

## How we see 'Y': South African health sciences students' and lecturers' perceptions of Generation Y students

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**Background.** Health sciences education in the 21st century must recognise the changing profile of students, which includes an understanding of the characteristics of Generation Y students (born between 1981 and 2000) as future healthcare professionals.

**Objective.** To examine the perceptions of students and lecturers regarding Generation Y students in health sciences that might impact on teaching and learning in a South African setting.

**Methods.** A quantitative research approach was used to determine undergraduate students' and lecturers' perceptions of Generation Y students in the Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa. Anonymous questionnaires were used to obtain information.

**Results.** The study population included students ( $n=616$ ) and lecturers ( $n=71$ ). Despite some shared perceptions about generational characteristics, students and lecturers differed significantly on many issues. Unlike lecturers, students perceived themselves as being ambitious (not arrogant) and possessing superior cognitive skills. Despite desiring a vibrant and stimulating learning environment, students wanted face-to-face contact with lecturers. Poor intergenerational communication also emerged as a pertinent issue.

**Conclusion.** Identification of intergenerational issues that may impact on teaching and learning may contribute to developing novel educational approaches acceptable to both lecturers and students.

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Innovative educational approaches must meet 21st century healthcare and education requirements. Professional educators and students (as future professionals) are healthcare stakeholders who must take responsibility for meeting the challenges of improving healthcare for patients and populations by attending

to the knowledge, skills and attitudes of future healthcare professionals.<sup>[1]</sup>

Current undergraduate students, or Generation Y (also referred to as Millennials or the Net Generation), born between 1981 and 2000, have a distinct profile and characteristics as a result of the era during which they were born.<sup>[2]</sup> They are said to be confident and ambitious, preferring specific learning styles, including active experiential learning and multitasking, and communication technology for information access and interpersonal relationships.<sup>[3,4]</sup> Their world has been shaped by the information-communication technology (ICT) revolution, and global social, political and economic changes that have an impact on their attitudes and behaviours.<sup>[5]</sup>

This discourse has led to a trend in health sciences education, i.e. incorporating technology to address the challenges found in teaching and learning.<sup>[6]</sup> An awareness of Generation Y's characteristics is essential when addressing current issues and planning future strategies in academic medicine.<sup>[7]</sup>

However, caution should be exercised when attempting to separate myth from reality regarding the core behaviours and attitudes of Generation Y students. An understanding of how different generations view each other, and exploring the impact on teaching and learning, should precede any intended changes to education.<sup>[8]</sup> Limited empirical data regarding Generation Y characteristics beyond the hype portrayed in the popular media are available, and a more conservative view regarding the sweeping claims about 'digital natives' is advisable.<sup>[8,9]</sup>

We aimed to explore the characteristics of Generation Y health sciences students that impact on the teaching-learning environment. Information was obtained on the shared and contrasting perceptions of students and lecturers, typical characteristics of Generation Y students, and issues of significance that may impact on health sciences education and then scrutinising these in light of current pedagogical theory. For this purpose, a questionnaire survey was designed based on the literature regarding Generation Y, including aspects pertinent to health sciences education.<sup>[2,3,6,10]</sup>

The study hypothesised that by gaining a better understanding of Generation Y students, uncovering misunderstandings or conflicting perceptions between students and lecturers and discovering students' unique needs, the strategies for health sciences education in the 21st century may be improved.

Four key elements pertinent to educating Generation Y students in health sciences were identified as relevant to this study, including the educational environment, Generation Y students' personal attributes, their learning styles and needs, and issues of professional communication between students, lecturers, patients, colleagues, families and peers. This approach aligns with the pedagogical principles for effective practice in undergraduate education (Table 1).<sup>[11,12]</sup>

### Methods

This cross-sectional study was performed using a quantitative research design.

