

Title: Differences among Millennials vs Generation Z and the Effects This Plays on Medical Education

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Introduction:

Medical education continues to transform itself based on the generation of learners being educated. As an example with Millennials, medical schools and educators have reduced the number of large didactic sessions and have incorporated more technological educational platforms for these learners. From a medical school and in larger context health care perspective, Generation Z (also known as “iGen”) is now becoming the predominant demographic matriculating. From a medical education perspective, it has been demonstrated the importance of curtailing how education is taught based on the unique features of each generation.

Key Points:

- Mental health is more prevalent than previous generations
- Volunteering has diminished compared to previous generations
- A higher need for mentorship and guidance rather than independent learning is seen among Generation Z

Whether this can be surmised from our society as a whole, there has been an increase in focus of mental health among medical students. This was prompted by reports demonstrating that nearly half of medical students suffered from burn out. Furthermore, studies have demonstrated nearly 12% of students faced suicidal ideation and over 80% demonstrate signs of psychological stressors in general. Medical schools have responded by having an increased emphasis and funding toward services such as counseling as well as adjusting educational experiences and grading rubrics to lower mental health disturbances. Unfortunately, Generation Z is faced with an even higher prevalence of mental health that is also getting worse in time. Reports demonstrate that between 2005-2017, there was nearly a 50% increase in suicidal ideations; this is as a reminder pre-COVID, which already has led to increase in burnout and stress among health care employees. It is important that our medical education for this generation emphasizes mental health safety and ways to mitigate mental health not only for the students’ sake, but also for their future patients as it has been demonstrated psychological distress leads to diminished abilities for individuals to empathize and be altruistic.

Volunteering is on the decline among Generation Z. Though nearly 75% of all medical schools have student-run clinics and volunteering is considered integral in the application process for medical school, less than a third of Generation Z students are likely to perform volunteer work once admitted to college. A recent survey demonstrated as few as 12% of first year college students participated in volunteer activities. Interestingly, there is a unique difference among this generation in how they tend to volunteer when they decide to do so. Generation Z is more likely to utilize entrepreneurial and technological skills to address a problem rather than direct “hands

on work” if you will. This does lead to opportunities in medical schools to foster this generation’s unique focus on technology and entrepreneurship.

Generation Z tends to also have a more unique stance, when it comes to more sensitive or disturbing educational topics such as rape, abortion, addiction, abuse and assault. These are key subjects in medical education with the hopes that with education in these materials will allow physicians to be more empathetic and communicate more effectively when such topics arise with patients. Already in the undergraduate level, students within Generation Z have demanded for trigger or content warnings be issued prior to discussing such material and for there to be safe spaces for them to go to feel safe after such discussions. Interestingly, in 2018, fewer than 11% of students were aware of what a trigger warning is, and less than a third support their use in medical education. However, as generation Z becomes more immersed in medical education, likely there may have to be considerations of adjustments towards this sentiment.

Lastly, in terms of physical spaces for learning, Generation Z has been described as having nearly opposite sentiments compared to Millennials. Though Millennials, similar to previous generations, preferred large, open unstructured environments which allowed for communal work, Generation Z tends to prefer quiet spaces where task-specific activities are readily apparent. They also have a much higher preference towards mentorship as an expectation as a way of learning rather than learning materials independently.

As seen, each generation poses a new set of challenges for educators and educational systems to best optimize the learning experience. Generation Z is the newest generation entering the medical system and it is important from a healthcare perspective we adjust our learning for this new generation. A higher emphasis on mentorship, mental health, potential trigger warnings for disturbing materials, and a further emphasis on technological educational activities are some ways to cater towards this newer generation.

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Several Ways Generation Z May Shape the Medical School Landscape

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ABSTRACT: Just as medical colleges have adapted to the Millennial generation of students, a new generation is poised to enter as matriculants. Learner attributes of this generation, Generation Z, are in stark contrast to previous ones, but more than that, they provide new challenges that undergraduate universities are already facing. This article aims to highlight some of these challenges, including those relating to student counseling services, volunteering activities, learning environments, and learner perspectives. These challenges are framed and discussed within the context of medical education.

