Twelve tips for interfacing with the new generation of medical students: iGen

Sarah Lerchenfeldt, Stefanie M. Attardi, Rebecca L. Pratt, Kara E. Sawarynski and Tracey A. H. Taylor

Department of Foundational Medical Studies, Oakland University William Beaumont School of Medicine, Rochester, MI, USA

INTRODUCTION

Generational differences have long fascinated researchers. A breadth of research exists on the millennial generation, in which many of the current best practices in education are designed based on their distinctive characteristics. However, it is important to acknowledge that, as of 2020, many students from the millennial generation (Twenge 2006, p. 5) have graduated from higher education institutions. Many educators now have classrooms full of the next generation of students, born after 1994, known as iGen or Generation Z (Seemiller and Grace 2019, p. xix; Twenge 2017, p. 2). In most countries, medical school matriculation follows graduation from high school and therefore iGen already makes up the majority of students in health professions education programs. Even in America, where a 4-year degree is a prerequisite, over 30% of recent matriculants fell within the iGen range in 2017 and 2018, with the proportion increasing to nearly 70% in 2019 (AAMC 2019, p. 4).

Every generation has unique factors that shape the group’s collective characteristics. Different from the ‘space race’ and The Beatles that shaped the baby boomer generation, or the AIDS epidemic, the battle for reproductive rights and the fall of the Berlin Wall that shaped GenX, our newest matriculants have grown up with ubiquitous technology (Christensen et al. 2018). iGen members represent the first cohort of students in which technology has been present in all aspects of their lives. Since birth, they have been influenced by social media and wide-spread internet availability, leading to decreased face-to-face interactions and a desire for immediate access to information. Health professions educators should recognize the unique attributes of iGen students in order to foster student success and create a more positive learning environment. The following twelve tips examine the research-based distinctive characteristics of iGen students and highlight important concepts to consider when modifying current pedagogy to better support their needs. Incorporating these tips as an educator can promote lifelong learning and skill development for iGen students and empower this generation to thrive.

ABSTRACT

iGen, or Generation Z, is the newest generation of health professions students to enter the classroom. This generation represents the first cohort of students in which technology has been present in all aspects of their lives. Since birth, they have been influenced by the boom of social media and wide-spread internet availability, leading to decreased face-to-face interactions and a desire for immediate access to information. Health professions educators should recognize the unique attributes of iGen students in order to foster student success and create a more positive learning environment. The following twelve tips examine the research-based distinctive characteristics of iGen students and highlight important concepts to consider when modifying current pedagogy to better support their needs. Incorporating these tips as an educator can promote lifelong learning and skill development for iGen students and empower this generation to thrive.

KEYWORDS

iGen; Generation Z; medical education; teaching; generational differences

Twelve tips for interfacing with the new generation of medical students: iGen

Sarah Lerchenfeldt, Stefanie M. Attardi, Rebecca L. Pratt, Kara E. Sawarynski and Tracey A. H. Taylor

Department of Foundational Medical Studies, Oakland University William Beaumont School of Medicine, Rochester, MI, USA

Introduction

Generational differences have long fascinated researchers. A breadth of research exists on the millennial generation, in which many of the current best practices in education are designed based on their distinctive characteristics. However, it is important to acknowledge that, as of 2020, many students from the millennial generation (Twenge 2006, p. 5) have graduated from higher education institutions. Many educators now have classrooms full of the next generation of students, born after 1994, known as iGen or Generation Z (Seemiller and Grace 2019, p. xix; Twenge 2017, p. 2). In most countries, medical school matriculation follows graduation from high school and therefore iGen already makes up the majority of students in health professions education programs. Even in America, where a 4-year degree is a prerequisite, over 30% of recent matriculants fell within the iGen range in 2017 and 2018, with the proportion increasing to nearly 70% in 2019 (AAMC 2019, p. 4).

Every generation has unique factors that shape the group’s collective characteristics. Different from the ‘space race’ and The Beatles that shaped the baby boomer generation, or the AIDS epidemic, the battle for reproductive rights and the fall of the Berlin Wall that shaped GenX, our newest matriculants have grown up with ubiquitous technology (Christensen et al. 2018). iGen members represent the first cohort of students in which technology has been present in all aspects of their lives. Since birth, they have been influenced by social media and wide-spread internet availability. They were the first generation to be exposed to Wikipedia, YouTube, Facebook, and smartphones as children.