### Participants

All students in their second or final year of undergraduate study in the Schools of Medicine, Allied Health Professions and Nursing in the Faculty

**Table 1. Key elements pertinent to the educational approach for Generation Y students aligned with theoretical frameworks informing undergraduate education<sup>[11,12]</sup>**

Four key elements	Seven good practices	Twelve attributes of quality
A. Educational environment	1. Give prompt feedback 2. Encourage student-faculty contact	i. Assessment and prompt feedback ii. Out-of-class contact with faculty iii. Emphasis on early years of study
B. Personal attributes	3. Encourage co-operation among students 4. Emphasise time on task	iv. Collaboration v. Adequate time on task vi. Synthesis of experiences
C. Learning styles and needs	5. Encourage active learning	vii. Active learning viii. Integration of education and experiences ix. Ongoing practice of learned skills
D. Professional communication	6. Communicate high expectations 7. Respect diverse talents and ways of learning	x. High expectations xi. Respect for diverse talents and learning styles xii. Coherence in learning

**Table 2. Demographic data of the participants**

Variable	Undergraduate students							
	School in the Faculty of Health Sciences						Lecturers	
	Medicine		Allied Health		Nursing		Total	%
	Total	%	Total	%	Total	%	Total	%
<b>Gender, <i>n</i></b>	322		226		68		71	
Male	158	49.1	40	17.7	10	14.7	25	35.2
Female	164	50.9	186	82.3	58	85.3	46	64.8
<b>Ethnicity, <i>n</i></b>	320		226		68		69	
Black	1	28.4	9	4.0	32	47.1	2	2.9
White	202	63.1	211	93.4	34	50.0	67	97.1
Other	27	8.5	6	2.6	2	2.9	0	0
<b>Home language, <i>n</i></b>	321		224		68		69	
English	42	13.1	31	13.8	3	4.4	12	16.9
Afrikaans	188	58.6	183	81.7	33	48.5	57	80.3
Black African indigenous language	91	28.3	10	4.5	32	47.1	2	2.8

of Health Sciences, University of the Free State (UFS), Bloemfontein, South Africa, were invited to participate in the study. Students were requested to voluntarily complete an anonymous questionnaire during academic contact sessions in March 2010. Second-year students were included in the sample because of the assumption that they would have adapted to their course and university environment by the end of their first year. The opinions of older, more mature students with some exposure to the working environment of their respective occupations were obtained. These included fourth- and fifth-year students in the five-year MB ChB course and fourth-year students in the other four-year courses, with the exception of third-year students in the three-year BSc Radiation Science course. The target population ( $N=668$ ) included second-year ( $n=277$ ) and senior ( $n=391$ ) students

(2010 figures from the Directorate Institutional Research and Planning, UFS). Lecturers were also invited to voluntarily complete an anonymous questionnaire online or in printed format.

### Questionnaire survey

The questionnaires, based on recommended guidelines,<sup>[13]</sup> were available in Afrikaans and English, the languages of instruction at UFS, where a parallel language policy is followed.<sup>[14]</sup> Undergraduate students' and lecturers' perceptions regarding statements about Generation Y students were determined employing a modified 4-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree). For reporting purposes, responses 1 and 2 were grouped together to indicate disagreement, and responses 3 and 4 to indicate agreement with statements.

The questionnaires for students and lecturers were similar, with the exception of the sections on demographic and personal information.

### Pilot study

A pilot study included 10 third-year students and two lecturers from the Schools of Medicine, Allied Health Professions and Nursing, respectively. No changes to the questionnaires were required after the pilot study.

### Data analysis

Statistical analysis of quantitative data was done by a biostatistician using the SAS programme<sup>[15]</sup> to calculate frequencies and percentages for the categorical variables and means, and standard deviations or percentiles as appropriate for the numerical variables. Associations between categorical variables were determined using contingency tables with 95% confidence intervals (CIs) for the differences in percentages and chi-square tests or Fisher's exact tests where the expected numbers in the cells of tables were small. A  $p$ -value  $<0.05$  was considered to be statistically significant.

### Ethical requirements

Ethics approval was obtained from the Ethics Committee of the Faculty of Health Sciences, UFS (Ethics approval No. ETOVS 205/09).

### Results

#### Demographic information

Table 2 shows the demographic details of the students and lecturers who participated in the study.