KEYWORDS: Generation Z, iGen, Medical education

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Introduction

Each generation of learners has unique attributes that set them apart from previous cohorts. Understanding this generational diversity is paramount for medical educators as they seek to tailor instructional approaches to student learning behaviors.¹ In this manner, curricular transformations and shifts in teaching modalities across institutions of medical education are adapted to generational attributes.^{2–5} For example, medical educators have adjusted to the learner attributes of Generation Y (“Millennials”) by reducing the number of large-group didactic sessions and incorporating web-based instruction from videos, podcasts, and software applications.^{6–8}

Now, students from Generation Z (“iGen”) are becoming the predominant population in medical schools. Striking differences have already been noted between Generation Z (individuals born after 1995) and Generation Y, such as preferences for face-to-face interactions over digital interactions and a desire to design their own course of study, which has already led to changes in the way undergraduate majors are constructed.^{9–11} However, generational changes go beyond shared student learner characteristics. Recent studies have highlighted other attributes of Generation Z that are poised to affect medical education.^{9,12,13} The aim of this commentary is to highlight some of these attributes so that medical educators can be better informed and prepared to teach the incoming generation.

Student counseling services

Over the past decade, there has been an increased focus on the mental health of medical students. This shift was prompted by reports that nearly half of medical students suffered from burn-out, an alarming 11.2% of students admitted to suicide ideation, and 82% showed signs of psychological distress.^{14,15} In response, medical schools have instituted measures to improve the mental

health of their students, including the expansion of student counseling services and modifying their curricula and grading systems in an attempt to reduce anxiety and depression.^{16,17}

Shockingly, mental health tendencies of Generation Z show they are even more prone to psychological distress than earlier generations, and this tendency is getting more pronounced over time. A recent study using data from the National Survey on Drug Use and Health found a 63% increase in major depression episodes in young adults, 71% increase in psychological distress, and 49% increase in suicidal thoughts between 2005 and 2017.¹⁸ The data suggest the problem is worsening at an accelerating rate, with depression, anxiety, suicide, and self-harm rising dramatically in children of Generation Z.^{12,19} In fact, the defining characteristic of Generation Z is the decline in psychological wellbeing, not economic factors and war as with previous generations.^{13,20}

In the time since young adults of Generation Z have entered college, campus counseling centers have been strained. College counseling center directors now report student clients with severe psychological problems are the majority of cases.²¹ Colleges have had to enlarge their counseling capacity to handle the upsurge in demand for psychological care by increasing the number of counselors and consulting hours and by expanding their referral networks.²¹ As Generation Z students enter postgraduate programs, rates of psychological distress are set to rise in medical school. Providing adequate treatment for distressed students is imperative, not just for student health, but for the care of their future patients. Even subclinical levels of psychological distress reduce empathy and acts of altruism, impair the ability to develop plans to help others, and garner a more egocentric perspective when reasoning about the mental state of others.^{22–24} Medical colleges may have to expand student counseling services or adopt other strategies for combating the growing numbers of distressed students.



Volunteer work

Volunteering is a ubiquitous component of medical education that gives students clinical exposure and opportunities to treat rural and traditionally underserved populations. Three-quarters of medical schools have student-run clinics that use medical student volunteers.²⁵ Volunteering experiences are deemed nearly as important as Medical College Admission Test (MCAT) scores and grade point average (GPA) by applicants to US medical colleges.^{26,27} The majority of residency program directors also view volunteering experiences as an important factor in their acceptance decisions.²⁸ Yet, Generation Z students are likely to have less volunteering experience and demonstrate reduced motivation to volunteer in clinical settings than previous generations.²⁹ Although two-thirds of Generation Z high school students participated in community service, less than one-third reported they will volunteer on entrance to college.³⁰ This is supported by recent surveys of first-year college students that show only 12% participated in volunteer activities.³¹

The decline in volunteering among Generation Z students coincides with an increased emphasis on providing solutions to societal problems, particularly using entrepreneurial and technological approaches.³² In their qualitative study of generation Z community engagement, Seemiller and Grace⁹ find when students volunteer, they would rather do it in a manner that addresses underlying causes of a problem. One example they give is, rather than working at a food bank to help starving individuals, students would rather work on a way to help eradicate hunger in their community.⁹ Such a plan may involve the development of a new technology that is crowdfunded, reflecting their technological and entrepreneurial proclivities.