iGen students grew up experiencing social interactions differently than previous generations, in large part to the preponderance of social media, technology, and smartphone access across all demographics. They develop socially at a different rate than previous generations: as teens they were more likely to go out with their parents, less likely to date, and did not often apply for their driver’s license unless encouraged by their parents (Twenge 2017, p. 18–22, 25–28). During adolescence in the United States (where many of these studies have been published), many have never held a job or experienced scheduling and attendance requirements (Twenge 2017, p. 29–34). Increased screen time has caused many negative effects including problems with mental health, decreases in literacy and test scores, and difficulty with in-person classroom interactions (Twenge 2017, p. 63–64, 77–91). In addition, many have witnessed their parents struggle through an economic downturn (Seemiller and Grace 2017; Twenge 2017, p. 182), and they have always lived with the pressures of global terrorism (Bell 2013; Christensen 2018). In the United States, they have experienced school shootings and lockdown drills (Seemiller and Grace 2019, p. 16–25; Twenge 2017, p. 143–169). They have a desire and expectation for safety in many aspects of their life. As a result, iGen members may be cautious and pragmatic, a shift from the collaborative and confident Millennials (Seemiller and Grace 2017; Twenge 2017, p. 182).

Health professions educators welcoming iGen students into their classrooms seek to better understand these unique attributes. While the volume of critical content and skills that our students are required to master cannot be changed, it may be time to modify educational approaches to foster student success both inside and outside of the classroom. In the following twelve tips, we aim to further examine the unique attributes of iGen and highlight important concepts to consider as we re-examine the delivery of health professions curricula.
Tip 1
Support life skills development
iGen members tend to develop life skills at a slower rate when compared to previous generations. Many iGen members at the age of 18 resemble 14-year-olds of previous generations in terms of social and life skills (Twenge 2017, p. 40). This may be due to decreased responsibilities and independence during their formative years. Upon entering a health professions program, many iGen students are less prepared to face the potential challenges of independent living (Twenge 2017, p. 302). They are often learning to manage several responsibilities for the first time, including finances, meal preparation, home maintenance, and personal care. The first year of any health professions program is academically challenging for most students, but the challenge may be exacerbated for those needing to master essential life skills. As educators, we may need to provide extra support outside of the classroom, helping them master independent living. Non-credit life skills seminars became prevalent at post-secondary institutions to support millennials’ transitions from home to campus living (Wilgoren 1999). Offering experiences to improve skills in independent living may play an important role in iGen student academic success. Currently, the need for such offerings may be overlooked, particularly in countries where students are required to hold a previous undergraduate degree prior to medication school admission, such as Australia, Canada, New Zealand, the United Kingdom, and the United States. The private sector is beginning to produce life skills resources using online platforms (e.g. Adulting School 2020). Overall, addressing stressors of independent living may allow students to focus more on the academics of their health professions program.

Tip 2
Foster the development of time management skills
iGen students are often comfortable with defined tasks, but less so with managing their time to complete individualized or longitudinal curriculum requirements (Chicca and Shellenbarger 2018; Eckleberry-Hunt 2018). The tendency to lack time management skills may be directly related to a lack of work experience while in school (Twenge 2017, p. 29–34). For example, many students in this generation do not have enough experience balancing multiple responsibilities, such as school and a job simultaneously. As iGen students populate health professions classrooms, curricula should be assessed to identify points at which time management skills are a contributing factor to success. While faculty may feel that they are offering kindness by relaxing deadlines, in reality these actions may be counterproductive. Holding students accountable to hard deadlines can promote the development of time management skills. For instance, it may be helpful to segment assignments into scaffolded components, while keeping a hard deadline with each required step (Chicca and Shellenbarger 2018). Encouraging students to self-identify benchmarks as they work independently through larger projects can also be productive for time management skill development. As students develop and discover the value of these essential skills, they may appreciate constructive feedback, including consequences from missed deadlines and late submissions.

Tip 3
Encourage personal and mental healthcare
iGen is the first generation to have had smartphones present throughout their adolescence, and as a result, are more inclined to spend time online and less time with each other in person. Increased digital media use is linked to decreased feelings of happiness (Twenge et al. 2018). According to Twenge (2017, p. 77–88), iGen teenagers spend less time with face-to-face encounters outside of school with friends compared to any previous generation, resulting in decreased time spent practicing face-to-face social skills, negotiating relationships, and developing appropriate emotions. Decreased in-person social interactions are associated with increased feelings of loneliness (Twenge, Spitzberg, et al. 2019). For these reasons, iGen students are at an increased risk for mental health declines, such as anxiety and depression. In medical school, 82% of pre-clinical students’ self-report that they are in psychological distress (Plochocki 2019) and many iGen students seek help for mental health concerns (Twenge 2017, p. 118). It is essential to develop a learning environment that encourages personal wellbeing and mental health and to share institutional resources for mental health assistance and private counselling. Feelings of isolation can increase when students interact solely with course material by watching pre-recorded lectures or using internet modules. It is also important to note that, despite their more limited in-person social interactions, iGen students have expressed a preference for face-to-face encounters over digital interactions (Seemiller and Grace 2016, p. 61–62; Gierdowski 2019). Engaging students in synchronous small group discussions or innovative assignments that encourage peer conversation may be important for combating inclinations to connect only electronically with others (Mendez-Reguera and Lopez Cabrera 2020). When students realize that their learning happiness can be positively influenced by direct interactions with their peers (Spears et al. 2015), they may appreciate the reasoning behind deliberate course events.