A total of 616 students completed the survey during March 2010 (response rate 92.2%). Students from the School of Medicine comprised

52.3% ( $n=322$ ) of the sample; 36.7% ( $n=226$ ) were from the School of Allied Health Professions and 11.0% ( $n=68$ ) were nursing students. The majority of students were white (72.7%;  $n=448$ ) and Afrikaans speaking (66.1%;  $n=407$ ). English was the first language of only 12.3% ( $n=76$ ) of all students. Of the remaining students, 21.4% ( $n=132$ ) were black African, with an indigenous language as their mother tongue. The remainder of the cohort included Indian ( $n=5$ ), Asian ( $n=3$ ), and mixed-ancestry (coloured,  $n=24$ ) students. Three students did not specify their ethnicity.

Seventy-one lecturers participated in the survey – a response rate of 34.5%, which falls within the norm of 35 - 40% described for studies at organisational level.<sup>116</sup> The respondents included 47 (66.2%) lecturers from the School of Medicine, 20 (28.2%) from the School of Allied Health Professions, and four (5.6%) from the School of Nursing. They were mostly female (60.6%), Afrikaans speaking (80.3%) and white (95.7%), of whom 34.3% ( $n=23$ ) were born between 1944 and 1960 (Baby Boomers), and 64.2% ( $n=43$ ) between 1961 and 1980 (Generation X). One participant represented Generation Y (born between 1981 and 2000).<sup>110,17</sup>

### Summary of significant findings from questionnaire surveys

The results from the questionnaire surveys reflected the perceptions of students and lecturers regarding Generation Y students, and are presented according to the key elements of the educational framework used in this study (Table 1).

**Educational environment.** Students and lecturers agreed that Generation Y students cannot imagine a world without technology, function best in a structured, organised environment and regard a team environment as

optimal for learning. Table 3 summarises statements where significant differences were observed between students and lecturers.

Significantly more lecturers than students indicated that Generation Y students prefer empathetic role models (students 71.3%, lecturers 95.5%), need motivational leadership (students 71.5%, lecturers 90.5%), or need guided supervision, preferably by an older mentor (students 56.7%, lecturers 80.9%). Compared with lecturers, less than 50% of students agreed that Generation Y students prefer an anonymous, open online environment (students 28.0%, lecturers 82.1%), or consider the internet to be a way of life rather than just a form of technology (students 47.5%, lecturers 93.9%). Significantly more students agreed that Generation Y students grew up in a structured, organised environment (students 89%, lecturers 29.7%) and are used to obeying rules (students 93.3%, lecturers 29.7%).

Students and lecturers agreed that Generation Y students think that lecturers should give each student individual feedback on a regular basis, and that when a lecturer gives negative feedback, they should explain or justify it. Significantly more lecturers indicated that Generation Y students want immediate, personal access to lecturers whenever it suits them (students 46.7%, lecturers 86.8%), and that they prefer positive feedback because negative feedback is destructive (students 54.4%, lecturers 88.2%) (Table 3).

**Personal attributes.** Students and lecturers agreed that Generation Y students are friendly and pleasant, display positive, assertive behaviour, are optimistic about the future, appear confident and have a high self-esteem.

Table 4 illustrates statements where significant differences were seen between students and lecturers.

**Table 3. Significant differences between perceptions of students and lecturers regarding the educational environment of Generation Y students**

Statement	Students		Lecturers		p-value (95% CI)
	Respondents N	Agree* n (%)	Respondents N	Agree* n (%)	
<b>Generation Y students</b>					
... think the internet is more than technology, it is a way of life	613	291 (47.5)	66	62 (93.9)	<0.0001 (39.5 - 53.5)
... prefer the anonymous, open online environment	610	171 (28.0)	67	56 (82.1)	<0.0001 (44.2 - 63.9)
... prefer empathetic role models	606	432 (71.3)	67	64 (95.5)	<0.0001 (18.1 - 30.4)
... need motivational leadership	593	424 (71.5)	63	57 (90.5)	0.0012 (10.9 - 27.1)
... need guided supervision, preferably by an older mentor	612	347 (56.7)	68	55 (80.9)	<0.0001 (14.1 - 34.3)
... grew up in a structured, organised environment	611	544 (89.0)	64	19 (29.7)	<0.0001 (47.9 - 70.8)
... are used to following rules	610	569 (93.3)	64	19 (29.7)	<0.0001 (52.2 - 75.0)
... want immediate, personal access to lecturers whenever it suits them	612	286 (46.7)	68	59 (86.8)	<0.0001 (31.1 - 49.0)
... prefer positive feedback because negative feedback is destructive	612	333 (54.4)	68	60 (88.2)	<0.0001 (25.2 - 42.4)

CI = confidence interval.

