

Challenges in IT Education relating to Generation Z students

Dr. Binh Tran (Corresponding author)
Assistant Professor
School of Science and Technology
Georgia Gwinnett College
Lawrenceville, GA, USA

Garfield Anderson
Program Director
Computer Sciences
Gwinnett Technical College
Lawrenceville, GA, USA

Abstract

This review examines generational differences between the Baby boomer, Generation Y, Millennial and Generation Z cohorts as well as explores the faculty-student relationship between the former and latter generations. This is important because the latest Generation Z poses challenges to technology unlike previous generations due to their innate ability to adapt and embrace it. Teaching and learning preferences are discussed, examined, and recommendations are presented as it relates to Information Technology undergraduate education for suggestions on how to deal with the current upcoming Generation Z cohort.

Keywords: post-millennial, generation Z, newest generation, technology generation, sharing generation

1. Introduction

Many factors influence successful learning outcomes for undergraduate education but one of the most prevalent is the faculty-student relationship. One of the biggest contributing factors that directly impact this relationship is the generational differences that exist between the faculty member and the generation of students. Each generation has unique factors and experiences that molds their way of thinking due to their life experiences and mentality regarding teaching and learning. The latest generation of students known as Generation Z and also dubbed the “Sharing Generation” has grown up in the world of technology which has become part of their lives making it ever more challenging for IT programs at academic institutions.

2. Generational conceptual framework

Generally in baccalaureate education there is a wide age gap that exists between faculty and their students. (Levit, 2015) The average age of Information Technology or Computer Science faculty is approximately 42.5 years old, whereas the average age of undergraduate students in the IT or CS major is approximately 23.5 years old. (Higa, 2016) Faculty average ages that are in the mid-40s would place them in the “Baby boomer” or “Generation Y” whereas the majority of students are at the end of the “Millennial” or the “Generation Z” classification. While it is extremely important not to categorize an entire generation of people certain general characteristics such as life experiences through external events can shape their mentality. This has led to some commonalities in morals, values, beliefs, attitudes, behaviors and perceptions of the world. For example the baby boomers being in a larger group tend to be more competitive whereas the Millennial and generation Z tend to be more technologically savvy due to being exposed to new technologies their whole lives. (McCrindle, 2016) These shared experiences also affect teaching and learning styles as well as preferences for each generation. Information Technology or Computer Science faculties are charged with creating a learning environment that is conducive to the students’ learning preferences while also meeting the learning outcomes of the curriculum.

2.1 Baby Boomers

To better understand the teaching and learning characteristics of a group, it is necessary to create a baseline. Most IT/CS faculty members are in the “baby boomer” generation. Baby boomers are those who were born approximately from the 1945 to 1960 and typically raised in an environment that is prosperous and focused on the traditional family nucleus. (Levit, 2015) This generation has over 80 million members and tends to be workaholics, service oriented, optimistic and desire personal gratification. Baby boomers were dependent on their educators to provide them the information and were typically in a traditional auditory lecture format. They were respectful of their teachers and understood that they were there to learn viewing their educators as vast resources of knowledge. Even though some are getting more familiar with technology this group typically views technology as a positive resource but not as a necessity and for some the learning curve is quite difficult. Learning for this group is typically about the “what” and “how” before the “why” making them more process oriented than outcome oriented.

2.2 Generation X

A smaller generation sandwiched between two bigger generations is Generation X that is composed of those born approximately between 1960 and 1980. The earlier members would be more similar to the previous baby boomers and the later members would be more similar to the subsequent millennial generation. Members of Generation X usually experienced a shift in societal values due to reduced adult supervision and higher parent divorce rates compared to the previous generation. As with the previous generation they were also respectful of their teachers and saw education as a privilege looking to their teachers as role models and mentors. In the United Kingdom, a 2016 study of over 2,500 office workers found that Generation X as the hardest-working employees and also for having the highest work ethics. Learning for this group also focuses on the “what” and “how” however, members born closer to the end of the 1970s and early 1980s start focusing on the “why”. Another study in 2015 reports that Generation X members are given credit for most startup companies in the United States and Canada compared to other cohorts. (Levit, 2015)

