

Scheme of Teaching and Learning Process of Inverted Class (Flipped Classroom) with Genuine Inclusion of ICT in Anatomy Students

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Abstract

The ICT's determined new models of teaching and learning that allow to develop a wide range of design of methods for the process of the study of anatomy. This innovative proposal determines qualitative and quantitative benefits to the study of human anatomy in university students belonging to the Faculty of Medical Sciences of the Dental Career of the Catholic University of Argentina during the year 2019. The present research work was to propose and implement an innovative methodology in the teaching and learning process as opposed to the traditional scheme where synchronous and asynchronous group work between groups of students who happen to have an active role in their training.

Keywords: *Teaching; Learning Process; Genuine Inclusion; ICT*

Introduction

The digital age, determined in the new models of teaching and learning linked to the possibilities offered by information and communication technologies, allows develop a wide range of design of methods for the process of the study of anatomy. This innovative proposal determines qualitative and quantitative benefits to the study of human anatomy in university students belonging to the Faculty of Medical Sciences of the Dental Career of the Catholic University of Argentina during the year 2019. The acquisition of skills and the assimilation of knowledge by them was determined by the viability provided by synchronous and asynchronous group work between groups of students who happen to have an active role in their learning process.

One of the main contributions of Information and Communication Technology (ICT) to education, especially in recent years with the staging of applications and tools of the so-called Web 2.0, have been the different possibilities that appear in the field of formal and informal learning in open and flexible environments [1]. The traditional model, which our society knows well, could be summarized in the vision that students attend the lessons that teachers teach and, at home, perform the homework assigned to them in class [2].

The objective of this research paper was to implement an innovative methodology in the teaching and learning process as opposed to the traditional scheme.

Apart from the fact that the relationship of verticality in the teaching and learning process is basically maintained, in this proposal the teacher does not occupy the central place, but officiated as tutor of the process.

“The flipped classroom is a teaching method whose main objective is for the student to assume a much more active role in their learning process than the one they had traditionally occupied” [3]. In short, it is an investment with the previous method [4], where students will study for themselves the theoretical concepts that the teacher provides them and the class time will be used to resolve doubts, carry out practices and initiate relevant debates with the content. A relevant reflection would be that of the author Esteve [5] who quotes: “In any trade, if you work and analyze what you do well, what you do wrong and clean, you will improve. If he only works and does not take stock of what he has done, he will always remain the same for many years to come, but this is no different from other professions” (p.77). In addition, Flipped Classroom can be applied in all curricular areas; primary education, secondary education, higher education and even adult education [6].

Advantages and disadvantages of the flipped classroom method

Among the benefits, the study of the relevant literature shows that the method allows to take advantage of important advantages, regardless of the exact way in which it is carried out. It is important the fact that it entails a great saving in teaching time. Students will show more interest and feel more engaged. In short, the individual becomes the protagonist of his learning.

Flipped Classroom also has the virtue of being an optimal tool for students more capable. It offers the possibility of teaching students to their individual rhythms, which means a superior customization for each one. This model can be ideal for the development of talent of the most capable [7].

As it could not be less within the appropriate ones, the method has some disadvantages that we must have when applying it in order to eradicate them in the best possible way. We will highlight the reticence that may show the students, who may choose to prefer the traditional method, thus refusing to leave their comfort zone. In addition, the application of the inverted class involves a great effort on the part of the teacher [8] who decides to opt for this route, since he must modify his programming and create the material.

Related to the use of ICT, there are also some problems that should be noted. In the first place, there is a need for adequate facilities and specialized equipment. The teacher, who is a key element in the adoption of ICT in the classroom [9], must be convinced and motivated to carry out this project. Also, you will need to possess some degree of communication skills, or else the method may show a number of deficits if not optimally applied.

ICT At the local level Maggio [10] defines two ways of including technologies in teaching practices.

Effective inclusion where technological integration into teaching is carried out by the mere fact of being available and the teacher does not recognize its value for teaching or integrate it with didactic sense, oversailing practices in which its use is superficial... in short: the technology is, but it could not be, since in this case the proposals are similar to those that could be made in a notebook or in an exercise book.

