Teaching the Generation Y Anatomy Student

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Received: August 27, 2018; Published: September 18, 2018

Abstract

Background: Generational groups are comprised of individuals molded by common historical and social events during their formative years. The generation of Millennials [born 1982 - 2002], also referred to as Gen Y, holds a decisive place in the anatomy organization of developed countries. They are the largest demographic group in history of healthcare to attend institutes of higher education and enter the workforce. Millennial students are disparate in their learning styles, work culture and overall demeanor, and anatomy educators seem to struggle to comprehend this generation of students.

Aim: The goal of this article is to delineate teaching strategies to make the classroom experience more meaningful for anatomy students by improving lecture efficacy with a greater emphasis on student learning styles and classroom participation.

Methods: A critical analysis of peer-reviewed published research articles pertaining to the education of anatomy students was carried out. Based on empirical data, this article suggests curricular strategies to enhance student engagement and optimal knowledge acquisition in Generation Y anatomy students.

Results: Generational differences within the anatomy profession are inevitable. However, they must be recognized, analyzed, and addressed if the profession is to meet the current demands of healthcare. Based on empirical data, it can be concluded that the classroom experience can be made more meaningful by improving lecture efficacy, ensuring congruence of teaching and learning styles and enhancing classroom participation. Specific approaches towards these ends have been discussed in the article

Conclusions: Due to the multifaceted nature of learning in healthcare, and a variegated student population, a rich repertoire of teaching methods are required. Educators with a command of their subject, allied with high-quality delivery of educational material will impart the best education to their students.

Keywords: Curriculum; Learning; Millennial; Generation Y; Teaching

Introduction

Generational groups are comprised of individuals molded by common historical [1] and social events [2] during their formative years. Though individual episodes obviously differ among these people, they possess a common generational personality with unique beliefs, values, attitudes and expectations, which impact their behavior in educational and work settings [1,3]. A widely accepted generational grouping, based on the birth year, includes: the ‘GI Generation’ [1901 - 1924]; the ‘Silent Generation’ [1925 - 1942]; the ‘Baby Boomers’ [1943 - 1960]; ‘Generation X’ [1961 - 1981]; ‘Generation Y’ or ‘Millennials [1982 - 2002] and ‘Generation Z’ from 2003 onwards [4]. This generation of Millennials, referred to as Gen Y in this article, holds a decisive place in the anatomy organization of developed countries as it is the largest demographic group in history to attend institutes of higher education [2,5] and enter the professional workforce [1,3,6].
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Each generation of anatomy educators, seems to struggle to comprehend the defining characteristics of the generations that follow [7]. This is currently most apparent since Gen Y anatomy students are distinct in their behavioral traits [8], which are at variance with their educators who belong to earlier generations [4, 9]. These contentious generational differences within the anatomy profession are inevitable [10] and must be recognized, analyzed, and addressed if the profession is to meet the current demands of healthcare [3,7,10]. This adjustment between educators and learners will aid millennials in achieving success in their professional careers by being trained in a manner that is congruent to their preferences.

The singular goal of this article is to delineate teaching strategies to make the classroom experience more meaningful for anatomy students by improving lecture efficacy with a greater emphasis on student learning styles and classroom participation.

Generation Y students are the same worldwide

It has been suggested that since most studies on the traits of Gen Y students have been conducted in Western countries, the characteristics associated with this generation might be country and culture specific [3,11]. However, reports suggest that the Gen Y population worldwide is inherently similar [10,12] due to the export of Western culture through globalization and social media [13]. Even in Asian countries where family considerations are relatively more important [14], the internet, urbanization and small family sizes [2,13,15] have created a technologically advanced, confident and self-involved generation very similar to the Western counterparts [15].

Why are considerations of generation Y students important in anatomy?

It is pertinent to recognize that Gen Y anatomy students are very diverse in their cultural, economic, and geographical backgrounds [16] and hold a pivotal place in healthcare organization [2]. In developed countries the Gen Y population is the largest group entering the healthcare workforce [10] and their training will impact the delivery of healthcare for decades [17]. Institutes worldwide rely heavily on these students [3,10] and hence their generational traits are paramount to anatomy schools seeking a competitive advantage in student recruitment and retention [3,7]. In addition, though diversity among the OT educators is expanding [9], most are or will be training students who come from a background antithetic to their own [6,11]. Many educators fail to recognize this, and continue to adopt techniques that worked well previously [18]. Hence current teaching strategies need to address the specific requirements of Gen Y anatomy students.

What are the general characteristics of generation Y anatomy students?

