

RESEARCH ARTICLE

Identifying and Teaching Generation X Pharmacy Students

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Objectives. To determine the degree to which first professional year students identify with Generation X characteristics and to compare recall performance following traditional lectures with that following lectures specially designed for Generation X students.

Methods. Subjects were first professional year pharmacy students. Four lectures were used in the study: 2 using traditional instructional methods and 2 incorporating instructional techniques designed to appeal to the Generation X learner. Subjects subsequently completed learning assessments and scores were compared. A validated Generation X scale was used to assess the degree to which the characteristics of the participants reflected those characteristics that define Generation X.

Results. The characteristics of the pharmacy students surveyed did not correlate strongly with Generation X characteristics. However, mean learning assessment scores indicated that the students learned more from the lectures especially designed for Generation X than from traditional lectures ($P < 0.001$).

Conclusions. Students performed better on recall assessments administered following instruction designed for Generation Xers than on assessments administered following traditional instruction. However, the Generation X Scale may not be applicable to this highly selected population.

Keywords: Generation X, learning styles, learning aptitudes

INTRODUCTION

Generation X has been defined as those individuals born between 1965 and 1980. Many educators have noted a shift in student attitudes and values that seems to be associated with this generation. Generation X individuals, currently aged 23 to 38 years, represent the majority of students enrolled in colleges of pharmacy. However, only scant literature is available concerning the impact of Generation X on the pharmacy profession.^{1,2} To date, no publications have addressed the degree to which Generation X pharmacy students conform to the general attitudes and behaviors associated with Generation X.

The possibility exists that pharmacy students do not conform to the general characteristics of Generation X. Generally, pharmacy students matriculate from a pool of select college students who are often identified as high achievers in academics and

extracurricular activities. To gain admission to a professional school, these students typically must have strong study skills and high motivation, attributes that are not necessarily characteristic of Generation X. Thus, professional school students in general and pharmacy students in particular may have discarded their Generation X beliefs in order to perform well in an academically oriented atmosphere.

If indeed Generation X students have different educational needs as suggested by several authors³⁻⁹ and if pharmacy students conform to Generation X characteristics, it would be beneficial to both pharmacy educators and students to determine the instructional methods most likely to stimulate these students. Some authors have described the educational desires of Generation X students and have suggested techniques that might make learning more effective. However, use of these techniques has not been evaluated in a systematic way. The production of educational materials tailored to the learning characteristics of Generation X students may enhance the educational experience of these students. Development of such materials, from a faculty viewpoint,

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is time-intensive and their effectiveness unproven. Thus, the present study to determine the efficacy and desirability of non-prescription medication instruction materials developed especially for Generation X pharmacy student was undertaken. Objectives of this study were to compare recall performance following traditional lectures with recall performance following Generation X lectures, and to determine the degree to which students in the first professional year of pharmacy education identify with Generation X characteristics.

METHODS

Instructional Method

The Medical Institutional Review Board of the University of Kentucky approved this research. Subjects were identified as 100 first professional year students entering the College of Pharmacy at the University of Kentucky in the Fall Semester of 2001. These students were all enrolled in the Nonprescription Products and Supplies I course as required by the college of pharmacy curriculum.

A literature review was conducted to assess educational desires associated with Generation X students. The investigators outlined teaching strategies that were meant to address these desires (Table 1). Some of the strategies such as an interactive course website were thought to be more applicable to overall course management; others such as insertion of clip art and animation in slide presentations were thought to be useful for individual lectures.

Four lectures were identified for study: (1) patient/physical assessment; (2) oral health; (3) external analgesics; and (4) sleep and stimulation. These lectures were chosen because each topic consisted of a single lecture and the material was perceived to be of approximately the same degree of difficulty. In order to minimize variability, the same instructor (Melody Ryan) presented all 4 lectures. The instructor and 2 of the other authors, all members of Generation X, reviewed each lecture for presence or absence of Generation X content.