These exercises adopt the most favorable format of technology generating in fact an impoverishment of the pedagogical proposal overprinted by the technology of turn to the pedagogical proposal.

The second way is genuine inclusion in this case the inclusion of technology achieves the purposes of teaching and its contents where teaching practices and didactic proposal are intertwined with technological developments in the processes of knowledge production in the field to which you are referring (p.18).

Materials and Methods

Observational and cross-sectional study was used in a population of 30 students of the Anatomy II course of the Faculty of Medical Sciences of the Dental Career of the Argentine Catholic University during the years 2018 and 2019 where the Flipped Classroom was imple-

mented as a complementary resource of the practical works with material of the traditional theoretical classes. The cohorts divided and formed six working groups; the same were provided papers of clinical cases to link these contents with what was seen during the course and perform activities of upper projective anatomy, where the students linked clinical surgical cases, anatomical images and anatomoclinical correlates.

The activities belonged to topics of topographical anatomy corresponding to the last semester of the course, comparative tests were applied between the populations of the 2018 and 2019 years that consisted of the average obtained by each student in their partial evaluations of each thematic unit during the course. This research work was carried out attentive to the ethical and regulatory objections in force (requirements stipulated by the Good Clinical Practices -GCO-, regulatory provisions and adherence to ethical principles originating in the Helsinki affidavit).

Results

During the course 2018, there was reluctance on the part of the students, who choose or prefer the traditional method of course, only a group formed by 40% of the population preferred the implementation of the Flipped Classroom. A comparison of results of the performance of the partial evaluation of this thematic unit between both groups gave a better average in their grades in which they submitted to the Flipped Classroom than those who preferred the traditional method obtaining an average grade of 7 in the first case against 5 in those of the traditional method, as well as an improvement in their grades compared to the partial evaluations of the preceding thematic units.

In the 2019 cohort, 100% willingly adopted the Flipped Classroom and there was an improvement in their grades compared to the partial evaluations of the preceding thematic units.

Discussion

The implementation of new teaching and learning models linked to the possibilities offered by information and communication technologies is increasingly frequent in the teaching of dentistry. The purpose is to promote collaborative learning in the students who are supported by the constructivist learning model, which postulates that the student is an active subject of the teaching and learning process to the extent that he himself is empowered by the knowledge and tools that teachers offer as a starting point for this construction. It seeks to break with the classic models of education with the aim of generating new knowledge by students from what has already been learned. Higher education and university teachers must understand this new paradigm and work with creativity and ingenuity in order to adapt and be in tune with the group with which they interact. The vast majority of students who pass through the classrooms of the Academic Unit are on average 22.54 years old, so it is common for them to be more attracted to a digital and interactive resource than to a textbook.

In the Flipped Classroom model the contents are generated by the students, the interaction between them is allowed and they only need connectivity, a physical device to carry it out (computer, cell phone, tablet, etc.) and basic knowledge in the use of the network.

It was also highly valued by the students on the advantage of having the material used during the development of face-to-face activities, thus improving the quality of their academic training.

Conclusion

In the Flipped Classroom model of teaching and learning and the possibilities it offers applied to higher education, particularly in the field of morphological sciences such as anatomy, not only represent enormous advantages for the training model anchored in information and communication technologies, but have become fundamental and necessary resources that point to a paradigm shift that has already happened.

It is not possible to address the teaching and learning processes in higher education with yesterday's models that present constantly updated information to people of today (digital natives) who will be the professionals of the future.

The results obtained in this work, not only in terms of the perception of students, but referring to the design of a model of collaborative learning, which allows and expands the classroom spaces, improve the accessibility to study materials through their availability permanently on the web, the incorporation of new audiovisual resources as triggers of educational objectives and emphasizing student-student communication in real time, allow universalizing the educational proposal including all actors of the process and defining students as protagonists of the same and teachers in their role as tutor of the teaching and learning process.

Inclusion and universalization of academic proposals are fundamental notes when it comes to offering quality higher education.

It remains to deal with an even more attractive offer for this group and for teachers, so that both acquire a participatory and above all collaborative role, in an educational model that seeks to overcome traditional models, making available to the student all the tools to make him an active subject and main actor of his own training.

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