\* Includes the categories 'Strongly agree' and 'Agree' on the questionnaire Likert scale.

A significantly higher proportion of lecturers indicated that Generation Y students are self-centred (students 17.6%, lecturers 72.5%), may seem arrogant (students 27.5%, lecturers 59.4%), feel entitled to benefits not yet earned (students 19.6%, lecturers 69.6%), want instant gratification and are not willing to wait for delayed rewards (students 30.0%, lecturers 73.9%) or think that they are entitled to everything they want (students 23.3%, lecturers 72.1%). Significantly more students than lecturers agreed that Generation Y students are ambitious (students 97.4%, lecturers 65.2%), have high expectations of success (students 95.7%, lecturers 77.9%), are motivated to achieve success (students 98.7%, lecturers 85.6%) and aim to achieve a work-life balance (students 98.4%, lecturers 74.6%).

**Learning styles and needs.** Students and lecturers agreed on some of the learning needs of Generation Y students, e.g. that real-life simulations are a valuable way to learn new skills, technology is essential, visual data are better than text data, face-to-face contact with lecturers is essential to understand a subject, e-learning is not better than face-to-face contact, learning should be tailored to individual student needs, group work is a key element of learning and Generation Y students want a constantly changing learning environment.

Table 5 illustrates statements where significant differences between the opinions of students and lecturers were seen.

Significantly more students agreed that learning is about discovery and exploration (students 90.7%, lecturers 50.8%), experience is a better learning platform than lectures (students 90.5%, lecturers 61.5%), and it is important to incorporate one's own experiences into the learning experience/process

(students 89.9%, lecturers 70.8%). In addition, a significantly greater proportion of students agreed that Generation Y students can multitask (students 77.4%, lecturers 50%), are active learners (students 87.9%, lecturers 47%), take responsibility for their own learning (students 96.6%, lecturers 49.3%), have good critical thinking skills (students 46.8%, lecturers 27.3%), learning content should be intellectually challenging (students 85.5%, lecturers 57.6%) and students should collaborate on subject content decisions (students 62.7%, lecturers 39.1%).

A significantly higher percentage of lecturers agreed that Generation Y students struggle with in-depth learning (students 41.0%, lecturers 89.4%), find it difficult to manage large volumes of written information (students 76.2%, lecturers 93.9%), and find structured supervision frustrating (students 26.8%, lecturers 64.2%).

**Professional communication.** Undergraduate students and lecturers agreed that Generation Y students communicate well with people from diverse cultures. Table 6 illustrates statements with significant differences between students and lecturers.

Lecturers and students had contrasting views on the ability of Generation Y students to communicate using technology rather than personal interaction (students 14.0%, lecturers 82.4%), e.g. text messaging rather than face-to-face contact (students 14.9%, lecturers 74.2%). Significantly more lecturers also agreed that Generation Y students find it difficult to communicate with older individuals (students 40.3%, lecturers 70.6%), think that older generations do not understand how to communicate with them (students 42.6%, lecturers 83.8%), and

**Table 4. Significant differences in percentage between students and lecturers agreeing with statements regarding Generation Y students' personal attributes**