Oral health and external analgesics were taught using traditional, lecture-based, didactic instruction accompanied by computerized slide presentations and handouts. The patient/physical assessment and sleep and stimulation classes incorporated instructional techniques designed to be more appealing to the Generation X learner. For the physical assessment lecture, the following teaching methods were incorporated: insertion of clip art and animation into slide presenta-

tions; use of a digital video featuring faculty and staff of the college dramatizing patient confidentiality issues; live demonstrations on the use of the stethoscope and sphygmomanometer; and student participation in short role playing exercises in which they enacted typical patient-pharmacist encounters. The sleep and stimulation lecture also incorporated several teaching techniques targeted at Generation X students: clip art and animation were included in slide presentations; student input was elicited during class; and a quiz show format with prizes was used as a means of reviewing material.

Generation X Survey

At the end of the fall semester, students were surveyed using a validated Generation X scale to determine the degree to which they conform to the characteristics attributed to this generation (Appendix 1).¹⁰ The survey instrument did not contain identifiers. Scores were averaged across the groups for each of the 4 domains measured by the survey: jobs, parents, shopping, and yuppies. If a subject did not answer at least 50% of the questions in each domain, that student's responses for that domain were discarded. These domains were compared to the values generated in the survey validation by Manolis et al for Generation X and Baby Boomer cohorts.¹⁰

RESULTS

Of 100 students enrolled in this class, all were born between 1964 and 1981. Sixty-six percent of subjects were female and 34% were male. Two were born in 1964 and nine were born in 1981. The remaining 89 could be classified as Generation X based on date of birth (1965-1980). The most common year of birth was 1978.

Instructional Method

One hundred students completed the learning assessment for patient/physical assessment; 99 students completed one for oral health; 97 for external analgesics; and 84 for sleep and stimulation. Of a possible 5 points, the mean scores for the brief, 5-question, post-lecture assessments were as follows: patient/physical assessment, 4.17 ± 0.9 ; oral health, 3.83 ± 1.0 ; external analgesics, 3.33 ± 1.0 ; and sleep and stimulation, 4.55 ± 0.6 (Figure 1). A one-way analysis of variance (ANOVA) for the 4 learning assessments revealed significant differences across the assessments ($P < 0.0001$).

Generation X Scale

A total of 86 students completed at least part of the Generation X scale. The scores were averaged for each of the 4 domains. The Jobs domain consisted

Table 1. Generation X Educational Desires and Correlated Teaching Strategies

Generation X Desires	Teaching Strategy
Expect learning to be fun	Games, contests, prizes
Independent problem solvers	Small group and individual activities
Technologically literate	Supportive/interactive website, review sessions online
Craving for stimulation	Charts, photos, graphics, cartoons, sound, music, narration
Need for personal contact	Learn names, send e-mails
Preference for concrete and specific information	Focused objectives, emphasize guidelines
Follow rules only after understanding significance	Explain course policies
Maximum communication and feedback	Frequent e-mails, ability to check grades on-line, self-grading practice examinations
Focus on outcomes rather than techniques	Emphasize situations in which information will be used
Relevant to work	Emphasize situations in which information will be used
Experiential learning	Role playing, tasting/touching products
Control learning content, process, times, locations	Website, role in establishing learning goals, high intellectual standards, evaluation criteria
Highlight key points	Bullet lists in handouts
Learning cutting edge technology	Use of website, on-line materials
Find it hard to forgive	Increased proof reading of exams
Want ideas heard	Ask for frequent feedback, learning preferences
Love evaluation	Practice exams on website, ability to check grades online
Expect immediate answers	Practice exams on website, rapid grading of exams

of questions 1 through 7, and 78 students completed at least 50% of the questions in this domain. The group mean score for this domain was 2.87 ± 1.01 . The Parents domain consisted of questions 8-12; 80 students completed at least 50% of the questions in this domain. The group mean for this domain was 2.36 ± 1.16 . The Shopping domain consisted of questions 13-17; 80 students completed at least 50% of the questions in this domain. The group mean for this domain was 4.11 ± 0.90 . The Yuppies domain consisted of questions 18-22; 76 students completed at least 50% of the questions in this domain. The group mean for this domain was 2.62 ± 1.11 . As a compari-

son, the scores for each of these domains for the Generation X and Baby Boomer cohorts studied by Manolis et al are given in Table 2.¹⁰ On each domain, the mean score was less for the pharmacy students, indicating less identification with the characteristics of Generation X than either the Generation Xer or the Baby Boomer.