Gen Y anatomy students possess unique characteristics [9], quite similar to the overall population of Gen Y students [11] and divergent from past generations [3]. The most defining characteristic is their natural flair in acquiring and using technological tools [6,9] with an intuitive understanding of digital language [2]. They are the first generation of students to grow up with digital technology [9] and prefer visuals and graphics to text [12]. Moreover, having received the complete attention of their parents while growing up [19], some appreciate their instructors showing a personal interest in their education, development plans and achievement goals [13,14], and typically perform better when instructors connect with them on a personal level [19]. In addition, since this generation was raised in a less authoritative environment [8,11] they require more justification and relevance behind new ideas and processes [20]. Overall, Gen Y students prefer a relaxed learning environment [6,11], with more freedom [13] and a free rein for personal expression and creativity [21].

Many researchers in teaching pedagogy have focused their studies on the academic needs of the traditionally perceived student (ages 18 - 21 years) who usually attends daytime courses in college classrooms [22] and often stays to participate in social activities on university campuses [9]. However, another growing academic student cohort [23] is composed of the non-traditional or adult student-workers (22 - 55+ years of age) who constitute a significant proportion of the student population [21]. They typically balance more competing life roles [10,13] and work multiple part-time to full-time jobs [22]. Since many enter of these students enter school several years later after high school [1,5,8], they often need preparatory reentry courses [23] and are at a greater risk of dropping out of school [7].

Citation: Joydeep D Chaudhuri. “Teaching the Generation Y Anatomy Student”. EC Clinical and Experimental Anatomy 1.2 (2018): 62-70.
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How do generation Y students learn best?

Based on the recognition of the unique needs of Gen Y students [21], it is propitious to identify their learning strategies. While very categorical learning styles might not be identified [5,22], considering that particular professions often attract individuals with similar core personality traits [6], some commonalities in learning preferences may be expected [1,5,8,9].

Over the past decade, complementary interfaces have fostered a neomillennial learning approach based on an enhanced efficiency in classroom teaching [23]. Unfortunately, there is a paucity of research on strategies that work best with Gen Y students in anatomy programs, and hence this article draws evidence from recent scholarly publications in other anatomy disciplines such as medicine [22], nursing [24] and other anatomy disciplines [13,19,20].

What are the characteristics of present day anatomy educators?

Reports indicate that generational differences in the teaching environment is a contentious issue since individuals with divergent perspectives and orientations are working towards a common goal [25,26]. Moreover, educators from all generations typically prefer to teach in the way they were taught [8], their learning styles also influences their teaching styles [13,21,22].

Traditional healthcare education has been based on the Socratic Method where the teaching is led by an educator in which the participation of the learners is extremely limited [22]. This practice of teaching is preferred by earlier generations, due to a high respect for hierarchy [27], and a willingness to yield to authority almost without question [9]. This practice has been accepted and continued by later generations of students [28]. The Gen Y students in sharp contrast question authority and resent top-down management [4], and hence are direct and outspoken [9]. They belong to an exclusive generation that is optimistic, collaborative, team-oriented [29], and are very reliant on technology [2]. It is the first native online generation [3] and hence are culturally diverse, globally oriented [30], and constantly connected worldwide [2,25]. The environment of discord in teaching is further aggravated by the skepticism of educators who have less respect for knowledge gleaned from the internet, and not borne out by experience [31].

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Effective teaching depends on the tripartite relationship between students, educators and institutions with established learning practices and effective supervisory relationships [32]. Students belonging to Gen Y prefer a broad spectrum of teaching strategies that emphasize a student-centered approach [3,5]. Moreover, due to shorter attention spans [22], they prefer variety in formats of delivery of educational material to maintain interest [Dowell, et al. 2013]. Thus, their ideal learning environment involves less lectures [3] and more group based projects that emulate the work environment [17]. In addition, this group of students desire to do the work themselves [19], want educators to set clear goals [22] and want to feel part of a team [4,17].

It is noteworthy, that the main reasons for student dropouts in professional healthcare programs are because they perceive the coursework as being irrelevant [1,9,22] and the teaching that they are subjected to does not match their learning styles [8]. In addition, they also complain of a lack of personal attention in their learning efforts [11, 17]. Hence, the ultimate goal of all anatomy educators should be to develop a curriculum that amalgamates synchronous and asynchronous learning. Synchronous learning refers to a learning event in which all the students in a group are engaged in learning at the same time [20]. In contrast, asynchronous learning enables information sharing between people in a network [3,19] and so learning does not take place in the same environment or time [18].