Statement	Students		Lecturers		p-value (95% CI)
	Respondents	Agree*	Respondents	Agree*	
	N	n (%)	N	n (%)	
<b>Generation Y students</b>					
... are motivated to achieve success	615	607 (98.7)	67	58 (86.6)	<0.0001 (3.9 - 20.4)
... may seem arrogant	612	168 (27.5)	69	41 (59.4)	<0.0001 (19.9 - 44.1)
... are self-centred	613	108 (17.6)	69	50 (72.5)	<0.0001 (43.9 - 65.8)
... feel entitled to benefits not yet earned	613	120 (19.6)	69	48 (69.6)	<0.0001 (38.7 - 61.3)
... are ambitious	615	597 (97.1)	69	45 (65.2)	<0.0001 (20.5 - 43.2)
... have high expectations of success	611	585 (95.7)	69	53 (77.9)	<0.0001 (7.8 - 27.8)
... want instant gratification and are not willing to wait for delayed rewards	613	184 (30.0)	69	51 (73.9)	<0.0001 (32.9 - 54.9)
... think they are entitled to everything they want	614	143 (23.3)	68	49 (72.1)	<0.0001 (37.6 - 60.0)
... aim to achieve work-life balance	615	605 (98.4)	67	50 (74.6)	<0.0001 (13.3 - 34.2)

CI = confidence interval.

\* Includes the categories 'Strongly agree' and 'Agree' on the questionnaire Likert scale.

**Table 5. Significant differences in percentage between students and lecturers agreeing with statements regarding the learning needs of Generation Y students**

Statement	Students		Lecturers		p-value (95% CI)
	Respondents	Agree*	Respondents	Agree*	
	N	n (%)	N	n (%)	
<b>Generation Y students</b>					
... think experience is a better learning platform than lectures	611	553 (90.5)	65	40 (61.5)	<0.0001 (16.9 - 41.0)
... feel it is important to incorporate own experiences in learning	613	551 (89.9)	65	46 (70.8)	<0.0001 (7.8 - 30.4)
... think learning is about discovery and exploration	614	557 (90.7)	65	33 (50.8)	<0.0001 (27.6 - 52.3)
... think traditional lectures are outdated	606	241 (39.8)	64	35 (54.7)	0.0211 (2.1 - 27.7)
... are active learners	612	538 (87.9)	66	31 (47.0)	<0.0001 (28.6 - 53.3)
... have good critical thinking skills	613	525 (85.5)	66	18 (27.3)	<0.0001 (47.1 - 69.3)
... can multitask	611	473 (77.4)	66	33 (50.0)	<0.0001 (14.9 - 39.9)
... struggle with in-depth learning	603	247 (41.0)	66	59 (89.4)	<0.0001 (40.0 - 56.8)
... find it difficult to manage large volumes of written information	614	468 (76.2)	66	62 (93.9)	0.001 (11.1 - 24.4)
... should collaborate on subject content decisions	611	383 (62.7)	64	25 (39.1)	0.0002 (11.1 - 36.2)
... think that learning content should be intellectually challenging	612	523 (85.5)	66	38 (57.6)	<0.0001 (15.6 - 40.1)
... learn only what is necessary to pass assessments	613	251 (41.0)	65	59 (90.8)	<0.0001 (41.8 - 57.9)
... take responsibility for own learning	614	593 (96.6)	67	33 (49.3)	<0.0001 (35.3 - 59.4)
... find structured supervision frustrating	612	164 (26.8)	67	43 (64.2)	<0.0001 (25.4 - 49.4)

CI = confidence interval.

\* Includes the categories 'Strongly agree' and 'Agree' on the questionnaire Likert scale.

have a casual approach that may appear to lack professionalism (students 38.1%, lecturers 89.9%).

Significantly more students were of the opinion that Generation Y students are good communicators (students 90.0%, lecturers 42.6%), can maintain close, personal relationships (students 94.7%, lecturers 66.7%) and often have superficial, online relationships (students 91.8%, lecturers 79.4%).

## Discussion

Current strategies tailored to the educational needs of Generation Y students are mostly based on limited data and vague statements derived from the popular literature.<sup>[18]</sup> This study provides a comprehensive overview of the personal attributes, preferred learning styles and needs, communication behaviours and educational environment requirements of Generation Y students from the perspective of students and lecturers,

providing scientifically generated evidence that may inform innovative teaching-learning strategies.