DISCUSSION

First professional year pharmacy students performed better on the learning assessments following lectures designed to appeal to Generation X than on those administered following traditional lectures. Because all

Table 2. Comparison of Generation X Scale Scores

Dimension	Pharmacy Students (mean ± SD)	Generation X cohort Manolis et al¹⁰ (mean ± SD)	Baby Boomer cohort Manolis et al¹⁰ (mean ± SD)
Jobs	2.87 (1.01)	3.86 (1.47)	3.51 (1.60)
Parents	2.36 (1.16)	3.40 (1.57)	2.73 (1.38)
Shopping	4.11 (0.90)	4.20 (1.05)	4.26 (1.10)
Yuppies	2.62 (1.11)	3.77 (1.22)	3.31 (1.35)

of the students could be classified as Generation X based on their year of birth, these results were not surprising. Informally, several students expressed a desire to have more of their instruction follow the Generation X format. As an unexpected outcome, several students commented on their course evaluations that they enjoyed the learning assessments following the lectures. This finding is consistent with Generation X's strong desire for feedback and evaluation (Table 1).

The Generation X scale created by Manoli et al did not characterize these first professional year pharmacy students as Generation X. In every dimension, the students' mean scores were lower than those of the average Generation Xer *and* the Baby Boomer in the validation cohort, indicating less Generation X characteristics.¹⁰ Each student participating in this research was in the cohort classified as Generation X. How then can these results be explained?

Through the application process, pharmacy students are generally screened for high academic and extracurricular performance. In this way, students participating in this research were likely to be more intellectually advanced than Manolis' subjects who were a convenience sample that had been recruited at a local shopping mall.¹⁰ To achieve academic success, students must learn to perform well in an environment that was not created to appeal to the Generation X student. Therefore, these students may have either less innate Generation X characteristics or they may have learned to suppress their Generation X characteristics. Based on our data, it appears the Generation X scale cannot reliably be applied to pharmacy students.

Kentucky is a rural state and this characteristic is reflected in the student population. This factor cannot

be discounted as a possible explanation for the scoring seen in our population. Additionally, 60% of the pharmacy class studied was female. Manolis et al did not report the gender ratio of their sample. Males and females could possibly score differently on the Generation X scale and this imbalance might have skewed the results. Additionally, there may be some difficulty in applying the Jobs dimension of the Generation X Scale to a student population. The study validating this scale did not exclude students or report on the number of students who participated in the study.¹⁰

Despite scoring relatively low on the Generation X scale, first professional year students performed better on recall assessments following Generation X-type instruction than that following traditional instruction. This apparent discrepancy may have several explanations. Active learning techniques employed in the Generation X-type lectures have been just as well received by many other types of learners.¹¹ Our results may simply reflect increased student engagement in the learning process. The other possibility is that the students have stronger Generation X characteristics than indicated by the scale. Either because of a design flaw in the scale or as a result of some other unknown variable, the scale may not have accurately captured the Generation X characteristics possessed by our students.

Our study has several limitations; the lectures encompassed different topics, so direct comparisons on subject matter cannot be made. Patient/physical assessment and/or sleep and stimulation may be inherently more interesting topics than oral health and/or external analgesics. However, great care was taken to assess the students' knowledge from the patient/physical assessment lecture before any workshops were conducted in