Making the classroom experience more meaningful

The most important aspects of healthcare training include clinical problem solving [4], learning how to acquire knowledge [26], and developing client management strategies [4,7]. Considering the current educational environment, the acquisition of these skills requires a divergence from the traditional methods of delivery of education [9]. However, many educators are not inclined to disrupt this stable environment of traditional teaching [29]. In addition, despite the increasing prevalence of asynchronous learning [23] a significant amount of teaching in anatomy education still occurs in the classroom [19]. Hence, one of fundamental tenets of educating the Gen Y anatomy student should be to make the classroom experience more meaningful, since evidence indicates that dynamics between educators and learners enhance student participation and enjoyment [22,32]. Though the strategies that have been suggested are drawn mainly from other anatomy disciplines, these techniques are largely transferable to the anatomy educational process.

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Strategies and approaches to make the classroom experience more meaningful for generation Y anatomy students.

### Improving lecture efficacy

The status quo of traditional classroom lectures does not meet all the educational requirements of Gen Y students [3,5], and have thus acquired a negative reputation in modern learning [7]. Consequently, anatomy lectures need to have clear objectives that are brief and high yielding [1], and with the specific purpose of clarifying knowledge gaps [3]. With textbooks and other newer teaching tools providing a foundation of basic concepts [6], lecture sessions should focus solely on explaining high-order concepts [2], and challenging students to apply concepts to clinical scenarios [5]. Since Gen Y students are inclined to assume responsibilities [9], they should be encouraged to acquire information regarding certain aspects of their course content on their own initiative [8]. The abundance of peer reviewed anatomy reference websites that are written by experts [3] and have been validated using quality assurance resources [2] are also reliable supplements to textbooks. In addition, digital media such as podcasts [7] and blogs [13], are also useful educational tools, although these might appear fundamentally antipodal to traditional teaching. This is typically referred to as learner responsible content [LRC], and its efficacy can be tested with low stake quizzes [9]. These quizzes are typically administered, at the beginning of the lecture [11], where students are required to demonstrate their knowledge derived from LRC [8]. Once the expectations of LRCs have been established, classroom didactics should focus on a clarification on specific issues [3]. Thus, to derive maximum benefit from lectures, the specific learning objectives should be outlined prior to the lecture [5] or even at the onset of the course [3]. Such delineation would provide an impetus for students to seek and retain knowledge as the information is repeated, built upon and applied during lectures [11,13].

Efforts to enhance the educational experience of lectures in the anatomy curriculum is always an ongoing subject of pedagogical research. Considering the constraints of the modern anatomy curriculum, two approaches that deserve consideration are the ACTIVE teaching format [5], and the use of didactic games [2].

The ACTIVE teaching format, is an innovative strategy that requires faculty members to focus on a few specific learning points during the lecture [5]. This format, typically used in medicine, facilitates small group interaction within a large group. In this process, learners are assembled [A] into smaller groups, and the lecturer conveys [C] the learning points to students and then teaches [T] a limited amount of background material for a short period of time. The lecturer then presents a case and inquires [I] of the group using questions about client management strategies. Each group discusses the question for 2 - 3 minutes and comes to a consensus on their best answer. The educator verifies [V] their understanding and then debriefs the groups on the rationale behind their answer choice. Then, the educator explains [E] the answer choices and educates students on the learning points. This process of inquiring, verifying, explaining and educating is repeated for each learning point, and the learning points are summarized at the conclusion of the lecture. The entire session should not last longer than 45 minutes, and this has been conclusively demonstrated to improve student engagement. Thus, the ACTIVE teaching format offers an exciting alternative to the standard lecture format, since it requires minimal resources and can be readily applied to anatomy education [6].
Another option that holds promise for student training in the anatomy curriculum includes the use of didactic games that require the reproduction of past events [evaluation of classroom participation can be evaluated by the instructor [evaluation of classroom participation can be evaluated by the instructor [11] or creation of new plans of those events [13]. The level of complexity of the didactic games can also be decided based on the specific objectives of the course [12]. These didactic games are an effective measure in shaping general competences [4], and reinforcing the emotional motivation of the student [7]. They have also been reported to encourage the determination and classification of priorities [11], work planning under pressure [12], willingness to overcome difficulties [5] and critical thinking [3]. A major advantage for educators is that it offers the opportunity to recognize the character traits of students in less stressful situations [9]. In addition, the incorporation of didactic games in the classroom allows some of the responsibility of education to shift from educators to students [8,11]. However, for its successful implementation, the student population needs to be well acquainted with the format through organizational meetings where the rules and expectations can be presented [7].

