

Challenges for generations in higher education in health

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Abstract

The characteristics of information and communication technology use in today's society create a series of challenges within health sciences higher education learning scenarios. The objective of this article is to present several problematic cases which illustrate these challenges and propose ways to handle them. The main element at the disposal of health sciences higher education professors is the establishment of rules and clear limits in the interaction with the new generations. Learning scenarios in which information technologies for communication are used in an emotionally safe atmosphere of trust should be the goal of curricula in health sciences higher education. (**Acta Med Colomb 2020; 45. DOI: <https://doi.org/10.36104/amc.2020.1649>**).

Key words: *medical education, applications of medical informatics, distance learning.*

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Introduction

Education is a human and social process of cultural communication and transformation (1). Generally speaking, it involves a generational relationship in which a collection of knowledge is delivered by one generation to be received, critiqued and nurtured by the new generation. In a formal context, that is an institutional or school context, it is taught, with the specific knowledge being mediated by a curriculum, seeking a human ideal (2).

The teaching and learning processes are captured in study plans which, depending on the personal profile being sought, use various teaching and learning venues. These venues are dynamic, as they depend on the behavior of the educational process actors, that is the students and teachers on one level, parents and administrators on a second level and society in general at a broader level (2).

Some characteristics of today's society create a series of challenges in learning settings, including those of higher education in health care. Thus, the following challenges in medical education are described: a health system in flux, different societal expectations regarding people's health or disease, patient safety during health care, ethics and professionalism (humanization), changes in curricular emphasis (from objectives to competencies and now to learning outcomes), the amount of information, the need for continuous learning, technological changes and the new generation of students (3). This article aims to present some of the challenges in the new generation of students with regard to the learning scenarios in higher education in health, in order to provide some recommendations for handling them.

Conceptualization

In order to understand the topic at issue, the concepts of challenge, generation and learning scenarios must be defined. The etymology of the word "challenge" [*desafío*, in Spanish] is the Greek *des* (denial of action) and *afiar*, a verb used in ancient times to give assurance of respect for the physical integrity and belongings of another (4). To challenge means to enter into a dispute. According to the Real Academia de la Lengua [Spain's official institution for the preservation of the Spanish language], it is also understood as the action of facing difficulties with determination (5). Thus, in this article, "challenge" is understood to be the professor's conscious act of facing (valiantly) an adverse condition in the learning scenarios.

The concept of "generation" has historical roots in the beginning of the twentieth century. A generation is considered to share three characteristics: 1) births within a certain time period, 2) a historical moment (period or era), and 3) some sociocultural conditions (6). The meaning of "generation" in the academic community was validated in an exercise during a higher education in health care meeting (Figure 1). In the network society (7), generations, from a time perspective, are shorter. This, together with the increased life expectancy and extended length of institutional education, increases the number of generations which share the educational process.

Currently, the following generations may be considered to come together in higher education in health care: baby boomers (1946-1964), generation X (1965-1980), millennials (1980-1996) and centennials (1996 to the present). The last two generations have also been described as generation

“C” - always connected to the network - (8), generation app - due to their tendency to solve their problems through these mobile phone computer programs - (9), generation YouTube - due to their interest in social networks with high visual content- (10) or digital natives due to their close relationship with technology and its subsequent impact on behavior (11).

The greatest challenge may not be the new generations but rather the convergence of four of them on the learning scenarios of higher education in health care. For example, patients and relatives may come from any of these generations, students are millennials or centennials, professors are distributed among baby-boomers, generation X and millennials, and administrators are mostly from the oldest generation.

Finally, learning scenarios are understood to be educational venues composed of two dimensions: a psychosocial and a material dimension. The psychosocial dimension is closely related to the generations and consists of three sub-domains: personal (teacher-student), social and organizational (the structure of the educational institution.) In turn, the material dimension has two sub-domains: real space (classrooms, hospitals, doctor’s offices, communities) and virtual space (virtual classroom systems and social networks, among others) (12).

The sociocultural context of higher education in health care

Higher education in health care is permeated by the network society, whose main characteristic is not information *per se*, since all societies have been based on information. Its major difference lies in the large capacity for transmitting information and data, as well as the constant connection which all human beings theoretically have to the sources of information through information and communication technologies (ICTs) (7, 13).

The ICTs, and, more specifically, the speed at which these technologies are updated, are one of the most decisive factors in the learning scenario challenges (14). According to Moore’s Law, technology doubles its velocity exponentially (double the capacity at half the price every two years) (15). Unfortunately, this speed of change exceeds humanity’s speed of adaptation (which has a more linear behavior), which explains the sense of loss, speed and constant disruption in all generations (14).