We observed major differences in perceptions between students (as members of Generation Y) and lecturers (who belong to previous generations), which may foster conflict and misunderstanding and contribute to the contemporary view that teaching this generational cohort is an important challenge in health sciences education.<sup>[19]</sup>

Students and lecturers shared a positive view that Generation Y students are friendly and pleasant, confident, assertive and optimistic about the future. However, while students viewed themselves as ambitious and motivated for success, lecturers regarded them as self-centred, arrogant, displaying a sense of entitlement and demanding instant gratification. Creating an understanding and awareness of such intergenerational conflicting perceptions should contribute to limiting frustration and fostering good relationships between students and practising clinicians in health sciences

**Table 6. Differences between students' and lecturers' perceptions regarding aspects of professional communication behaviour of Generation Y students**

Statement	Students		Lecturers		p-value (95% CI)
	Respondents	Agree*	Respondents	Agree*	
	N	n (%)	N	n (%)	
<b>Generation Y students</b>					
... are better at communicating with technology than with personal interaction	613	86 (14.0)	68	56 (82.4)	<0.0001 (58.9 - 77.8)
... prefer text messaging to face-to-face contact	612	91 (14.9)	66	49 (74.2)	<0.0001 (48.5 - 70.3)
... find it difficult to communicate with older generations	613	247 (40.3)	68	48 (70.6)	<0.0001 (18.8 - 41.8)
... think older generations don't understand how to communicate with them	613	261 (42.6)	69	57 (83.8)	<0.0001 (31.7 - 50.8)
... have a casual approach that may appear to lack professionalism	614	234 (38.1)	69	62 (89.9)	<0.0001 (43.7 - 59.8)
... often have superficial online relationships	612	562 (91.8)	63	50 (79.4)	=0.0012 (2.2 - 22.7)
... can maintain close personal relationships	607	575 (94.7)	66	44 (66.7)	<0.0001 (16.6 - 39.6)
... are good communicators (verbal/non-verbal)	611	550 (90.0)	68	29 (42.6)	<0.0001 (35.4 - 59.4)

CI = confidence interval.

\*Includes the categories 'Strongly agree' and 'Agree' on the questionnaire Likert scale.

education. The importance of constructively managing generational diversity in academic medicine has been highlighted previously.<sup>[20-23]</sup>

While our results show that students and lecturers agreed that an organised educational environment incorporating teamwork and individual positive feedback is optimal for learning, significantly more students thought that Generation Y students are accustomed to structure and obeying of rules (Table 3). Significantly fewer students believed that Generation Y students need supervisory mentoring by empathetic role models or prefer the anonymity of technology. Therefore, the current literature advocating extensive use of technology in teaching and learning, based on the assumption that Generation Y students prefer such an approach, may be somewhat misleading.<sup>[5,24,25]</sup> Our findings support those advocating a more conservative view that innovative technology may not address all the challenges faced in higher education today.<sup>[8,26]</sup>

In this study, students and lecturers agreed that vibrant and fitting learning environments incorporating visual stimulation, simulation and technology are ideal. However, the importance of face-to-face contact with lecturers was valued and should not be disregarded in favour of the predominant use of e-learning strategies. A learning environment appropriate for Generation Y students should therefore strike a balance between nurturing students' cognitive skills through personal interaction with lecturers (as mentors and facilitators of learning), relevant use of innovative technology and practical experiential learning activities.

Students perceived themselves as responsible, active learners, with the ability to multitask – a view not shared by lecturers. Significantly more lecturers thought that students struggle with in-depth learning and handling vast amounts of information, and become frustrated by structured supervision. On the other hand, students emphasised the value of experiential learning that is intellectually challenging and allows

for collaborative input. These contrasting perceptions confirm students' confidence in their higher-order thinking skills, and emphasise the need for employing a student-centred approach in health sciences education. Adult learning principles, embodied by self-directed learning and active engagement, include creating an environment characterised by freedom of expression and mutual helpfulness, encouraging students' commitment and dynamic contribution to learning by incorporating their prior knowledge and experience and providing opportunities to practise concepts and skills.<sup>[27]</sup>

Students and lecturers concurred that Generation Y students communicate well with people of diverse cultures. However, significantly more students thought that they were good communicators capable of maintaining healthy interpersonal relationships, while lecturers perceived them to be more adept at communicating by means of technology, and that intergenerational miscommunication and students' seemingly casual and unprofessional approach hampered their professional communication. The contrast between students who regard themselves as good communicators (in spite of the detrimental effects of technology on their interpersonal relationships) and lecturers who think Generation Y students have limited communication skills, may contribute to challenges arising in the teaching and learning environment.