At the medical school level, the emergence of different attitudes about volunteering may be anticipated in the coming years. Declines in volunteering have the potential to reshape medical education. Medical student volunteering hours are positively correlated with student engagement in clinical training.³³ Volunteering also increases the number of professional interactions to which medical students are exposed and improves perceptions of the overall quality of their medical education.³³ Volunteering in clinics can also influence which specialty students ultimately decide to enter.³⁴ Thus, the newest generation of students may have different perceptions of their medical education and use different criteria to select their area of practice in comparison with past generations.

Declines in volunteering may be offset by an increased demand for entrepreneurial opportunities, which some medical colleges are already providing.³⁵ Such opportunities may benefit medical education. For example, educational activities that require problem-solving within entrepreneurial settings have been found to foster critical thinking skills.³⁶ Creating medical educational pathways that allow entrepreneurship may also serve as a pathway to generate technological innovations.³⁷ In addition, volunteering experiences may be structured to utilize

the skills and preferences of the new generation. Although most medical school volunteering occurs at student clinics where the aim is to gain clinical experience, many medical colleges also offer service opportunities within community organizations that enhance civic involvement and social responsibility, promote global health outcomes, or seek to prevent disease.^{38,39} Instead of gaining clinical experience, these experiences would foster the development of other professional competencies. Developing programs where students participate in community-oriented service activities may not only suit their generational attributes but also help to form their profession identity, improve their understanding of social accountability, and grow their commitment to work in rural and underserved areas.^{40,41} Although it remains to be seen how these generational differences related to volunteering will play out, medical school faculty and administrators should be aware of the shifting attitudes regarding volunteering and entrepreneurship.

Learning environments

Medical education exposes students to the basic and clinical science underlying injury and disease. As part of this instruction, many medical schools have required elective courses that delve into topics such as rape, abortion, addiction, abuse, and assault. This content is often disturbing and can make students uncomfortable, particularly if they have personal experiences related to the content, such as a loved one who died from the disease or if they themselves experienced rape or assault. Current attitudes of medical faculty are that this is a necessary part of medical education that needs to be taught because physicians must be able to communicate on sensitive subjects with their patients.⁴²

However, student attitude toward disturbing educational content is changing now that Generation Z cohorts are in higher education. For example, at some institutions, undergraduate students have demanded trigger or content warnings be placed in syllabi or given in class before distressing material is discussed or shown.^{43,44} In a survey of psychology faculty, the majority of professors now offer content warnings to students when teaching abnormal psychology.⁴⁵ Students are also asking to be exempt from learning material that distresses them and are calling for the creation of safe spaces where they can go to feel safe around others who agree to abstain from causing them discomfort.⁴⁶ In line with this, faculty have proposed the use of content warnings to serve, not only as classroom warnings, but as campus-wide interventions.⁴⁷ The concern of students and educators who are proponents of content warnings is that educational content that forces students to re-experience past physical or emotional trauma may adversely affect their mental state.⁴⁸

A 2018 study of content warnings in medical school revealed few students (11%) were aware of what a content or trigger warning is, and fewer than one-third supported their use in medical education.⁴⁹ However, the number of undergraduate

students reporting concerns to administrators about failure of faculty to implement content warnings is on the rise and may appear in medical education in greater numbers.⁵⁰ Some medical professionals have already begun to advocate for the creation of safe spaces where discomforting subjects can be discussed.⁵¹ Although the psychological merits of content warning and safe spaces are still being worked out, medical schools may need to develop strategies that help students cope with disturbing content. Incoming medical students from Generation Z may already expect content warnings to be provided and may be surprised if none are given. Alternatively, faculty development and student services may be bolstered in a manner that helps identify and support affected students so they may better cope with their strong emotional responses to course materials. This approach may help faculty better model the ethic of care and be more responsive to student needs.⁵² Instructors may also wish to handle surprising and unpleasant content by offering alternative assignments. However, this approach is controversial in that it may limit student exposure to important information.⁵³

For physical spaces, iGen learner preferences are in near perfect opposition to those of Millennials. Although the previous generation prefers to work in large, open, unstructured environments where many people work together in a variety of areas, the new generation prefers quiet spaces with an intuitive layout where the intent of the activity to be performed is readily apparent.⁵⁴ Redesigning or partitioning existing learning spaces to accommodate task-specific educational activities may be desired by incoming medical students. In addition, iGen learners prefer spaces for collaboration and mentoring be made available. In both educational and work environments, this generation has the expectation of being mentored instead of learning independently through new experiences.⁵⁵ Educational spaces that accommodate small groups for mentoring and collaboration have been suggested to benefit both the learning and professional development of iGen members.⁵⁶ Also, despite a growing presence of technology in the classroom, members of Generation Z may wish for even greater technological integration into learning spaces. For example, a survey of college students in 2016 found 71% desired even more technology as part of their education than they were currently receiving.⁵⁷ They are also increasingly using social media to contact their instructors and show a growing preference for electronic classroom material and electronic examinations to written ones.⁵⁸ Creating campus spaces designed to address technological concerns of the new generation may facilitate learning more so than in previous generations.