Tip 4
Incorporate literacy development into curricula
As traditional books and news sources are replaced by shorter texts, news feeds, and tweets, iGen members in aggregate show a decreased preference for reading long-form text for pleasure (Twenge 2017, p. 59–65; Twenge, Campbell et al. 2019). Since much of science and medicine still depends on information dissemination through journal articles and textbooks, it is imperative that educators bridge the gap between our current students’ lived experiences and their future professional environment. Faculty should look for opportunities to incorporate literacy development seamlessly into the curriculum. When recommending or requiring reading assignments, faculty should be cognizant of students’ likely low reading stamina and work with the students to build this skill. Requiring a long reading assignment early in the curriculum is unlikely to have
any of the desired results or retention, and instead could lead to frustration for all parties. An alternative assignment that involves asking students to submit written reflections on short reading assignments may improve both comprehension and writing skills over time. Finally, seeking to ensure transparency in the value of reading assignments may encourage students to adapt to primary peer-reviewed material.

Tip 5
Foster professional written communication skills

Appropriate written communication is a fundamental skill (Melvin 2015) across all disciplines and a necessary competency for students to achieve in medical training. Data from Twenge (2017, p. 63–64) indicate that since the mid-2000s, Scholastic Aptitude Test (SAT 2020) scores have decreased, especially in writing, with a 13-point decline. Growing up with instantaneous communication methods afforded by smartphones may result in some iGen members lacking experience with more ‘traditional’ forms of communication such as email in professional settings. Texting and posting to social media instead of reading books, magazines and newspapers are not advantageous in developing reading comprehension or writing skills. Twenge (2017, p. 311) reports iGen students bring new attitudes about communication; for example, ‘why would anyone use email when texting is so much faster?’ Consequently, students may not understand that professional emails should be composed with correct salutations, complete sentences, and without emojis. Educators may struggle with preparing iGen for future professional settings (Miller and Murphrey 2010). It is important that health professions educators clarify to iGen students, who may not rely on email for primary communication, that their professional world largely does. Doyle (2019) suggests encouraging students to communicate appropriately with faculty, the institution may wish to provide instructions and examples for how to send professional emails. Developing mechanisms that increase self-confidence in using email and responding in a timely manner might be of great benefit. Helping iGen understand the value of communication methods in a professional setting is important for their future success.

Tip 6
Teach information management skills

Although iGen students are typically comfortable accessing information through digital resources, they may be less experienced with determining the credibility of each source (Salubi 2018). Health professions educators should collaborate with librarian experts to help students develop information management and evidence-based medicine skills. Addressing information credibility issues with students and requiring them to evaluate the appropriateness of information sources can aid in developing information management skills (Wiedmer 2015). Providing exemplary sources may also be advantageous in setting students on a valid information path. Additionally, providing feedback (including source credibility, alternative search strategies and appropriateness of citations) when information sources are used in both informal and formal educational settings can be productive in skill development. Finally, asking students to monitor their peers in study groups, lab discussions, and any other educational setting can be valuable to further develop their confidence in accessing information and providing evidence-based statements.

Tip 7
Broaden learning spaces and resources

iGen may define learning spaces and resources in vastly different ways than previous generations. Didactic face-to-face learning events, such as lectures, may be less favourable when students feel that they can learn the content through other resources (Cardall et al. 2008; Gupta and Saks 2013). In many cases, iGen students feel that the learning environment is not limited to the physical classroom and can be extended to more flexible and virtual spaces afforded by the internet and digital technology. Current post-secondary students view technology as a means for engagement and are eager to use it, especially if it facilitates interaction with others (Gierdowski 2019). Instead of feeling pressured to develop exclusively remote-accessible resources and experiences, faculty can facilitate learning by adopting digital technologies where appropriate (Wiedmer 2015). For example, internet-based instructional methods have similar effectiveness to some traditional methods (Cook et al. 2008) and could be used to replace select in-person active learning experiences where students gain foundational knowledge (Jensen et al. 2015). Face-to-face time can be saved for interactive learning experiences, as employed by the flipped classroom model (Chen et al. 2017), team-based learning (TBLC 2020) and problem-based learning (Pluta et al. 2013; Seibert 2020). Faculty should convey their rationale for offering face-to-face experiences and communicate the importance of learning in a setting that closely resembles their future healthcare setting.