2.3 Generation Y (Millennials)

The millennial generation are those that were born approximately between 1980 and 2000 and was the most popular student population until the next Generation Z. With an increase in immigration this generation is the largest group in the nation’s history. This group represents a very culturally diverse demographic as 34% of millennials are minorities either black, Hispanic, Asian, or Native American. Many of them were raised in single parent households. They experienced the start of the technology .com boom and for many the .com crash. Generally millennials that are parents are very involved in their children’s lifestyles and participated in multiple activities such as sports, music and clubs. Due to the active participation of the parents educators have to not only meet the demands of the students but also that of the parents. This social economic shift makes Millennials view education as a right versus a privilege that their parents or previous generations did. This has started to cause a paradigm shift in education because metrics have to be changed to support this new learning mentality and as more and more Millennials start entering the workforce and becoming faculty and administrators in educational institutions new policies and practices are getting implemented to support higher retention and student success rates. (Brown, Dehoney & Millichap, 2015)

2.4 Generation Z

The latest generation born approximately 1995 to early 2000s make up the youngest and newest generation of students about to start undergraduate studies. This group which make nearly 25% of the U.S. population are “highly entrepreneurial, pluralistic, and determined to take charge of their own futures. (Levit, 2015) Compared to the Millennials said to be the most studied generation this generation Z label and research is just beginning. The earliest members are finishing up college and the later members are nearing the start of college. It is no surprise that this generation is the most technologically literate; however, contrary to some this generation of students sees higher education as extremely valuable and a requirement to be successful. Generation Z members are very entrepreneurial with nearly 15 percent of them already having their own business and up to an additional 22 percent plan to own their own business in the future. Generation Z students tend to have a sincere love for learning and thrive when challenged and are actively involved in their education. Empowered by the Internet they can be very independent and self-educating through popular websites such as YouTube and other online learning resources. (Anatole, 2013) They are also prepared to make their own decisions based on information they find differing from the Millennials, who typically rely more on friend and family. Information Technology or Computer Science students in this group tend to be extremely capable and in some cases may know more about a certain new technologies than their faculty. (Styring, 2015)

3.0 Faculty–student relationship

The faculty-student relationship is a complex one because it is a combination years of experience and upbringing that the faculty has along with the new thinking and biases of the student and his or her generation. This generation gap can lead to many challenges that neither the faculty nor the student can easily solve and in many situations requires one or more changes which neither is ready or willing to make. For example, a Baby boomer or Generation X faculty member usually likes to run the classroom in a more orderly fashion; however, a millennial faculty member may want to operate his or her classroom in a more relaxed peer setting. These differences make it quite a challenge for students who like to learn in one particular setting and not in the other. Generation Z students like to be involved in their own education and normally are more interactive so if they come across a more strict faculty member they may have a hard time concentrating and doing well in that course. If they are exposed to a more relaxed peer learning setting they may be more likely to succeed and retain the knowledge for subsequent classes. (Alderson, 2015)

Another example is in a class where older generation faculty usually deliver content via lecture auditory format. The faculty member grew up learning this way and many of the students do well with this delivery format; however, many Generation Z students prefer a more kinesthetic approach. If the faculty member is not willing to adapt then he or she will lose the attention of the students and in many situations have students who are definitely capable but not willing to try since they do not like the delivery format of the course content. Many faculty members have learned to adapt especially those of the Generation Y or millennial but this could lead to negative consequences for some of the learners who prefer the more traditional autocratic way instead of the more relaxed peer learning model. (Murphy, 2015)

As one can see the challenges are numerous and there is not a solution that is clear cut other than the fact that both the faculty and the student must be aware of their generational differences and then adapt to best fit the course, content and all parties involved. This can also apply to evaluation techniques migrating from more traditional tests and quizzes to other forms of assessment such as discussion, case studies, simulations and role-playing activities.

Then there is also the potential technology gap meaning the students may or think they may be more technologically knowledgeable than their faculty members which can be the case. If the students feel that education is inherently their right and that the faculty is there to serve them then faculty-student relationship can definitely be more strained than if they feel that education is a privilege. When the student starts to think they know more or can learn elsewhere then there is less incentive for them to continue to attend, pay attention and do well in the course especially if they are already lacking the respect for their faculty from the onset.

4.0 Generation Z challenges

Some of the challenges have already been discussed such as the mindset of the Generation Z students as it relates to their older generation faculty members. Generation Z's massive reliance on technology is another issue that faculty of all generations must deal with. When technology enhancements are made to the courses then both faculty and students may benefit; however, there could arise situations where the students can use and solve more technical problems than their faculty. This can even be more prevalent as it relates to new Information Technology majors where newer technologies come out daily and in some situations older generation faculty members adapt and adopt that technology slower than the students get exposed to or use it. (Alderson, 2015)

As technology improves there are mass resources available to everyone and since Generation Z rely on technology they are more likely to adapt and use online resources such as Lynda or YouTube for academic purposes. What this could mean is the Generation Z student may feel that attending classes is not important or required because they can obtain that information on their own and in some cases even be more up-to-date than attending the class. Speed of access really matters to Generation Z students and information overflow is not a problem so if they experience internet speed slowness or technical problems they may tune-out as they are easily distracted.