Furthermore, the healthcare system no longer only demands care, companionship or relief during suffering from healthcare professionals. Other demands have been added, including: patient safety (including personal information privacy), quality health care (with the multiple definitions of quality which may be found), reduced healthcare costs and relevant clinical outcomes (from the patient’s perspective); all of this without affecting, or even improving, the healthcare professionals’ quality of life.

This environment of change (social and healthcare)

contrasts with the speed at which university curricula can respond. For example, operational licenses in Colombia are granted for seven years (17), a period during which some healthcare or technological goals will have become obsolete while others will have been introduced. Thus the need for higher education institutions to reformulate their objectives towards their students’ self-learning and continuous education, with sustainable changes, at a reasonable cost without requiring much space-time (14).

Lastly, considering the traditional distribution of curricula into basic, preclinical, clinical and community courses, and bearing in mind that each of these has several professors in different learning scenarios (taking into account the different practice centers), two different students will have different educational experiences depending on the learning scenarios through which they pass, which eludes the homogeneity which the program educational project (PEP) seeks to establish. That is, if there are already a significant number of challenges in the manifest curriculum, the potential challenges in the manifest curriculum and hidden curriculum are much greater (18).

Generational challenges in higher education in health care

With this context, the challenges for the participants in the healthcare education process are presented. Each of them is in a situation which could potentially occur within the current higher education in health care.

Demand for guarantees

Problem situation. *Four weeks into his course, a student says, “Hi Teach: the group reviewed Decree 2566 which states that one academic credit corresponds to 48 hours of work. We are concerned that your class has two credits and in just four weeks we have put in 40 hours, so we are requesting that you adjust the time because we should only work two hours a week, not ten.”*

Students of the millennial and centennial generations see education as a service for which they are paying and therefore demand that the terms of the educational contract (curriculum and study plan) be fulfilled (8). It is not unusual for them to arrive at the academic venue with the course micro-curriculum in hand to verify compliance with what is recorded as to its content, distribution and hourly load. They demand that what is written in these documents be adhered to.

In addition, they consider that their grades are a reflection of the opinion and relationship they have with their professor and not their academic performance. This is due to the fact that they were raised in an environment in which people deserve a prize just for participating in a given activity, not for their actual performance; what some have called the “trophy generation” (19). This generation was raised with the idea that “you can do anything”, and therefore circumstances

which show an inability to produce high achievement and performance (for example, low grades) cause anxiety.

To face this challenge, one must be very explicit in the rules of the game at the beginning of the course, exploring what is described in the micro-curricula and warning that some situations may vary for different reasons. It is also important to define the professor's expectations for the course in terms of time invested, effort, and meeting deadlines, among others. This should be compared to the students' expectations, with common interests between professor and students as a result (8, 20).

Horizontal relationship

Problem situation: *During clinical rounds, a student approaches you and says, "Hi Peter, how are you? I heard you have a lot of work, and you seem stressed about that. Would you like me to help you?"*

The upbringing of students in the new generations was characterized by a horizontal, friendship relationship with their parents (21, 22). They expect all their interactions with authority to be the same way. Addressing a professor by his/her first name is the rule, and few titles (Dr., Mr., Professor) are used. Likewise, they may feel strange when addressed in this manner. They want the professor to be friendly and to spend time with them outside of the academic setting. Thanks to social networks, they can know more about their professors' private lives, which was very difficult in the past (8).

In light of their view of authority as a peer, it is understandable that they would want everything to be negotiable: the distribution of the academic load, grades, schedules and everything related to the educational "contract".

When faced with this way of relating, tolerance is recommended, even if you do not agree with this way of communicating. You should also understand that it is natural for the student not to use formal address, and that this is not a sign of disrespect. For extracurricular relationships, it is very important for the professor to establish limits regarding how much of his/her private information the student may access. Accepting "friend" requests on social networks or "following" on the networks between students and professors should be in line with these explicit rules (8).

Participative pragmatism

Problem situation. *Seeking new learning settings, a flipped classroom is developed. When the discussion time arrives you begin by asking, "What is the pathophysiology of the disease you saw in the video class?" But nobody answers.*

The flipped classroom is a teaching strategy in which the lecture activities which traditionally take place in the on-site setting are moved to the home to take advantage of the time with the professor to progress in theory application (from which the term "flipped" is derived) (23). While this can result in optimization of the professor and students' time, personalization of the content, and use of ICTs in a

generation accustomed to them, students may not review the material before arriving in class because the curriculum does not provide enough independent time to do so (24), thus losing all the benefits and causing displeasure, especially in the professor.

Furthermore, while the new generations demand a voice and vote in learning scenarios, they prefer to criticize rather than be criticized. Thus, questions which may expose them in front of their peers will tend to fail (such as the question used in the problem situation). Questions such as "What would you have done differently in this case?" or "In what ways do you think the author of that text acted correctly?" move the critical focus outward and foster participation in the flipped classroom (8).

