, and to prefer clear instructions. According to Pew Internet & American Life Project's *Millennials: A Portrait of Generation Next* (2010), they outpace all other Internet and mobile users. They are more likely to have their own social networking profiles, to connect wirelessly from home or work, and to post videos of themselves. They are more likely than any other generation to text, sending or receiving more than 20 texts per day. For instance, 73% of wired teens use social networking sites while 47% of online adults do so. The *Social Media and Young Adults* report (Lenhart, Purcell, Smith, & Zickuhr, 2010) from Pew revealed that mobile phone ownership is just under 75% for high school students and 93% for young adults aged 18-29. Among teens, 69% own a laptop computer and 93% use the laptop to access the Internet wirelessly. Importantly, the *Teens and Mobile Phone* report (Lenhart, Ling, Campbell, & Purcell, 2010) found that 27% of teens use their mobile phones to go online. This figure was higher for older teens; 34% of 17 year olds used their phones to access the Internet. This figure is also higher for teens on their own phone plan, 39% of which used their phones for Internet access. These mobile phone users check and send email, visit social networking sites, and search online via their phones. Thus, not only are Millennials the most active generation online, they also have the most mobility in their access.

Young (2009) explained the need for students to exhibit concrete technological skills in order to succeed in the workplace. Students, faced with a competitive job market, will

want to become “technocompetent,” and business educators need to be current in technological applications if we are to ensure our students are able to do so (Clarke, Flaherty, & Mottner, 2001). Today’s business educators are faced with compelling reasons to incorporate social media into their course work. Innovators among educators are developing an awareness of the needs of this latest group of students and incorporating Web 2.0 technologies into course design. Kaplan, Piskin, and Bol (2010) explained their use of blogging as an outlet for student writing in the form of original posts and comments and for building reading comprehension skills. Cronin (2009) and Workman (2008) both utilized wikis in business courses as a tool for project-based learning. Munoz and Towner (2009) explored the use of Facebook, a social networking site, as an online hub for class discussions. Virtual worlds can host live classes (see Wood, Allan, and Solomon 2008) or serve as a context for project-based learning (Tuten 2009). In addition, there are many tools useful for creating and sharing multi-media files, collaborative research and note-taking, and project management (Tuten, Wetsch, and Munoz 2010). Educational benefits of these tools include the active contributions of “participant learners,” affordability, accessibility, and ease of use. As Armstrong and Franklin (2008) pointed out, Web 2.0 educational tools are a natural extension of the way students already use the Web and therefore can heighten student engagement, a special challenge for educators teaching Millennials. For business educators, there is the added benefit of preparing business students to meet future employer needs for digital knowledge (Young, 2009).

Yet, students are co-producers in their educations and those most accountable for their educational outcomes. Given the role they play, their expectations must also enter into the debate. With the evolution in Internet technologies, modes of communication have shifted from in-person, telephone, and email to social networking status updates, tweets, text messages, and instant messages. Understanding Millennial expectations may aid business educators in designing communication strategies and courses in ways that will meet the needs of these students.

Importantly, *using* technology and *learning with* technology are different. The levels of technology competence and comfort may vary substantially from student to student. The *Higher Education in a Web 2.0 World* (JISC, 2009) report charted the relative degree of comfort and familiarity university students had with the use of technology for coursework. Findings revealed students were comfortable and familiar with instant messaging, managing administrative needs online, and getting text messages for administrative updates. They were comfortable but felt unfamiliar using social networks to discuss coursework, posting questions online, and taking quizzes online. They were familiar but uncomfortable using social networks as a formal part of a course. Students were both unfamiliar and uncomfortable using and making podcasts, making wikis, and submitting assignments online.

Based on this assessment, we might conclude that, while students are using technology in their social lives, they may not expect to use the same technologies in the context of higher education. Yet, Parker and Burnie (2009) suggested that the technology expectations of students will alter the way professors teach, the way classrooms are constructed, and the way colleges deliver degrees. Thus we are left with the core question, what do Millennials expect? We address this question and provide implications for business educators based on a study of more than 1,700 college-bound high school students. The following section outlines the research methods.