In this study, students matched the typical view of Generation Y as a wired and connected cohort whose face-to-face communication abilities have deteriorated owing to information-communication technology applications in their daily life. Therefore, lecturers should take note of students' need for guidance and role-modelling in developing communication skills. The value of effective communication in health sciences education cannot be overestimated, as future healthcare professionals must be equipped to effectively interact with patients, colleagues, families and community. The importance of developing and updating clinical communication skills training

is well documented.<sup>[28]</sup> However, Generation Y students may be prejudiced against training in intergenerational and interpersonal communication skills due to their perceived superior communication proficiency.

A limitation of the study is the self-reported data and that students may have felt a compulsion to participate, as the questionnaires were administered during an academic contact session. The anonymous and voluntary nature of their participation was explicitly mentioned, both in the prior briefing and the questionnaire, to eliminate such bias. Secondly, the study may not represent students in other health sciences faculties in South Africa. While a relatively large cohort of students ( $n=616$ ) and lecturers ( $n=71$ ) were included in the study, the number of participants could be expanded to include data from other health sciences faculties. The small number of lecturers compared with the number of students has an impact on the significance of differences between the groups.

Finally, qualitative exploration of the quantitative findings reported in this publication may yield greater in-depth insight, triangulate the findings (increase validity) and contextualise the knowledge gained.

## Conclusion

When considering the design and development of an educational framework, it is imperative that the teaching and learning environment of the 21st century and the needs of Generation Y students are taken into account. This includes identifying areas of misunderstanding between students and lecturers that lead to conflict and impaired relationships. Key focus areas include personal attributes, learning styles and needs, communication skills, and the appropriate educational environment for this generational cohort. This study provided comprehensive data revealing shared perceptions and distinct differences between Generation Y students and lecturers that indicate possible misperceptions or potential unrecognised needs that should be examined further to contribute to progress in health sciences education.

