

Should Generational Characteristics Be Considered In Instructional Methods? The Instructional Preferences Of Millennials And Its Implications For Medical Education

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Abstract

Medical educators are faced with the challenge of improving the effectiveness of didactics for the incoming generation of medical students and residents, most of whom are Millennials. The objective of this study was to determine whether generational characteristics should be considered in instructional design. 4th year medical students and residents in a southern medical school in the United States were asked to rank what they considered important instructional practices in a classroom or clinical setting. Non-parametric statistics were used to analyze the data. Lectures combined with group work and discussions were ranked as the most preferred instructional format, regardless of generational cohort. Males were more likely to prefer learning procedural skills whereas females preferred learning communication skills. Irrespective of generational characteristics, sound instructional practices should be employed for effective learning.

BACKGROUND

Lecture-based instruction continues to be a preferred format in higher education, although pedagogical research has questioned the effectiveness of this format¹. Medical school faculty, who have large volumes of material to teach, also have to find ways to engage their learners through meaningful interactions. Therefore, an important challenge to educators is how to improve the effectiveness of didactics while incorporating techniques that would enhance critical thinking and active learning among students.

With the changing dynamics in higher education and an increasing population of students born after 1981, studies are beginning to focus on the characteristics of the incoming generation of college-bound students and how that will affect pedagogy. Some studies have emphasized the educators perspectives on effective instructional practices^{2,3} and few have reported on student perspectives on effective instructional practices^{4,5}. Even fewer studies have examined medical student and residents perspectives on instructional preferences in the classroom and clinical settings.

Medical education is particularly challenging in that learners not only have to acquire facts but they also have to be competent practicing physicians by obtaining medical

knowledge and practicing evidenced based medicine. This transfer of knowledge and drive for competency is further complicated by generational differences and opinions on effective instruction.

The following generations can be found at medical schools⁶⁻⁸.

1. The silent generation, born between 1925 – 1942, presently occupy many administrative, faculty, and decision making positions that affects how instruction occurs.
2. The baby boomers, born between 1943-1960, are mostly faculty and program directors, who may be responsible for the overall curriculum.
3. The genXers, born between 1961-1974, are clinician-educators, faculty, and residents who were and are being taught by the baby boomers. GenXers tend to be independent, self reliant, and skeptical.
4. The cuspars8, born between 1975 – 1980, are those that have characteristics of both genXers and millennials.

- The millennials, born between 1981 to 1999, represent the incoming pool of medical students taught mostly by baby boomers and genXers. Millennials tend to be multi-taskers and perfectionists, are sometimes viewed as lazy because they have been raised to expect extra help and additional resources when faced with educational struggles.

GenXers and cuspars mostly occupy residency programs and millennials are the incoming class of medical students. The question that arises is that, should generational characteristics be considered in medical school pedagogy?

This study sought to investigate whether generational characteristics of the four groups (baby boomers, genXers, cuspars and millennials) played a role in what was perceived as important instructional strategies and behavior in a classroom and clinical setting in medical education centres.

It examines generational differences in instructional preferences for clinical and classroom teaching, and its possible implications for academic medicine. The study was conducted under the hypothesis that there will be no generational differences in instructional preferences in clinical and classroom settings. This is based on the premise that effective pedagogy is not determined by the discourse on generational characteristics. Effective pedagogy should be based on opportunities for learning, encouraging reflective action, and making connections with previous learning and experiences. This study sought to investigate generational preferences of instructional methods within a medical school from the perspective of the residents and fourth year medical students.

METHODS

This study took place in a United States southern medical school in 2007. All fourth year medical students and residents (at different stages of their residency program) were invited to participate in the study. This population was chosen because they had experienced a variety of teaching methods in the classroom and clinical settings. They also represent different generational cohorts.

This inquiry was quantitative in nature. An instrument was developed based on research on student perspectives on instruction in higher education^{2,4,5,9,10}. The survey consisted of two parts. Part A focused on demographic information such as gender, age group, PGY level and where they

completed medical school. Part B consisted of the four sub sections with ranking items. The subsections were: teaching behavior in a classroom setting, instructional format in a classroom setting, teaching behavior in a clinical setting and instructional format in a clinical setting. Each section had 5 statements related to instructional behavior and format (appendix 1). Participants were asked to rate the importance of each item on the four sub sections on a five point ranking scale from least important to most important.