Learner perspectives

In addition to changing perspectives on the incorporation of technology into learning, other generational differences in learner perspectives between Millennials and iGen have been described, which I will briefly summarize. Of note, the new generation sees themselves as compassionate problem solvers who

prefer prescribed learning activities rather than as passive yet creative learners that thrive with more autonomy.⁹ Whereas Millennials are able to work independently, the new generation requires more guidance, especially when working with peers, of which they tend to be more critical.⁹ Although iGen students are “digital natives” who grew up around technology, they prefer blended activities that mix online with in-person collaborations.⁵⁴ Yet, because they are accustomed to obtaining information through online searches, they are able to find and synthesize information rapidly.³² Consequently, they are also more likely to use outside resources and other learning materials that are not recommended by the instructor to help them learn.⁵⁹ When they use instructor-provided material, the majority prefer lecture-style videos or audio presentations, simulations, and case studies to group exercises and assigned readings.⁶⁰ Medical educators should take these learner perspectives into account when designing course material and during curricular transformations.

Conclusions

Generational diversity is an important factor that drives curricular transformation in medical education. The youngest generation now entering medical colleges have a unique set of attributes that sets them apart from previous generations. Faculty and administrators of medical institutions should seek to be better informed and prepared for how they may need to modify their instruction, curriculum, and learning environments to better accommodate students of Generation Z. Student counseling services, volunteering expectations, educational environments, and learner perspectives comprise major targets for change relating to the most recent generational shift, which is poised to transform the medical education landscape. Medical institutions should be ready to develop strategies in response to the traits of the incoming generation.

Author Contributions

JHP was responsible for developing, drafting, and revising the manuscript.

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REFERENCES

1. Vermetten YJ, Vermunt JD, Lodewijks HG. Powerful learning environments? How university students differ in their response to instructional measures. *Learn Instr*. 2002;12:263-284.
2. Hart D, Joing S. The millennial generation and “the lecture.” *Acad Emerg Med*. 2011;18:1186-1187.
3. Hopkins L, Hampton BS, Abbott JF, et al. To the point: medical education, technology, and the millennial learner. *Am J Obstet Gynecol*. 2018;218:188-192.
4. Pettit RK, McCoy L, Kinney M. What millennial medical students say about flipped learning. *Adv Med Educ Pract*. 2017;8:487.
5. Twenge JM. Generational changes and their impact in the classroom: teaching Generation Me. *Med Educ*. 2009;43:398-405.
6. Cook DA, Dupras DM, Thompson WG, Pankratz VS. Web-based learning in residents' continuity clinics: a randomized, controlled trial. *Acad Med*. 2005;80:90-97.

