

To the point: medical education, technology, and the millennial learner

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Generational change is nothing new; there will always be change and challenge in education. Many faculty educators believe that medical students of today are particularly different from previous generations of medical students because of their generational base.¹ People of the same “generation” grow up with common experiences in a common location at a common time and have similar social attributes.² Most of our current medical students, residents, and recently graduated physicians were born from 1977–1995; they belong to Generation Y, also known as Millennials. Their teachers are typically either Generation X (born from 1965–1976) or Baby Boomers (born from 1946–1964). Faculty from the “Silent” or “Veteran” generation (born from 1925–1945) may also continue to teach at some institutions.

Each generation is impacted by world events, technology, and social norms, all of which shape the responses, preferences, and priorities of individuals in that generation. As such, Millennials are different from their Baby Boomer or Generation X educators, with unique priorities, habits, experiences, and preferences. What is important to Millennials may be different from what is

This article, from the “To The Point” series that was prepared by the Association of Professors of Gynecology and Obstetrics Undergraduate Medical Education Committee, provides an overview of the characteristics of millennials and describes how medical educators can customize and reframe their curricula and teaching methods to maximize millennial learning. A literature search was performed to identify articles on generational learning. We summarize the importance of understanding the attitudes, ideas, and priorities of millennials to tailor educational methods to stimulate and enhance learning. Where relevant, a special focus on the obstetrics and gynecology curriculum is highlighted.

Key words: medical education, millennials, obstetrics and gynecology, simulation, technology

important to individuals who belong to other generational groups. Millennials have been parented distinctly and have been consistently deemed to be “special” and “winners,” irrespective of their behaviors, effort, or actions.^{3–5} Rapid forms of global communication mean that Millennials are interconnected and in frequent contact with their social network. A survey of 7000 American college students in 2007 found that they speak or text with their parents on average 1.5 times per day.⁶ Local experience with their applications to medical school and obstetrics and gynecology residency programs demonstrates a history of numerous jobs, extensive hobbies, and often a diverse list of education achievements and degrees. This could lead to an impression that Millennials prioritize diversity in their experiences over depth of focus, which is a contrast with Generation X, who typically demonstrated longstanding commitment and depth of experience in a small number of activities.

Important world and cultural events that shaped Millennials include the fall of the Berlin Wall, 9/11, the great recession and energy crisis, global warming/climate change, increasing international communications and travel, and an

explosion in technology. Many have never known a world without the internet and a smart phone. They are accustomed to learning in groups and with help from technology. How are the Millennials distinct from Generation X, the Baby Boomers, and the yet to be defined Generation Z/Homeland Generation? The [Table](#) highlights traits of each generation.^{7–9}

Although there is an inherent danger in overgeneralizing students, recognizing generational characteristics allows educators to develop a learning culture that is appealing and relevant to our current generation of learners. This, in turn, will guide our faculty development to create teachers who think and teach in a manner conducive to the Millennials’ learning preferences. Recognizing the unique learning styles of Millennials and the importance of catering delivery of educational curriculum to suit their styles of learning specifically in the field of Obstetrics and Gynecology has been noted recently.¹⁰

Learning preferences of Millennials

A spectrum of learning traits has been linked to Millennials. These student profiles have arisen largely from surveys or opinions that were based on

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TABLE

Generations categorized by time, cultural and character context

Generation	Birth years	Current age, y	Defining cultural events	Character traits
Baby boomers	1946–1964	53–71	Vietnam War, civil rights, prosperity	Self-centered, driven, judgmental
Generation X	1965–1976	41–52	Personal computer, cable television, human immunodeficiency virus, women's rights	Adaptable, independent, impatient
Millennials	1977–1995	22–40	Internet, 9/11, mobile communication devices, "smart" devices; lesbian, gay, bisexual and transgender rights	Optimistic, techno-savvy, needy for feedback, collaborative

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observation. In terms of learning preferences, simulation, interactive group activities, workshops, and game-style presentations of knowledge are preferable. The personality profile is characterized as hopeful, confident, goal and achievement oriented, and inclusive. They share and are open and civic-minded.^{8,11}

Millennials have grown up in an environment of choice and unlimited information. They have an aptitude for web-based, self-directed learning and media literacy, as opposed to lecture hall-based learning and reading literacy. Customization of their learning and provision of optional ways to learn and discover information, especially in groups, are preferred.² Millennials value sharing and access to education materials, irrespective of copyright laws and the idea of intellectual property. Millennials would like information to be free and freely available. A lack of appreciation of the attitudes and preferences of Millennials can lead to misunderstanding and disquieting friction between generations. Consider this example: A medical student at our center posted a lecture created by 1 of our faculty members on a public website. The frustrated (Gen X) faculty member discovered the posting, demanded that it be taken down immediately and that the student who was responsible to be reprimanded. The Millennial's focus to "share" ideas was at odds with the Generation X's need to "protect" those ideas.

Teaching styles that appeal to Millennials

Millennial learners seek instruction that is technology enhanced, convenient,

personalized, and linked to relevance and societal meaning.¹² Didactic PowerPoint (Microsoft Corporation, Redmond, WA) presentations may be considered by a Millennial to be "ancient" without embedded interactive questions or video clips to stimulate discussion. Contemporary teaching strategies include e-learning, flipped classroom, simulation, peer-to-peer teaching, and social media.

E-learning

Podcasts, educational websites, virtual patient simulations, interactive multimedia tutorials, and on-line problem-based learning are all examples of e-learning.¹³ Multiple podcasts with a range of topics and sources can be found on the web, free of charge, and available through iTunes. Topics include emergency obstetrics, operative delivery and use of forceps, and a multitude of topics that include contraception, vaginal agenesis, management of preeclampsia, and cervical cancer screening. The Association of Professors in Obstetrics and Gynecology has a series of clinical cases and videos for self-learning that are freely accessible on their website and are linked to obstetrics and gynecology objectives.¹⁴ University medical centers should consider development of an education website to act as a framework to share information and to direct students to some of the most reputable and beneficial links. Obvious benefits of e-learning include convenience, efficiency in learning through use of built-in hyperlinks, unlimited viewing, and ability to deliver and access information across physical distance and in a wide variety of settings.¹⁵ These e-learning references

should be vetted by the faculty members and course and clerkship directors for authenticity, accuracy, and relevance.

Hampton and Sung¹⁶ examined, in a randomized fashion, the use of interactive computer-based learning vs usual teaching for pelvic anatomy and pelvic floor dysfunction as part of a medical student curriculum. After comparison of preintervention knowledge and attitude scores, the computer-based training group had improved knowledge and attitude significantly. However, Corton et al¹⁷ examined computer-based vs a paper-based learning platform to teach pelvic anatomy to medical students and found that pre- and posttest scores were not significantly different between the 2 platforms. This suggests that students may still learn and retain information irrespective of delivery platform.

Flipped classroom

Millennials are accustomed to fast information and answers, so empiric evidence suggests that they may tend to have shorter attention spans. Spending time with students interactively with a case discussion, instead of a lecture, is preferable. The flipped classroom replaces didactics with active learning in the classroom. During a flipped classroom learning session, the learner prepares with self-learning before the session and then solidifies the learning through teamwork, debates, self-reflection, case study discussion, application and consolidation, and coaching to challenge thinking and problem-solving.¹⁸ Preparatory work can include PowerPoint presentations with voice instruction or voice-over narration, and students independently can review basic

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