As an adjunct characteristic, the development of search engines and mobile applications leads to a lower dependence of students on their memory and transfers it to these devices, seeking a timely (read "immediate") answer, such as these technological developments offer. Questions which do not have a clear practical application tend to be dismissed by the new generations (25).

In conclusion, the learning scenarios are mediated by the degree of criticism to which students may feel exposed and the relevance (practical and functional) of the questions asked, which they will try to answer immediately, in most cases using their electronic devices connected to the internet.

Dealing with this challenge is complex. Banning the use of mobile telephones is a tempting way out, but it is impossible to accomplish, in social terms. Once again, establishing boundaries regarding what is expected to be answered with or without the help of electronic devices, making space in the curriculum for the independent activities and relating the questions to current and future problems the students will face is the best way to be successful in this situation (8).

Multitasking generation

Problem situation. *One of the clinical practice sites reports the absence and lack of response of one of the students. You call the student to your office, but he does not show up. Two days later he finds you in a hallway and tells you that he has been carrying out a lot of extracurricular responsibilities and that is why he did not go.*

As previously discussed, horizontal relationships are the rule for the new generations. Formal settings such as offices or scheduled appointments for evaluation produce a state of anxiety that makes them difficult (8). When they do take place, students want a positive language and expect it to be understood that, under the current societal conditions, they have many other things to think about, not just academics. This is a multitasking generation that wants to be recognized as such.

While the perception is of indifference to authority, it must be recognized that this is the first generation that does not strictly depend on a superior for access to information.



Figure 1. Tag cloud of the concept of generation constructed during a lecture on challenges in health care education for the new generations.

It is not strange that students should ask themselves what a professor can offer that is not on internet, and professors should be prepared to deal with this question (8, 20).

The easy success achieved by individuals the same age as the students (youtubers or influencers), together with the habit of receiving incentives for actions which in previous generations were considered minimal, create unrealistic expectations of their academic effort. They may expect excellence despite not attending the learning settings, or blame the test rather than considering their degree of effort in achieving the objectives (8).

Once again, establishing clear expectations, determining the expected degree of effort for achieving academic success on the assessment scales, establishing communication with the parents, in sum, devising a frequent and reasonable dialogue between professors and students, is the way to deal with this challenge.

Integration of the ICTs

Problem situation. *The use of ICTs in the curriculum is highlighted within the institutional development plans. All the professors have a virtual learning environment, but it is merely a document warehouse, with little interaction between professors and students.*

The introduction of ICTs in higher education in health care should redefine but not replace the learning environments. Merely being immersed in a hyperconnected society does not guarantee success in the use of ICTs in education (24). In fact, their use entails new challenges which are divided into four categories: flexibility, motivation/interaction, facilitating the learning process and affective learning climates (28).

First, flexibility is one of the main characteristics of virtual education and may be seen in the venue (a physical venue is not required for the professor-student encounter), time (carrying out asynchronous activities as required by the student), route (progression through the content in the order the student considers to be appropriate) and cadence

(following the content at the rate the student desires). Most virtual education developments limit flexibility to the spatial realm, since deadlines and content tend to be predefined by the professor (28).

Second, motivation-interaction is achieved through activities which establish a three-way dialogue: professor-student, student-student and professor-professor. Virtual communication networks are better at sustaining than creating relationships, and thus an on-site gathering where professors and students can meet is the best way to facilitate future interaction in virtual learning environments (28).

Third, to facilitate the learning process, the professor must develop non-technical skills in the student such as organization, discipline, time management, technological skills and the capacity for self-assessment (28). Of course, the virtual learning scenario should be guided and planned, establishing an assessment of prior knowledge; including the organizational information (institutional educational plan, programmatic educational project, curriculum, study plan); communicating the expectations to the students; and acquainting the students with the technology to be used during the virtual learning environment. In the end, this planning requires continuous monitoring using: 1) peer activities, 2) follow-up of the platform use indicators, 3) formative assessment and 4) synchronous and asynchronous communication (email, reports, statistics).

Finally, the emotional climate is part of the current *World Wide Web* paradigm, where feelings and the way of communicating them become the center (web 5.0). Empathic communication, with an appropriate use of humor, and frequent encouraging messages in a positive language to direct attention to the most relevant aspects of the course, are the described ways to create a good emotional climate. Unfortunately, few studies tell how to work with emotions in virtual learning environments (28).

Coda: Burnout syndrome in medical students

Burnout syndrome is a multivariate construct characterized by varying degrees of emotional depletion, depersonalization (a feeling of indifference towards the patients) and low perception of personal development. This situation results in decreased empathy, increased fraud, dropouts, medical errors and suicidal ideation (27).