7. Bahner DP, Adkins E, Patel N, Donley C, Nagel R, Kman NE. How we use social media to supplement a novel curriculum in medical education. *Med Teach*. 2012;34:439-444.
8. Evans KH, Ozdalga E, Ahuja N. The medical education of generation Y. *Acad Psychiatry*. 2016;40:382-385.
9. Seemiller C, Grace M. *Generation Z Goes to College*. San Francisco, CA: Jossey-Bass; 2016.
10. Mohr KA. Understanding Generation Z students to promote a contemporary learning environment. *J Empowering Teach Excellence*. 2017;1:9.
11. Eckleberry-Hunt J, Lick D, Hunt R. Is medical education ready for generation Z? *J Grad Med Educ*. 2018;10:378-381.
12. Haidt J, Lukianoff G. *The Coddling of the American Mind: How Good Intentions and Bad Ideas are Setting up a Generation for Failure*. New York, NY: Penguin Books; 2018.
13. Twenge JM. *iGen: Why Today's Super-Connected Kids are Growing up Less Rebellious, more Tolerant, Less Happy—and Completely Unprepared for Adulthood—and What that Means for the Rest of us*. New York: Atria Books; 2017.
14. Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among US medical students. *Ann Intern Med*. 2008;149:334-341.
15. Dyrbye LN, Harper W, Durning SJ, et al. Patterns of distress in US medical students. *Med Teach*. 2011;33:834-839.
16. Shiralkar MT, Harris TB, Eddins-Folensbee FF, Coverdale JH. A systematic review of stress management programs for medical students. *Acad Psychiatry*. 2013;37:158-164.
17. Reed DA, Shanafelt TD, Satele DW, et al. Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: a multi-institutional study. *Acad Med*. 2011;86:1367-1373.
18. Twenge JM, Cooper AB, Joiner TE, Duffy ME, Binau SG. Age, period, and cohort trends in mood disorder indicators and suicide-related outcomes in a nationally representative dataset, 2005–2017. *J Abnorm Psychol*. 2019;128:185-199.
19. Wyatt T, Oswalt SB. Comparing mental health issues among undergraduate and graduate students. *Am J Health Educ*. 2013;44:96-107.
20. Twenge JM, Martin GN, Campbell WK. Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*. 2018;18:765-780.
21. Gallagher B. National college counseling center 2014: The International Association of Counseling Services. Monograph Series 9V; 2014. http://d-scholarship.pitt.edu/28178/1/survey_2014.pdf
22. O'Connor LE, Berry JW, Lewis T, Mulherin K, Crisostomo PS. Empathy and depression: the moral system on overdrive. *Empathy in Mental Illness*. 2007:49-75.
23. Schreiter S, Pijnenborg GH, Aan Het Rot M. Empathy in adults with clinical or subclinical depressive symptoms. *J Affect Disord*. 2013;150:1-6.
24. Todd AR, Forstmann M, Burgmer P, Brooks AW, Galinsky AD. Anxious and egocentric: how specific emotions influence perspective taking. *J Exp Psychol Gen*. 2015;144:374.
25. Simpson SA, Long JA. Medical student-run health clinics: important contributors to patient care and medical education. *J Gen Intern Med*. 2007;22:352-356.
26. Monroe A, Quinn E, Samuelson W, Dunleavy DM, Dowd KW. An overview of the medical school admission process use of applicant data in decision making: what has changed since the 1980s? *Acad Med*. 2013;88:672-681.
27. Paolino ND, Artino AR Jr, Saguil A, Dong T, Durning SJ, DeZee KJ. Predicting medical school and internship success: does the quality of the research and clinical experience matter? *Mil Med*. 2015;180:12-17.
28. *National Resident Matching Program, Data Release and Research Committee: Results of the 2018 NRMP Program Director Survey*. Washington, DC: National Resident Matching Program; 2018
29. Cho M, Bonn M, Han S. Generation Z's sustainable volunteering: motivations, attitudes and job performance. *Sustainability*. 2018;10:1400.
30. Eagan K, Stolzenberg EB, Ramirez JJ, Aragon MC, Suchard MR, Hurtado S. *The American Freshman: National Norms Fall 2014*. Los Angeles, CA: Higher Education Research Institute, UCLA; 2014.
31. Fosnacht K, McCormick AC, Lerma R. First-year students' time use in college: a latent profile analysis. *Res Higher Educ*. 2018;59:958-978.
32. Seemiller C, Grace M. Generation Z: educating and engaging the next generation of students. *About Campus*. 2017;22:21-26.
33. Lee S, Valtis YK, Jun T, et al. Measuring and improving student engagement in clinical training. *Educ Prim Care*. 2018;29:22-26.
34. Brown A, Ismail R, Gookin G, Hernandez C, Logan G, Pasarica M. The effect of medical student volunteering in a student-run clinic on specialty choice for residency. *Cureus*. 2017;9:e967.