Tip 8
Building up from byte-sized information

The average student’s attention span is decreasing (Twenge 2017, p. 64–65; Chicca and Shellenbarger 2018). One study demonstrated that iGen students switch tasks on their screens an average of every 19 seconds and over 75% of students’ computer windows were open for less than one minute (Yeykelis et al. 2014). Although technology can be a distraction, it also offers opportunities to enhance educational experiences as iGen students seek personalized and engaging learning environments. Both the ubiquitous nature of digital and mobile technology and the shorter attention span of iGen students are important to consider when developing learning materials because byte-sized educational experiences may be appealing. iGen students are often accustomed to blending outside resources with instructor-created material (Loveland 2017). Furthermore, iGen students prefer video content over static content (Pappano 2018). Using a combination of technologies, such as interactive whiteboards, short videos,
or mobile apps and games can help create a collaborative experience where students use technology for interaction (Doucette 2018). Another tool for increasing engagement is to emphasize practical applications to the field of medicine. Offering students examples of correlations between their studies and their life can lead to positive student perceptions of the educational content (Naing et al. 2015). Drawing connections to other disciplines by stressing the interprofessional nature of the healthcare system, and pointing out the transferable aspects of science content and skill development, demonstrates the practical applications to iGen students. Case studies and simulation-based teaching are other methods to seamlessly emphasize these practical applications. Keeping the end in mind, it may be important to use strategies to build upon stamina. Early courses may want to consider building-block type lessons to avoid information overload, with longer sessions saved for later courses. Longer assignments that span semesters could also be designed to start byte-sized and structured, and build to longer learning events with more independence.

**Tip 9**

*Provide timely and real-time feedback frequently*

The technology that iGen students have grown up with often provides instant gratification and rapid responses (Christensen 2018). Therefore, it is reasonable for these students to expect timely formative feedback. Feedback is not only valuable for students, it is also required by major accrediting bodies worldwide, who agree that health professions students should receive formal formative feedback in each course or clerkship to allow sufficient time for remediation, for example, Liaison Committee on Medical Education (LCME) standard 9.7 (LCME 2019) or World Federation for Medical Education (WFME) standard B 3.2.4 (WFME 2020). Providing timely formative feedback is not only good pedagogical practice, it also satisfies the accreditation standards for medical education (LCME 2019; WFME 2020), physical therapy education (CAPTE 2016), occupational therapy education (ACOTE 2018), and others. It is especially valuable as students from this generation may have less experience with adult responsibilities (Twenge 2017, p. 39–41) and would benefit from the guidance of regular feedback.Educators can use learning management systems and e-learning software to incorporate real-time feedback to students for knowledge assessment. In addition, the feasibility of providing timely feedback should be considered when planning any assignment or assessment (e.g. written reports, projects, journaling and portfolios).

**Tip 10**

*Revitalize teamwork and collaboration*

Teamwork is critical in healthcare where optimal patient care depends on effective interactions between multiple professions and specialties. Although millennials focus on collaboration and teamwork, iGen students tend to be more competitive in nature and would prefer to be evaluated based on their own accomplishments (Patel 2017). Because iGen students are less likely to have worked (Twenge 2017, p. 29–34), they are less likely to have been directly exposed to the practical advantages of teamwork and collaboration. Health professions educators must help students learn to appreciate the importance of teamwork and to develop the skills necessary to effectively work on a team. Curricular activities promoting teamwork among students, such as problem-based learning or team-based learning, may help students practice these critical skills in a safe setting (Lerner 2009). In addition, utilizing collaborative educational strategies such as think-pair-share, lecture chatter, case discussions, group projects, dissection teams, and/or mentor groups may also teach students the value of working in teams (Pluta et al. 2013). Educators should remain mindful that iGen students prefer to work independently; therefore, a mix of independent and team-based activities may be most effective. Additionally, because this generation of students tends to value equality and innate individualism (Seemiller and Grace 2017; Twenge 2017, p. 175–177), they may be more likely to appreciate the relevance of teamwork and collaboration once educators introduce the concept and importance in their future professions.