METHODS

Data were collected to gather insight into Millennials' expectations for faculty use of educational technology using a web-based survey of college-bound high school students. The sample included members of the University Research Partners panel. The panel consists of college-bound high school students in the United States who opted into receiving information about colleges and universities. All current high school seniors in the panel were emailed invitations to participate in the study in the spring of 2010. The email message included a link to an online survey. The study was described as an investigation of Web 2.0 technology and how students use various tools to communicate with classmates, teachers, coaches, and counselors as well as college and university officials.

The survey explored students' use of different communication technologies, including frequency of use, purpose (for school or for fun), and specific activities (e.g., texting, searching, video-sharing). Respondents were asked to report on their use of various technologies via mobile phone access and computer access to provide a clearer picture of the use of mobile technologies among college-bound high school students. Questions also measured students' expectations for technology applications in the college curriculum and asked them to compare these expectations with their high school experiences.

Importantly, this study does not answer the question of whether such technologies offer improved learning outcomes. Instead, it specifically addresses questions about (1) the social technologies students are using personally—inside and outside the classroom, (2) the social technologies they have used within the context of their education thus far, and (3) what they expect from faculty in terms of course-related Web 2.0 technology use within the college curriculum.

A total of 1,708 students participated in the study, representing a response rate of 11.4%. The sample comprised participants from throughout the United States with 24.7% from the Northeast, 28.3% from the South, 16.9% from the Midwest and 30.1% from the West. Students of color made up 41.5% of the sample while 58.5% were white. The gender balance of the sample is skewed toward females (63.3% female, 36.7% male).

RESULTS

What are students' expectations regarding educational technology which, from their perspective, simply extends their everyday online experiences into the classroom? We begin by outlining our findings regarding students' use of Web 2.0 technology (and related communication tools). We then address the key question regarding their expectations for their university experience and relate these findings to the decisions for course design and communication facing business educators. Our results offer insights and some answers to this important question.

Web 2.0 Tools and Use Patterns

Based on the literature, we expected to find the participants to be heavy users of online activities using both computers and mobile devices. The frequencies reported in Table 1, which illustrates the percentage of students using specific tools (1) overall, (2)

for fun and enjoyment, and (3) for school projects and assignments, are consistent with previously published estimates. Internet access among college-bound and college students is ubiquitous, and the same is true for mobile phone access. Further, while most use social networks, games, videos, search, and IM from their computers, a minority participate in these activities using mobile phones.

Table 1: Student Use of Technology

Technology Used	% Using	% Fun	% School
Online search from your computer	89.6	74.9	88.3
Mobile phone (for calls)	82.0	79.5	36.0
Social network/media sites like Facebook, Twitter, etc. on your computer	78.5	76.8	20.8
Web-based applications (e.g., gaming, videos) on your computer	56.0	54.0	16.4
Instant messaging on your computer	43.0	41.4	13.7
Social network/media sites like Facebook, Twitter, etc. on your cell phone	22.2	20.6	2.7
Email on your mobile phone	18.0	14.9	11.7
Online search from your mobile phone	15.8	14.7	9.9
Instant messaging on your mobile phone	14.2	13.0	2.5
Web-based applications (e.g., gaming, videos) on your mobile phone	11.2	10.3	2.3

Participants also were asked about their use of websites, especially those that have a network component to them. The vast majority, 86.8%, reported having a profile on a social network, and 84.2% reported using Facebook; most (65.5%) have 100+ friends/connections within their networks. Other sites visited included YouTube, Pandora, MySpace, Photobucket, Twitter, Flickr, and DeviantArt. The majority reported using social networking sites at least daily, with 6.4% doing so hourly or more often, 36.8% using the sites several times a day, and 16.8% doing so at least once a day. Only 23.2% reported visiting networking sites less frequently than once a day, and only 95 of the 1,708 students surveyed indicated they “never” use social networking sites.

Web 2.0 Tools for Education-Related Communication

Participants reported using mobile phones (both calls and texting), emails, and social networks to interact with classmates, teachers, and coaches as shown in Table 2. For instance, about 20% reported using social networks to collaborate with other students on school assignments. Interestingly, there are patterns in what communication tools are used for each relationship type. Participants reported using primarily email (76.1%) to reach teachers with only 8.6% texting teachers and 5.5% reaching teachers via a social network, while 40% use email to reach coaches, 26% text coaches, 25.2% call coaches using a mobile phone, and 6.4% communicate with coaches via a social network. Email appears to be the clear standard for teacher-student interactions outside of class.