35. Niccum BA, Sarker A, Wolf SJ, Trowbridge MJ. Innovation and entrepreneurship programs in US medical education: a landscape review and thematic analysis. *Med Educ Online*. 2017;22:1360722.
36. McDonald SD. Enhanced critical thinking skills through problem-solving games in secondary schools. *Interdiscip J E-learning Learn Obj*. 2017;13:76-96.
37. Cohen MS. Enhancing surgical innovation through a specialized medical school pathway of excellence in innovation and entrepreneurship: lessons learned and opportunities for the future. *Surgery*. 2017;162:989-993.
38. John C, Asquith H, Wren T, Mercuri S, Brownlow S. A student-led global health education initiative: reflections on the Kenyan village medical education program. *J Public Health Res*. 2016;5:646.
39. Kline C, Asadian W, Godolphin W, Graham S, Hewitt C, Towle A. From "academic projectitis" to partnership: community perspectives for authentic community engagement in health professional education. *Engaged Scholar Journal: Community-engaged Research, Teaching, and Learning*. 2018;4:79-96.
40. Beck J, Chretien K, Kind T. Professional identity development through service learning: a qualitative study of first-year medical students volunteering at a medical specialty camp. *Clin Pediatr*. 2015;54:1276-1282.
41. Siega-Sur JL, Woolley T, Ross SJ, Reeve C, Neusy AJ. The impact of socially-accountable, community-engaged medical education on graduates in the Central Philippines: implications for the global rural medical workforce. *Med Teach*. 2017;39:1084-1091.
42. McBride R. Talking to patients about sensitive topics: communication and screening techniques for increasing the reliability of patient self-report. *Meded-portal*. 2012;8:9089.
43. Halberstam J. Trigger happy: from content warning to censorship. *Signs J Women Cult Soc*. 2017;42:535-542.
44. Wilson R. Students' requests for trigger warnings grow more varied. *The Chronicle of Higher Education*. September 14, 2015. <https://www.chronicle.com/article/Students-Requests-for/233043>
45. Boyens GA, Wells AM, Dawson KJ. Instructors' use of trigger warnings and behavior warnings in abnormal psychology. *Teach Psychol*. 2016;43:334-339.
46. Lukianoff G, Haidt J. The coddling of the American mind. *Atlantic*. <http://www.theatlantic.com/magazine/archive/2015/09/the-coddling-of-the-american-mind/399356/>. Accessed 6 June, 2019.
47. Hickey J. Exempting the university: trigger warnings and intellectual space. *First Amendment Stud*. 2016;50:70-82.
48. Carter AM. Teaching with trauma: trigger warnings, feminism, and disability pedagogy. *Disabil Stud Q*. 2015;35:36.
49. Beverly EA, Diaz S, Kerr AM, Balbo JT, Prokopakis KE, Fredricks TR. Students' perceptions of trigger warnings in medical education. *Teach Learn Med*. 2018;30:5-14.
50. Vatz RE. The academically destructive nature of trigger warnings. *First Amendment Stud*. 2016;50:51-58.
51. Kumagai AK, Jackson B, Razack S. Cutting close to the bone: student trauma, free speech, and institutional responsibility in medical education. *Acad Med*. 2017;92:318-323.
52. Flintoft R, Bollinger C. Beyond trigger warnings: preparing for engaged learning within an ethic of care. *About Campus*. 2016;21:24-31.
53. Martin JC, Frisby BN. Institution-wide trigger warnings. In: Knox EJM eds. *Trigger Warnings: History, Theory, Context*. Lanham, MD: Rowman & Littlefield; 2017:153.
54. Pulevska-Ivanovska L, Postolov K, Janeska-Iliev A, Magdinceva Sopova M. Establishing balance between professional and private life of generation Z. *Res Physic Ed Sport Health*. 2017;6:3-10.
55. Iorgulescu MC. Generation Z and its perception of work. *Cross-Cult Manag J*. 2016;18:47-54.
56. Bridges T. 5 ways the workplace needs to change to get the most out of generation Z. *Fast Company*. 2015. <https://www.fastcompany.com/3049848/5-ways-the-workplace-needs-to-change-to-get-the-most-out-of-generation-z>.
57. Olivier V. Students' preference and use of information and communication technology at the North-West University. *Academic Support Services Information Technology in Education*. Student Survey, North-West University, 2013.
58. Cilliers EJ. The challenge of teaching generation Z. *PEOPLE: Inter J Soc Sci*. 2017;3:322.
59. Mládková L. Learning habits of generation Z students. *Eur Conf Knowl Manag*. 2017:698-703.
60. Hampton D, Welsh D, Wiggins AT. Learning preferences and engagement level of generation Z nursing students [published online ahead of print June 14, 2019]. *Nurse Educ*. doi:10.1097/NNE.0000000000000710.