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## References

1. Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet* 2010;376(9756):1923-1958. [http://dx.doi.org/10.1016/S0140-6736(10)61854-5]
2. Howe N, Strauss W. *Millennials Rising: The Next Great Generation*. New York: Vintage e-books, 2000.
3. Earle V, Myrick F. Nursing pedagogy and the intergenerational discourse. *J Nurs Educ* 2009;48(11):624-630. [http://dx.doi.org/10.3928/01484834-20090716-08]
4. Bosteng BA. Should generational characteristics be considered in instructional methods? The instructional preferences of Millennials and its implications for medical education. *Internet J Med Educ* 2011;2(1):1-12. [http://dx.doi.org/10.5580/2667]
5. Oblinger D. Boomers, Gen X-ers & Millennials: Understanding the new students. *Educause* 2003; July/August:37-47. <http://net.educause.edu/ir/library/pdf/erm0342.pdf> (accessed 9 July 2013).
6. Sandars J, Morrison C. What is the Net Generation? The challenge for future medical education. *Med Teach* 2007;29(2-3):85-88. [http://dx.doi.org/10.1080/01421590601176380]
7. Pleotis-Howell L, Joard JP, Callahan E, Servis G, Bonham A. Generational forecasting in academic medicine: A unique method of planning for success in the next two decades. *Acad Med* 2009;84(8):985-993. [http://dx.doi.org/10.1097/ACM.0b013e3181ac4f08]
8. Bennett S, Maton K, Kervin L. The 'digital natives' debate: A critical review of the evidence. *Br J Educ Technol* 2008;39(5):775-786. [http://dx.doi.org/10.1111/j.1467-8535.2007.00793.x]
9. 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. [http://dx.doi.org/10.1080/01421590701798737]
10. Mangold K. Educating a new generation: Teaching baby boomer faculty about millennial students. *Nurse Educ* 2008;32(1):21-23. [http://dx.doi.org/10.1097/00006223-200701000-00007]
11. Chickering AW, Gamson ZF. Seven principles for good practice in undergraduate education. *AAHE Bull* 1987;39:3-7.
12. Chickering AW, Gamson ZF. Development and adaptations of the seven principles for good practice in undergraduate education. *New Direct Teach Learn* 1999;80:75-81. [http://dx.doi.org/10.1002/TL8006]
13. Eiselen R, Uys T, Potgieter N. Analysing survey data using SPSS13: A Workbook. Johannesburg: University of Johannesburg, 2005. <http://www.ujac.za/EN/Research/Statkon/Documents/Statkon%20Questionnaire%20Design.pdf> (accessed 14 December 2010).
14. University of the Free State Language Policy, 2003. [http://www.ufs.ac.za/dl/userfiles/Documents/00000/335\\_eng.pdf](http://www.ufs.ac.za/dl/userfiles/Documents/00000/335_eng.pdf) (accessed 26 August 2011).
15. SAS Institute Inc. *SAS/STAT<sup>®</sup> 9.1 User's Guide*. Cary, NC: SAS Institute Inc., 2004.
16. Baruch Y, Holtom BC. Survey response rate levels and trends in organizational research. *Human Relations* 2008;61(8):1139-1160. [http://dx.doi.org/10.1177/0018726708094863]
17. Clausing SL, Kurtz DL, Prendeville J, Walt JL. Generational diversity – the Nexters. *AORN J* 2003;78(3):373-379. [http://dx.doi.org/10.1016/S0001-2092(06)60749-7]
18. Bullen M, Morgan T, Qayyum A. Digital learners in higher education: Generation is not the issue. *Can J Learn Technol* 2011;37(1):1-24.
19. Seggie JL. A captivating 'alchemy' – educating doctors for South Africa: The story of MBChB curriculum modernization. *Transactions: Journal of the Colleges of Medicine of South Africa* 2010;54(1):41-45. [http://www.collegemedsa.ac.za/view\\_document\\_list.aspx?Keyword=Transactions](http://www.collegemedsa.ac.za/view_document_list.aspx?Keyword=Transactions) (accessed 9 July 2013).
20. Howell LP, Servis G, Bonham A. Multigenerational challenges in academic medicine: UC Davis's responses. *Acad Med* 2005;80(6):527-532. [http://dx.doi.org/10.1097/00001888-200506000-00003]
21. Lower J. Brace yourself. Here comes Generation Y. *Crit Care Nurse* 2008;28(5):80-84.
22. Moreno-Walton L, Brunetti P, Akhtar S, DeBlieux PM. Teaching across the generation gap: A consensus from the Council of Emergency Medicine Residency Directors 2009 academic assembly. *Acad Emerg Med* 2009;16(Suppl 2):S19-S24. [http://dx.doi.org/10.1111/j.1553-2712.2009.00601.x]
23. Mohr NM, Moreno-Walton L, Mills AM, Brunetti PH, Promes SB. Generational influences in academic emergency medicine: Teaching and learning, mentoring, and technology (Part I). *Acad Emerg Med* 2011;18(2):190-199. [http://dx.doi.org/10.1111/j.1553-2712.2010.00985.x]
24. Frand JL. The information-age mindset. Changes in students and implications for higher education. *Educause* 2000; September/October:15-24. <http://net.educause.edu/ir/library/pdf/ERM0051.pdf> (accessed 9 July 2013).
25. Salaway G, Caruso JB. The ECAR study of undergraduate students and information technology, 2008. <http://net.educause.edu/ir/library/pdf/ers0808/rs/ers0808wg.pdf> (accessed 9 July 2013).
26. Dohn NB. Web 2.0: Inherent tensions and evident challenges for education. *Int J Comp Supp Collab Learn* 2009;4(3):343-363. [http://dx.doi.org/10.1007/s11412-009-9066-8]
27. Shreeve MW. Beyond the didactic classroom: Educational models to encourage active student involvement in learning. *J Chiropract Educ* 2008;22(1):23-28. [http://dx.doi.org/10.7899/1042-5055-22.1.23]
28. Brown J. Clinical communication education in the United Kingdom: Some fresh insights. *Acad Med* 2012;87(8):1101-1104. [http://dx.doi.org/10.1097/ACM.0b013e31825ccb4]