As mentioned earlier their reliance on technology can help them but also hurt them in ways where they are unable to perform simple tasks because they are more prone to just "Google" the answer. They are more likely to look for the quick answer even if that means the answer is inaccurate. This also can lead to Generation Z students lacking the development of critical thinking skills and when encountered with a word problem or one that they cannot put into Google will not be able to solve or even know where to start. In computer programming courses a common theme is this generation attempts to get to the end of the program without meeting all the requirements of the program. (McCrinkle, 2016)

Another challenge especially in Information Technology is that there is a widening gap of skillsets between what they formally learn in school compared to those required of them in the industry. This can be the result of faculty not willing to adapt or just unaware of the constant changes in an ever changing industry. Academic proposals and curriculum changes require time and are not as fluid as industry changes so some Generation Z student being aware of industry requirements may feel their education is not directly tied to finding a job in the field they like resulting in less academic success.

Teaching strategies have to shift for this new generation of students because traditional Sage-on-the-Stage may no longer be effective. Guide-on-the-Side strategies such as active learning and flipped classrooms have attempted to address this issue with some success but keeping up with this constant Generation Z learning pace may not be achievable. This makes way for other non-traditional delivery methods such as hybrid classes or

online classes where the Generation Z student can move at their own pace but those also bring their own set of challenges.

5.0 Recommendations

As one can see there is myriad of challenges when dealing with this latest Generation Z cohort but there is some light at the end of the tunnel. The first step is to understand how they learn, how they think and how they think about their faculty. Even though this is not an easy task and definitely can be an idea for unlimited future research starting to solve this problem starts there. Recommendations include knowing what learning methods they prefer and changing as necessary, embedding the technology tools, motivation through association and facilitating their innate willingness to learn.

A study by Northeastern University reports that over 80 percent of current high school students want to go to college and have their own expectations and preferred learning environments. Faculty from all generations must know this and use this information to prepare and plan their courses accordingly. Generation Z students do not adapt well to the Sage-on-the-Stage as much as faculty who act as facilitators or guides helping and showing them how to do something rather than what that is. This change means faculty must also change their teaching methods to more visual and kinesthetic versus auditory and in many cases must lessen their control of the class. (Styring, 2015)

Generation Z students reach for a smart device every 7 minutes and use technology as the primary method of communication. Faculty can embrace this by using the learning management systems and embedded tools to integrate information for a course rather than the traditional textbook and notes methods. Faculty can make use of technology tools such as Skype to hold office hours or short lecture sessions. Faculty can create interactive videos and post them on YouTube or other protected websites so students can view at their leisure using whatever smart device they choose. (Higa, 2016)

Generation Z students want to be creative but many need some motivation. They want to know why what they are doing is useful and how can that help them in the future. This can definitely a challenge in many subjects but in Information Technology this should be rather simple especially since they are all already technologically literate. What faculty must do is to make sure they bridge this gap to make the connection for the students and in doing so they can see more engagement and success. This process of motivation by association allows them to see the benefits of what they are learning to their view of the real world and fosters self-motivation instead of external motivation.

Facilitating their innate willingness to learn means that faculty and administrators need to take step back and allow flexibility making use of the technology and allowing them to apply the technology, understand why it is important not just because we tell them but for them to see why it is important for themselves. Allowing them to perform tasks allows them to understand the concepts rather than just lower level cognitive skills such as memorizing and regurgitation. Education is moving towards a more student centered learning environment and even though some of us that are from the older generation feel otherwise must learn to adapt and embrace this if we are to successfully educate this latest generation of students.

6.0 Further Research

Research on Generation Z is still in its infancy but this review brings up challenges that faculty and administrators face when dealing with this latest cohort of students. Certain strategies and recommendations for allowing the faculty-student relationship to thrive and foster teaching and learning have been discussed.

Further research can be done to see if these recommendations really work and if so how many institutions are starting to adapt to these changes. Other strategies can be investigated to see if there are better ways to engage this latest cohort and also how many faculty and from what generation are willing to test and make these changes. It would also be important to look into any subsets of this group to see if there are divisions within the entire generation so research can be further done on those smaller groups.

Technology advancements have also allowed Learning Management Systems such as BrightSpace, Blackboard and Moodle to be more interactive allowing Generation Z students to be more aware of where they stand in their own educational path so studies about their effectiveness could also be a topic for further research.

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