The instrument was reviewed by three medical educators and a resident physician who provided feedback on the clarity and appropriateness of statements. Participants were requested to anonymously complete an online survey administered through Survey Monkey™. The Institutional Review Board (IRB) approved this study.

Non-parametric statistics for ordinal data was used to analyze the data. The Kruskal-Wallis test was conducted to determine generational differences in ranking of important teaching behavior and instructional preference in classroom and clinic settings. Follow-up tests were conducted to evaluate pair wise differences between the three generations using the Bonferonni approach. Probability values of $p < 0.05$ were considered statistically significant.

RESULTS

Of the 487 email addresses obtained, 160 participants completed the survey. The survey response rate was 32.9% after four reminders over a 6 month period. Demographically, there were more males (61%) than females (39%) at the medical school (table 1) and the largest percentage of respondents were cuspars (58%).

Figure 1

Table 1 Respondent characteristics by generation group ()

Generation	Number /Percentage
Before 1960 (Baby Boomers)	2 (1%)
1961-1974 (Generation X)	32 (20%)
1975-1980 (Cuspars)	92 (58%)
1981-1999 (Millennials)	34 (21%)

The most important teaching strategies

The following teaching methods were ranked as the three

most important factors in each category, regardless of gender or generation.

TEACHING BEHAVIOR IN A CLASSROOM SETTING

1. Gives clear explanations/reasons for opinions, advice, actions, etc.
2. Shows enthusiasm and interest in teaching.
3. Asks questions that promote learning (clarifications, discussion-generating questions, reflective questions).

INSTRUCTIONAL PREFERENCE IN A CLASSROOM SETTING

1. Lectures supported with visual aids (PowerPoint, slides, video, etc.).
2. Online instruction mixed with face-to-face lectures (hybrid classes).
3. Lectures with student discussions/group work.

PREFERRED TYPE OF CLINICAL TEACHING THAT IS IMPORTANT

1. Adjusts teaching to diverse settings (bedside, view box, OR, exam room, microscopes)
2. Coaches me on my clinical/technical skills (interview, diagnostic, examination, procedural, lab)
3. Teaches diagnostic skills (clinical reasoning, selection/interpretation of tests)

TYPE OF TEACHING BEHAVIOR IN CLINICAL SETTING

1. Practices ethical medicine
2. Encourages evidence-based medicine
3. Provides opportunity for learning procedural skills

GENERATIONAL DIFFERENCES

Since baby boomers were a small sample (1% of respondents), it is not practical to make any valid inferences about their preferences. There were, however similarities in what was ranked as important amongst genXers, cuspars and

millennials, and differences were minimal. There were generational differences with regards to role modeling as a teaching behavior and lectures with student discussions and group work as a teaching format. Cuspars were more likely to rank role modeling as important compared to genXers and millennials ($p = .027$). This pattern was reversed with regards to lectures with student discussions and group work as a teaching format ($p = .019$). GenXers and millennials ranked those as important compared to cuspars.

GenXers, cuspars and millennials are often viewed as technically competent generations and it was interesting to determine whether online learning would be an important instructional strategy. 90.6 percent of genXers, 82.6 percent of cuspars and 91.2 percent of millennials ranked online instruction as an exclusive instructional strategy as the least important instructional method. This pattern was reversed with regards to lectures with visual aids such as PowerPoint™ with 65.6 percent of genXers, 66.3 percent of cuspars and 58.8 percent of millennials ranking it as the most important teaching strategy.

GENDER DIFFERENCES

There were no gender differences on most of the items except three behaviors in the classroom and clinical setting. There were significant gender differences with regards to learning procedural skills, asking questions that promote learning and an instructor that teaches effective patient and/or family communication skills. Regardless of generation, males ranked learning procedural skills ($p = 0.012$) and asking questions that promoted learning ($p = 0.000$) as important instructional behaviors in a classroom and clinical settings. Females ranked teaching effective patient and/or family communication skills as important in the clinical setting ($p = .002$).

DISCUSSIONS AND IMPLICATIONS FOR MEDICAL EDUCATION

The existing body of research examining the new generation of incoming students, tends to focus on their characteristics and values^{11,12}. Such literature has gained momentum in academic centres as instructors strive to understand generational characteristics in order to adapt their instructional practices to meet generational needs. However, most of these suggestions offered on how to train millennials are not hypothesis-tested or evidence driven¹³. In an attempt to provide evidence driven suggestions, the purpose of this study was to determine if there were any generational

differences in ranking of what was perceived as important instructional strategies and teaching behavior in classroom and clinical settings in a medical school.