Ensuring congruence of teaching and learning styles

Recent cognitive research grounded in learning theories, suggests that individuals most often acquire knowledge by different methods depending on the context in which the information is delivered and utilized [7,14]. These methods, referred to as learning styles, have been extensively researched since congruence between styles of teaching and learning have been demonstrated to directly enhance learning [6], and lead to an overall augmentation of the educational experience [3]. More significantly, as previously stated, one of the main reasons for student dropouts in professional healthcare programs is the incongruence in teaching and learning styles [8,13].

A detailed description of various learning styles is beyond the scope of this article, and have been previously well described [5]. Learning styles have been characterized based on a variety of theoretical models [10] with the broad recognizable types being visual spatial, aural, verbal or kinesthetic learners [12]. Hence, identifying the preferred learning style of a student can be a useful to help students to recognize their strengths [25] and identify areas for development [20]. Further, the identification of learning styles also allows for differentiated instructions for students [19]. Differentiated instructions refers to the opportunity to employ different teaching approaches to all the students with the same learning goal [9]. This is a significant and advantageous divergence from the traditional classroom structure by offering multiple options to students for obtaining the information [5]. It can also help educators to recognize where additional activities are required to ensure the learning experience is robust and effective [8].

The importance of learning styles is underscored by the significant expectations of study load in the anatomy curriculum [1], where the information is novel for most students [9]. In addition, when the majority of information is presented in formats that are misaligned with learning styles [3], students spend more time in manipulating the material rather than in comprehending and applying the information [11]. This leads to considerable frustrations and impairment in learning [15,19].

While numerous approaches exist for determination of learning styles [13], the Kolb Learning Style Inventory LSI-IIa is most commonly used in allied health programs to assess the learning style of each group of students [17]. The Kolb’s LSI-IIa method requires the individual to numerically rank responses to specific questions regarding the process by which they learn, and based on their responses four learning style types are converger, diverger, assimilator, and accommodator. Students with the converger learning style are best at finding practical uses for ideas and theories, and their strengths include problem solving, decision making, deductive reasoning, and the ability to define problems [3,5]. The diverger students prefer observation over action, and are best at viewing concrete situations from many different points of view [3]. Students with the assimilator learning style are best at understanding a wide range of information and putting it into a concise, logical form [5]. Hence, they are interested in abstract ideas and concepts, and the logical soundness of a theory is more important than its practical value [2]. Accommodators enjoy carrying out plans and getting involved in new and challenging experiences. These individuals are great at getting things done, leadership, and risk taking [18].

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Enhance classroom participation

Many academics consider class participation as an evidence of engagement in learning and that it benefits learning [8,11,21], critical thinking [17], and interpersonal skills [8,12], and is directly related to overall student engagement [3]. Hence graded class participation could be stipulated as a responsibility that students are expected to perform [5,9,13]. The allocation of grades is necessary as healthcare students typically engage in classroom activities due to extrinsic motivation [4] so that they can exhibit their knowledge and receive training in handling clients in the right manner [7]. If a student perceives that something which needs to be engaged does not lead to one of the above outcomes it is sidelined [3]. In addition, evaluation of class participation encourages learners to study [6], since some students feel it is safe to refrain from class participation since it reduces the pressure of needing to keep up with readings [1,12].

The need for evaluation necessitates the need for reliable and fair assessment of student participation in the classroom. There are several techniques based on Bloom’s taxonomy of learning objectives currently used in evaluating student participation that are directly aimed at addressing these concerns of reliability and fairness in grading practices [5,11]. The most logical solution to reduce such ambiguity is by incorporation of an assessment rubric, using a holistic approach that sets clear standards of performance for students based on observable behavior in the classroom [8]. The components of a rubric should broadly include the task description that students are expected to perform [2], and a scale detailing how well or poorly the task is performed [5], a breakdown of the dimensions of the task [9] and an identification of the highest level of performance [3].

These assessment tools for evaluation of classroom participation can be evaluated by the instructor [11], and discussed with the learner in the form of mid-term assessments and optional educator-learner conferences [12]. This approach alleviates the subjective nature of assessment of class participation [8,11,21] and offers students an opportunity to recognize and improve poor performance [6]. Another option is through the use of peer assessments, where students rank their fellow students at the end of the term [4]. However, this form of assessment has been criticized in the past due to perceived friendship biases [11]. The third option for grading class participation is the practice of cold-calling, wherein instructors randomly select students for a response to an ongoing class discussion, without prior warning [4,11]. In such a circumstance, students can be provided with an advanced list of topics that they are responsible for knowing prior to the lecture, and the expectations of these cold-call responses [5].