**Tip 11**

*Support brave spaces*

In higher education, ‘safe spaces’ have become increasingly common since 2013 when iGen students first matriculated to college (Lukianoff and Haidt 2015, 2018, p. 214). A safe space is a place where students can expect to be void of situations (Twenge 2017), words, or ideas (Lukianoff and Haidt 2015) that may cause them discomfort. Safe spaces originated with good intentions to provide minority students with a place to meet others in their community without fear of judgment (Seemiller and Grace 2017; Twenge 2017). However, the safe space concept has evolved to protect the greater student population from any potentially offensive viewpoint (Lukianoff and Haidt 2015; Twenge 2017, p. 154) and critics of safe spaces and trigger warnings argue that the ideology does not offer iGen students the opportunity to learn in an environment reflective of the real world (Lukianoff and Haidt 2015). Some educators believe that their duty is to prepare students to be challenged (Lukianoff and Haidt 2015) and to develop coping strategies (Plochocki 2019). This is especially true for health professions students, who will embark on a profession where discomfort and emotional risk are regular occurrences in patient care. For these reasons, fostering ‘brave spaces’ (Arao and Clemens 2013, p. 141) may hold more educational value in health care. A brave space is a place where students are encouraged to learn outside of their personal comfort zone and address challenging and controversial issues (Arao and Clemens 2013, p. 141). This approach focuses on the need for courage rather than safety. Brave spaces can help students feel more comfortable in anxiety-provoking situations, such as discussing upsetting topics, making mistakes in public, not knowing the correct answer during rounds, or facing difficult interpersonal encounters. To cultivate brave spaces, faculty should explain the rationale for including learning experiences despite discomfort it might illicit. Throughout the
experience, faculty should demonstrate support, such as allowing students to fail without judgment or to express controversial ideas openly, yet respectfully. Medical educators may wish to role-model courage by communicating openly about their own sensitivities, fears, and failures (Vaughn and Baker 2004; Huddy 2015). A crucial element to these narratives should be a description of how such experiences helped the faculty member to grow professionally and personally.

Tip 12

Embrace generational differences

Many generations routinely work together across academic institutions and health care centres. For example, Shatto and Erwin (2017) indicate that faculty often find themselves teaching alongside (and to) as many as four generations simultaneously, each with distinct preferences, experiences, and viewpoints. While this may lead to frequent points of contention and misunderstanding, it is an opportunity for professional and personal development. iGen students will be graduating into similar environments and need to recognize the nuances and effectively work with them. Learning about generational differences and focusing on each generation’s unique attributes, strengths, and shared values, will lead to a more productive classroom now and healthcare environment later. Early development of skills to work with individuals from various generations who may hold different values, perspectives and expectations is key for future careers. Remaining respectful and open to adapt and learn from generational differences will not only alleviate conflict but also help students and faculty succeed in a multigenerational environment and meaningfully participate in the health care system.

Conclusion

Seeking to better understand the unique attributes of iGen students can lead to a more positive learning environment for both learners and educators. Working to incorporate these twelve tips in manners that do not force undesired change, but instead lead to adjustments that promote lifelong learning and skill development, will enable iGen students to thrive. If educators meet this generation where they currently are and support their growth as future healthcare professionals, we can become better educators for generations to come.

Millennial (also known as Generation Y or Gen Y)

Most generational experts agree that millennials were born between 1981 and 1995. This generation has been shaped by high loan debt, a declining job market, technological growth and overprotective parents, in which distinctive characteristics include confidence, optimism, digital connection, and a strong self-focus.


Brave Space

A brave space is a place where students are encouraged to learn outside of their personal comfort zone and address challenging and controversial issues.


Acknowledgments

Center for Excellence in Medical Education at Oakland University William Beaumont School of Medicine.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Notes on contributors

Sarah Lerchenfeldt, PharmD, is an assistant professor of pharmacology.

Stefanie M. Attardi, PhD, is an assistant professor of anatomical sciences.

Rebecca L. Pratt, PhD, is a professor of anatomical sciences.

Kara E. Sawarynski, PhD, is an associate professor of cell biology.

Tracey A. H. Taylor, PhD, is an associate professor of microbiology.

ORCID

Sarah Lerchenfeldt http://orcid.org/0000-0002-1383-4456

Stefanie M. Attardi http://orcid.org/0000-0003-3291-490X

Rebecca L. Pratt http://orcid.org/0000-0002-6138-2562

Kara E. Sawarynski http://orcid.org/0000-0003-3008-0884

Tracey A. H. Taylor http://orcid.org/0000-0002-4739-7127

References