The findings of this study are supported by a small but growing body of research on the instructional preferences of millennial learners. Similar findings are reported by Roberts¹⁴ who conducted a study on higher education students at the University of Pittsburgh and concluded that 50 percent lecturing and 50 percent interactive activities was the most preferred instructional method in a class room setting. Walker¹⁵ also concluded that there were no generational differences in nursing students' preference of instructional methods. While some studies¹⁶ indicate that millennials are more likely to use technology, this study reiterates that technology is a tool that can be used to achieve effective learning, and it is not the solution. Learners expect instructors to use the technology to communicate expert knowledge¹⁴. Therefore, instructors (be it in a classroom or clinical setting) need to be cautious about developing educational practices based on popular discourse on generational characteristics. Irrespective of generational characteristics, sound instructional practices should be employed for effective learning. It would be good educational practice for instructors to focus on engaging their learners by creating learning experiences that are active, are relevant to the learner, involve concrete experiences, and take into consideration the learner's background and learning style. Until there is more research completed that explores the generations and their preferences for learning, it behooves the instructor to continue to follow reliable and effective instructional practices based learning theories.

Regardless of generation or gender, respondents indicated a preference for lectures and hybrid classes when compared to online instruction. They also preferred an instructor who facilitated learning by providing clear explanations and showed enthusiasm. Noteworthy is that exclusively using group work or online learning were amongst the least preferred instructional methods, irrespective of generational group. This is an interesting observation since popular rhetoric indicates that genXers, cuspars and millennials tend to be technologically competent and would prefer learning activities that harness social interactions. Their preferences could also be attributed to the profession. Medicine is a hands-on profession and online learning may not be important or a preferred instructional method for teaching

practical skills. Respondents generally preferred instructors that were able to adjust their teaching in diverse clinical settings and also encourage evidence based medicine. Gender differences were found with males generally having a preference for procedural learning while female tend to prefer acquiring communication skills.

The gender difference in preferences for communication skills echoes the findings that concluded that, when learning new information, females tend to prefer regular feedback and reassurance compared to males¹⁷. Also, there is some evidence that suggests that female medical students tend to have higher positive attitudes towards communication skills training¹⁸ and thus female physicians tend to exhibit more patient centered communication behaviors¹⁷. Cambiano et al¹⁷ also determined from their population that males generally indicated a preference for kinesthetic learning and would prefer hands-on experiences as was determined in this study. It was also evident from this study that males were more inclined to indicate a preference for learning procedural skills when compared to females.

Limitations of this study included the use of self-reported data, a low response rate and the potential for response bias from medical students and residents. While this study is not generalizable as it was conducted in one school with a limited population, it provides us with insights and the need for further investigation into the role of discourse on generational characteristics on effective pedagogy. Further discussions and studies are needed on preferences on methods of instruction as online instruction would not be affected only by personal preferences, but also by the structure of the course, and the quality of the instruction. There is a continuous need for the development of innovative pedagogical practices that complement the learning needs of learners.

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APPENDIX 1 – DATA COLLECTION INSTRUMENT

Medical Students and Residents' in Medical Education Perspectives on Instruction – Survey

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Figure 2

A. Demographic

1. **Gender:** Male Female

2. **What is your current status** 4th year medical student

PGY1
 PGY2
 PGY3
 PGY4
 PGY5
 PGY6
 PGY7

3. **When were you born?**

Before 1960
 1961-1974
 1975 - 1980
 1981 - 1999

4. **Program:** _____ (if you are a 4th year student, write the program you intend to do your residency)

5. **If resident, where did you attend medical school:**

United States
 Other Country

6. Do you use social networking sites like Facebook, Xanga, or MySpace?

Yes
 No

Figure 3

B. Teaching Behavior
 What type of teaching behavior is important to you? Please rank order (1=least important - 5 most important).

Gives clear explanations/reasons for opinions, advice, actions, etc.	
Asks questions that promote learning (clarifications, discussion-generating questions, reflective questions)	
Offers regular feedback	
Provides a role model	
Shows enthusiasm and interest in teaching	

C. Clinical Teaching
 What type of clinical teaching is important to you in a clinical setting? Please rank order (1=least important - 5 most important).