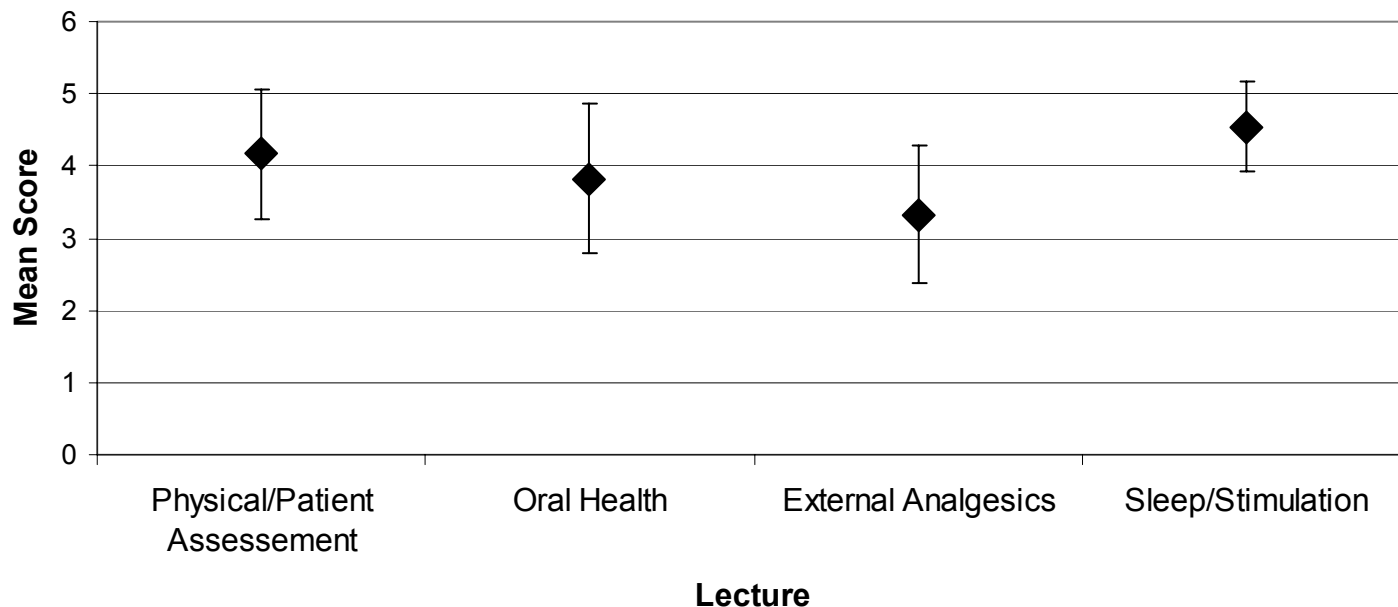


Figure 1. Comparison of mean learning assessment scores with Generation X instructional techniques (Physical Assessment and Sleep and Stimulation) and with traditional instructional techniques (Oral Health and External Analgesics)

which the students had hands-on participation in patient/physical assessment. An additional limitation is that this research was confined to one college of pharmacy. Participation by other colleges of pharmacy throughout the country would broaden the applicability of this data.

CONCLUSIONS

Pharmacy educators might be more effective if they incorporate more instructional techniques that appeal to the Generation X learner. In our experience, these techniques were easily developed and could be applied to a broad range of subject matter. First professional year students did not score highly when tested with a validated Generation X scale, indicating less Generation X-type characteristics. The Generation X scale may not be applicable to pharmacy students. Future work will focus on learner preference and standardization of instructional methods.

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Appendix 1. Generation X Scale

Generation X Scale

Please use the following scale to indicate your agreement with each of the statements below: Strongly disagree=1; Disagree=2; Disagree Somewhat=3; Neutral=4; Agree Somewhat=5; Agree=6; Strongly agree=7

1. I try to imagine myself in this same job a year from now . . . but I'm not seeing any pictures.
2. My job is well beneath my abilities.
3. I experience the endless stress of pointless jobs done grudgingly to little applause.
4. My job is uncreative.
5. My job does not live up to my self-image.
6. I often consider leaving my job to take another that pays less but places me back on the learning curve.
7. No matter how hard you try, you can never be more than 12 years old with your parents.
8. I have caved in to target market strategies aimed at myself after holding out for a long period of time.
9. Shopping should not be taken at face value.
10. Marketers consider me among their most desired markets.
11. Baby boomers have material wealth and long-range material security accrued by virtue of fortunate births.
12. Elderly baby boomers pine for their hippie or pre-sellout days.
13. Boomers always grab the best piece of pie and then put barbed-wire fence around the rest.
14. I have to endure pinhead baby boomers rusting above me for the rest of my life.
15. Boomers have homes won in a genetic lottery.