The pattern of communication channels used for different types of contacts is notable. Students are using texting and social networks to communicate with friends, email, texts, and mobile calls to reach coaches, but primarily email to reach teachers. The Pew report entitled, *Teens and Mobile Phones*, (Lenhart, et al., 2010) stated that 88% of teens with mobile phones text, some sending and receiving as many as 3,000 messages each month. Yet, our findings show texting is uncommon when communicating with teachers, and a secondary tool when communicating with coaches. It is important to note that the current study asked participants to explain *how they use* communication channels, but did not ask respondents to comment on their preferences for communication channels. Still, the question of what is used versus what would be preferred is a relevant one. Do students prefer to use email when contacting faculty or do they elect to use email because they believe it is the best option given a faculty member who may not text or use social networks? Students may select email as the primary option because that's the primary contact mode offered by the teachers. Perhaps the relatively small number of students contacting teachers via text, mobile phone, and social networks do so because teachers in those instances have indicated availability via those modes. If multiple (and more 'social') modes were offered, would students elect to use them rather than the more traditional email?

Table 2: Communication Channel Choice

Channel Used	With Teachers	With Coaches	With Classmates
Email	76.1%	40.0%	6.1%
Text	8.6%	26.0%	51.0%
Mobile phone call	5.2%	25.2%	12.2%
Social network	5.5%	6.4%	20.9%
Website	4.2%	1.6%	1.2%
Instant message	0.4%	0.8%	8.7%

Millennials are thought to be hyper connected via multiple channels of communication at any given time. To explore this, participants were asked about their preference for either a single channel or multiple channels when communicating with teachers about coursework. The results were mixed with 47.5% reporting no preference, 28.7% preferring a single channel, and 23.8% preferring multiple channels. Addressing this issue may be important for faculty as an increasing number of communication methods become available. For instance, faculty may at times post an announcement on Blackboard, send emails and email blasts, post status updates on Twitter, provide commentary and links to articles on a blog, and/or send messages on Facebook. The sheer quantity of channels makes it likely that exposure to messages may decrease even as opportunities to receive them increase.

Beyond communication tools, participants also reported using their computers and mobile phones for coursework in and out of the classroom. A full 65.2% of participants stated they use their mobile phones outside of class for completing school assignments and 25.4% use their phones to work on assignments *during* class. An underlying issue here is whether gadgets like PDAs, mobile phones, and netbooks will be used during class for coursework.

Expectations for College Faculty Use of Web 2.0 Educational Technology

After students reported type and frequency of their use of communication technologies, they were asked to report whether their high school teachers used a variety of different Web 2.0-related tools and whether they expected their college faculty to use the same tools when they entered the university setting. Table 3 displays the percentage of students whose high school teachers use each tool and the percentage of students who expect to see each tool used by college faculty in the classroom and/or for assigned coursework when they enter college.

Table 3: High School Teacher Use Compared to Expectations for College Faculty Use

Web 2.0 Technologies	% High School Teachers Currently Use	% Expect College Teachers to Use
Course/class websites*	55.1	74.3
Course management systems*	41.1	65.2
Online assignment modules*	25.4	53.2
Online discussion forums*	19.9	51.3
Social networking (e.g., Facebook)	13.9	16.4
Blogging*	11.0	18.1
Wikis	10.5	12.1
Streaming video*	8.4	23.2
Online lectures with video*	7.0	48.7
Online lectures with audio*	6.1	45.9
Instant messaging/text chat*	5.4	10.2
Podcasting*	5.4	19.1
Online meetings (video/audio enabled online meetings)*	2.2	24.1
Microblogging (e.g., Twitter)*	1.6	5.7
Social news (e.g., digg)*	1.6	7.4
Video chat*	1.3	11.1
RSS feeds*	1.2	6.2
Social bookmarking (e.g., Diigo, Delicious)*	1.1	4.3
Virtual meetings (avatar to avatar)*	0.9	8.3

*Significant differences at the .01 level

A z-test was used to test for significant differences between the current use by high school teachers and the expected use by college faculty members. Results revealed that college-bound high school students were more likely to expect college faculty to use email, course websites, course management systems, online assignments, online discussion forums, blogs and microblogs, streaming videos, online lectures, online

meetings and video chat, virtual meetings (avatar to avatar), social bookmarking and social news sites. There were no significant differences in their high school teachers' current use and their expectations for college teachers' use of social networking, texting, or wikis (notably three of the most prominent applications for educational technology). All other types of Web 2.0 educational technology showed higher expectations for faculty use than what students have experienced in high school. Students clearly anticipate much of their learning in college/university (beyond simple teacher-student communications) will take place online. The differences between percentages of students with high school teachers using technologies compared to expectations that college faculty will use technologies were substantially greater for the use of online course management systems, online assignment modules, online discussion forums, online lectures, blogging, streaming video and podcasting, and online meetings.