Provides opportunity for learning procedural skills	
Encourages evidence-based medicine	
Practices ethical medicine	
Performs effective patient education	
Inspires confidence in your knowledge and skills	

D. Instructional Format
 In a classroom setting, what type of teaching format is important to you? Please rank order (1=least important - 5 most important).

Lectures supported with visual aids (PowerPoint, slides, video, etc.)	
Lectures with student discussions/group work	
Group work with feedback and discussion facilitated by instructor	
Online instruction only	
Online instruction mixed with face-to-face lectures (hybrid classes)	

E. Teaching Behavior in Clinical Setting
 What type of teaching behaviors in the clinical setting are important to you? Please rank order (1=least important - 5 most important).

Adjusts teaching to diverse settings (bedside, view box, OR, exam room, microscope, etc.)	
Coaches me on my clinical/technical skills (interview, diagnostic, examination, procedural, lab, etc.)	
Teaches diagnostic skills (clinical reasoning, selection/interpretation of tests, etc.)	
Teaches effective patient and/or family communication skills	
Teaches principles of cost-appropriate care (resource utilization, etc.)	

References

1. Brandsford JD, Brown AL, Cocking RR (ed): *How People Learn: Brain, Mind, Experience, and School*. 1st ed. Washington, DC: National Academy Press, 2000.

2. Johnson SA, Romanello ML: Generational diversity: Teaching and learning approaches. *Nurse Edu*; 2005; 30(5):212-216.

3. Skiba DJ, Barton AJ: Adapting your teaching to accommodate the net generation of learners. *Online J Iss Nurs*; 2006; 11(2):4.

4. Lawler EM, Chen XM, Venso EA: Student perspectives on teaching techniques and outstanding teachers. *J Schol Teach Learn*; 2007; 7(2):32-48.

5. Elnicki MD, Cooper A: Medical students' perceptions of the elements of effective inpatient teaching by attending physicians and housestaff. *Acad Med*; 2005; 20(7):635-639.

6. Howell LP, Servis G, Bonham A: Multigenerational challenges in academic medicine: UC Davis's responses. *Acad Med*; 2005; 80(6):527-532.

7. Zemke R, Raines C, Filipczak B: *Generations at Work: Managing the Clash of Veterans, Boomers, Xers, and Nexters in Your Workplace*. New York: American Management Association. 2000.

8. Lancaster LC, Stillman D: *When generations collide: Who they are, why they clash, how to solve the generational puzzle at work*. New York, NY: Collins.2003.

9. Larson DL: Bridging the generation X gap in plastic surgery training. *Plastic & Recons Surg*; 2003; 112(6):1656-1665.

10. Copeland HL, Hewson MG: Developing and testing an instrument to measure the effectiveness of clinical teaching in an academic medical center. *Ac Med*; 2000; 75(2), 161-166.

11. Twenge JM: Generational changes and their impact in the classroom: teaching Generation Me. *Med Ed*; 2009; 43: 398-405.

12. Vanderveen K, Bold RJ: Effect of Generational Composition on the Surgical Workforce. *Arch Surg*; 2008; 143(3):224-226.

13. Reeves TC: Do Generational Differences Matter in Instructional Design? 2006; Retrieved July 28, 2008 at: [http://it.coe.uga.edu/itforum/Paper104/ReevesITForumJan08 .pdf](http://it.coe.uga.edu/itforum/Paper104/ReevesITForumJan08.pdf).

14. Roberts G: Technology and Learning Expectations of the Net Generation. In: Oblinger Diana G, Oblinger JL.(ed). *Educating the Net Generation*. Educause; 2005; 32-38.

15. Walker JT, Martin T, White J, Elliott R, Norwood A, Mangum C, Haynie L: Generational (age) differences in nursing students' preferences for teaching methods. *J Nurs Edu*; 2006; 45(9):371-374.

16. Kennedy G, Gray K, Tse J: Net Generation' medical students: technological experiences of pre-clinical and clinical students. *Med Teach*; 2008; 30 (1): 10-16.

17. Cambiano RL, De Vore JB, Harvey RL: Learning style preferences of the cohorts: Generation X, baby boomers, and the silent generation. *PAACE J Adult Learn*; 2001; 10:31-39.

18. Wrght, KB, Bylund C, Ware J, Parker P, Query JL, Baile W: Medical student attitudes toward communication skills training and knowledge of appropriate provider-patient communication skills: A comparison of first-year and fourth-year medical students. *Med Educ Online*; 2006; 11:18.

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