Discussion

The current educational environment present many opportunities for combining strategies, and the educational process in anatomy is gradually conforming to evidence-based methods of teaching, and applying cognitive processes to education. The strategies discussed in the preceding sections aim to empower educators to modify and integrate various approaches into their teaching practice, to make education more engaging for students.

Contrary to current belief, educators need to be cognizant of the fact that Gen Y still want a significant part of their learning to be delivered in the classroom [7,17]. Lectures still hold a crucial place in anatomy education by encouraging students to participate in the learning process. However, traditional educators are often concerned with controlling the learning environment [27,30], since they hold the power and responsibility in a class [26]. Ironically, Gen Y students want more autonomy in their learning [5,15] and hence educators need to be more flexible to arrive at a compromise solution.

Lecture efficacy, a subject of much discord, can be easily improved by low cost interventions such as the active approach, which do not require any special technology. However, faculty should not have to spend an inordinate amount of extra time on preparing a newer format of lectures. The prime focus of a lecture should be on stimulating a good discussion [9], without reducing the amount of relevant information [5]. Therefore while still holding authority, the primary role of the educator should be to act more as a facilitator of student learning.
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The incorporation of didactic games in a classroom has also been demonstrated to make a positive impact on the improvement of lecture efficiency, particularly in the anatomy field [8,11,21]. However, more robust tools need to be designed to assess the specific nature and strength of the effects of these games on the learning process, and eventually on client care. In addition, more research is also required on the perceived usefulness and degree of acceptability of these didactic games by students.

Despite good intentions, excessive concern solely on teaching the subject may lead some educators to neglect to consider how much of the teaching material is actually conveyed to the student [1,9,22]. Since the most striking barrier is the disparity in teaching and learning styles [21], teaching needs to be orchestrated in a multifaceted manner across a range of student learning styles. This approach champions student choice and builds a connection among students. Teaching to various learning styles, also enhances the effectiveness of interdisciplinary team interaction and thus ensure the long-term viability of the anatomy profession [3].

It is also critical that educators self-reflect on their teaching styles as they might be inclined to continue to teach in ways that they themselves learn best [31]. In addition, effective educators will recognize that even with the best teaching plan there is always the scope for improvement [32]. Student feedbacks [22] and video recordings of lectures [29] are also useful tools that offer an unaltered and unbiased insight of the effectiveness of the teaching from a student perspective.

While there is a plethora of resources and research to support educators in their efforts to maximize student participation in the classroom [1,9,22], literature is scarce in methods to assess the quality of this participation. Many faculty interpret student responses to faculty questions and classroom discussion, and comments during lectures as evidence of an actively engaged student population [7,33]. Because of this conviction, class participation is often evaluated in many anatomy curriculum. However, a caveat is that grading the evaluation of class participation can be unreliable as it is difficult to evaluate consistently [2,31,33], and objectively [1,9,22]. It is often challenging for educators to justify grades based on classroom participation [33]. Further, it is of significant concern that students who are introverted could be disadvantaged by such practices [34], and a lack of opportunities to provide feedback to students may prevent them from improving their performance in this area [2]. Hence, excessive reliance should not be on evaluations of classroom participation till more robust assessment tools are developed.

Conclusion

In conclusion, it must be recognized that this article does not undermine the more traditional methods of teaching and training of anatomy students. It only seeks to emphasize that due to the multifaceted nature of learning in healthcare, and a variegated student population, a rich repertoire of teaching methods are required. While judging the quality of teaching is extremely challenging due to the variables involved, the best research suggests that educators with a command of their subject, allied with high-quality delivery of educational material will impart the best education to their students.

Funding

This study was not funded and there are no potential competing financial interests.

Authorship

The manuscript is an original work, has not been published previously in whole or part, and is not under consideration for publication in any other journal.

Citation: Joydeep D Chaudhuri. “Teaching the Generation Y Anatomy Student”. EC Clinical and Experimental Anatomy 1.2 (2018): 62-70.
Teaching the Generation Y Anatomy Student

Bibliography


Citation: Joydeep D Chaudhuri. "Teaching the Generation Y Anatomy Student". *EC Clinical and Experimental Anatomy* 1.2 (2018): 62-70.
Teaching the Generation Y Anatomy Student


Volume 1 Issue 2 October 2018
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Citation: Joydeep D Chaudhuri. “Teaching the Generation Y Anatomy Student”. EC Clinical and Experimental Anatomy 1.2 (2018): 62-70.