Studies in the United States show that approximately 50% of undergraduate and graduate students have this syndrome, mainly the depersonalization construct (27). It is interesting to note that healthcare learning environments (especially in medicine) impact the development of the syndrome. This has been shown in comparative studies of cohorts with the same age and academic development who choose different professions.

The learning scenario factors associated with this syndrome are directly proportional to the degree of competition in which the curriculum is carried out (mainly in terms of

grades) and inversely proportional to the degree of collaborative work, the teaching quality and the organization of the clinical sites. Despite being associated with a high workload, in students, no relationship has been found to the number of patients, their complexity, the hours of activity nor vacation time (27).

In light of this challenge, less competitive evaluation systems (moving from numerical scales to dichotomous scales), peer tutoring programs, strong university wellbeing programs, group work teaching strategies and longitudinally organized rotations which allow for better follow-up and relationship between professors and students could be considered.

Is it worth challenging the learning scenarios for the new generations?

Research in higher education in health care validates the positive effect on learning outcomes of dealing with the previously described challenges (Figure 2). Huang et al. (29), in a meta-analysis of randomized controlled and quasi-experimental (pre-post) studies identified the teaching and

learning factors with the greatest effect as: proficiency-based learning, small-group work and the definition of objectives, followed by the use of interactive videos (30), problem-based learning and metacognition exercises.

Collaborative work, not only among students but also between the various healthcare areas (transdisciplinarity) should be a paradigm for innovating and dealing with the current challenges in higher education in health care (31). To assess a learning scenario in light of these challenges one will have to ask whether it: is safe for the patients, positively affects the quality of health care, facilitates care transition, is directly supervised by the professor, presents plans to manage and mitigate fatigue and facilitates the development of non-technical skills (professionalism) (32, 33). The administrators of higher education in health care should be alert to these dimensions in their teaching committees by service, to continue or discontinue the clinical practice scenarios.

Conclusion

The impact of information and communication technologies on the network society and the new teaching and learning modalities entailed the convergence of four different generations in the learning scenarios, with challenges for each of them. While the students are learning a discipline, the educational administrators and professors learn the best way of teaching it. One learning scenario for these generations should be bimodal (on-site and virtual), with clear, explicit rules from the beginning, but open to change according to the students' voice and vote, directed towards situated (significant) and emotionally safe learning for all.

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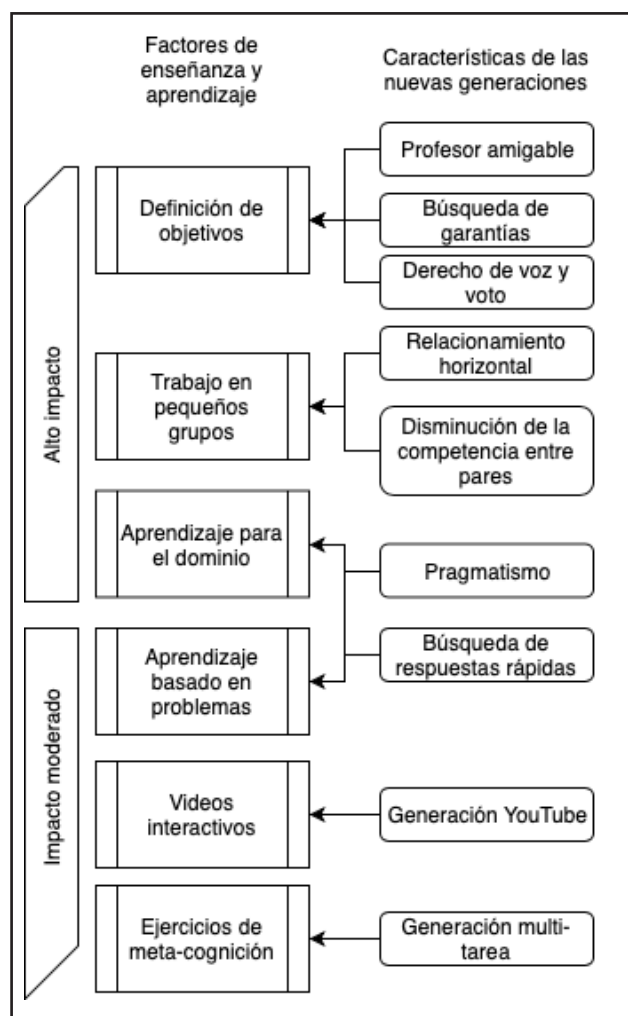


Figure 2. Relationship between high and moderate impact teaching factors and the characteristics of the new generations.

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