The differences between what students are experiencing in high school courses and their expectations (and lack thereof) are enlightening. The students entering our post-secondary institutions have high expectations regarding the use of technology in their course experiences overall and particularly for online course delivery and student-teacher interactions. Yet, the students also seem to anticipate that their experiences with social educational technologies like blogs, wikis, and social networks in high school reflect the experiences they will have when they enter college.

Perhaps the *Higher Education in a Web 2.0 World* (2009) report was correct in describing students as comfortable with many technology tools and activities socially that they do not as easily warm to academically. It is possible that students view Web 2.0 technologies as *their* tools and not only tolerate the gap between their experience and that of their teachers, but actually believe it is appropriate. There are several interpretations which can be made for these results. Given what is known thus far, one conclusion is that college-bound youth have not had sufficient experience with Web 2.0 educational tools to know what to expect in their college classes and may respond positively to tools with clear educational benefits (such as blogging and using wikis). At the same time, these students may feel that their personal social networks are just that – personal. They may expect that faculty will honor this personal space, rather than invade it. Even if these assumptions are correct, it is still likely to change in time—and perhaps in the not so distant future, students' experiences become more universally touched by Web 2.0 in high school and in college, and the tools become more easily applied by faculty.

CONCLUSIONS

Web 2.0 technologies are increasingly becoming part of our lives—at home, at work, and at school. What has been missing in the discussion of Web 2.0 educational technologies, and the needs of Millennial learners, is the views of the students themselves. This study sought to close this gap.

Students appear to perceive higher education as a hybrid learning environment, one that incorporates aspects of traditional and online learning models. This was reflected in the high proportion of participants who believed their university faculty would be providing material online—that is, including online lectures, interacting in discussions online, and holding online meetings. Though students are actively using social networks and other forms of social media in their personal lives for entertainment and communication, their expectations for the primary Web 2.0 tools with clear educational

applications (e.g., blogs, wikis, social networks, social bookmarks, and social news) were low. Only 16.1% expected university faculty to use social networks; just 18.0% anticipated faculty use of blogs, and 11.6% expected faculty to use wikis as part of their course design. Those expecting use of social news sites and social bookmarking sites were even fewer.

What does this mean for business educators? Our overarching goal as educators has always been one of inspiration—identifying, learning, and using the tools and activities that enable us to get the most from our students. The educational technologies made possible by Web 2.0 are surely among those that can serve faculty in pursuing this goal as evidenced by the business literature summarized earlier on the use of Web 2.0 technologies in the classroom (e.g., Granitz & Koernig, 2011). Knowing what students need and prefer is one component of instructional planning but so is understanding what tools and activities facilitate the learner’s comprehension of the subjects at hand. Business educators are tasked with a dual purpose when it comes to utilizing Web 2.0 technologies. We seek to use these tools to engage “wired” students but we also must prepare future marketers for careers that are increasingly focused on technology. For instance, some advertising agencies now seek to hire “creative technologists” rather than “creatives.”

There are limitations to the study. The participants were college-bound high school students who were members of a national panel. This sampling frame was chosen to reflect the incoming expectations for students and to do so on a national level. However, the results may differ from those that may have been produced by a study of incoming business students. Similarly, students responded as to their expectations of university faculty, rather than specifically for business faculty. Still, the benefits of accessing a national sample were deemed valuable and relevant for business educators.

In conclusion, this study offers business educators a glimpse into the expectations of their Millennial students. The findings suggest that students expect university faculty to create hybrid learning experiences that provide content and activities on a digital platform to complement those held in traditional classrooms. They do not have high expectations for faculty use of social educational technologies like wikis and social bookmarks. Engaging students may be more effective with such tools, but students will also need to hear how these technologies benefit them as they seek business careers (Clarke, Flaherty, & Mottner, 2001). Business faculty will need to apply educational technologies that aid in reaching Millennial students while ensuring business graduates are prepared to work in a Web 2.0 world.

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