

Use Of Information And Communication Technologies In Undergraduate Classes Before And After The Pandemic: Perceptions Of Medical Students At A Brazilian University

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Abstract – Higher education is a complex process that goes through continuous transformations over time, from the origins of the University in medieval Europe to the present time. These changes are not uniform and have been driven by the historical and social moments of each nation. The COVID-19 pandemic hit all countries almost simultaneously and required social distancing and other health measures. This forced schools and universities to change their way of teaching, with the flexibility of activities and implementation of remote classes. This study shows the perception of medical students at a Brazilian public university regarding the use of information and communication technologies before and after the pandemic. Most reported that teachers rarely used these resources in their classes before the pandemic, but started to do so frequently after the pandemic, which provoked a positive impact on facilitating the teaching-learning process. The results obtained suggest that pandemic may have been a driving event for the modernization of university education in Brazil and other countries.

Keywords – Technology; Methodology; Medical Education; University; Pandemic.

I. INTRODUCTION

Education is an activity carried out by humanity since the dawn of History, suffering the continuous influence of cultural elements and the reality that surrounds each society. Over the centuries, the progressive changes in the way human beings relate to their peers and the environment have also modified educational processes. Historically, the teaching-learning process was centered on the teacher, who was considered the most important element, but faced with modernization and globalization, the

construction of more complete individuals is expected, capable of interacting with the reality that surrounds them and modifying it.(1) Traditional forms of teaching are no longer sufficient to promote this development, and from this need, active methodologies emerge, possibly more suited to new, much more critical, pedagogical trends.(2) Social distancing and other biosafety norms implemented by governments during the covid19 pandemic accelerated these changes in the teaching process. Distance classes and activities carried out using information and communication technologies, which were rare before, have become routine.(3) Medical schools around the world were affected and the consequences need to be evaluated.(4)

II. METHODS

A. Objective - To study the influence of the pandemic on the use of information and communication technologies.

B. Procedures - The authors carried out an exploratory, descriptive and quantitative research. Electronic questionnaires were sent to the research subjects (students in the last years of the undergraduate course in Medicine at the University of the State of Pará, in Santarém, Brazil), from January to March 2021, after a consent form. Data were tabulated in spreadsheets and results were expressed as frequency and percentage for further analysis. All ethical standards were respected.

III. RESULTS

A total of 50 medical students were included in the study. Most students (94%) reported that they were already using computers and/or smartphones to do research or study topics related to their education. Half of them felt that information and communication technologies were rarely used by their teachers during classes before the pandemic, although 70% believed that they facilitate the learning process. The percentage of students who reported frequent use of technologies by teachers during academic activities during the pandemic was 88% and two thirds responded that they were satisfied with the results obtained by implementing these resources.

IV. DISCUSSION

We observed in the study that information and communication technology resources were already part of the students' routine, but their use by teachers is below expectations. This is a multifactorial problem and has already been reported by several authors.

In undergraduate courses in Brazil, there is a recent effort by government entities to promote evolution at all levels of education (primary, secondary and higher), through changes in guidelines and curriculum plans that are now adapted to these requirements. (5)

In this attempt to implement new techniques and promote changes in paradigms, university professors face several difficulties, ranging from the curricular structure itself, to the lack of mastery of the methodologies, through the resistance of the professor to use them.(6, 7)

In fact, the change in pedagogical practices at any level of education requires, above all, a change in the way of thinking and acting of the teacher as an individual. It is necessary to see the student from then on as a being endowed with countless possibilities, whose construction knowledge should not be shaped but facilitated. It is a real break with the reductionist monocratic thoughts that previously existed. (8)

Introducing active methodologies in undergraduate courses is not an easy task and it is necessary to face several challenges, both structural and pedagogical conceptions of the professors. (9)

In this new reformulation of university education, undergraduate health courses have been undergoing an intense search in this direction, especially with the creation of new teaching models and political-pedagogical projects based on the conception of knowledge construction by the student, who should have a more critical and reflective, based on problems of the social reality in which it is inserted.(10)

For this, it is required that the professor is open to these new trends and is able to understand and assimilate these tools and become active in the training of more humanized health professionals, engaged in promoting health in a more collective and effective way, having as an objective to improve the quality of life of the clientele in the public health system.(11)

Project-based learning, problem-based teaching, problematization, and team-based learning become part of the pedagogical discourse and impose themselves as teaching practices stimulated by new higher education policies. (5)

Training new professionals is particularly challenging, encouraging the acquisition of knowledge and training through skills and attitudes, to graduate a competent individual is the ultimate goal of undergraduate courses, especially in the health area..(12)

In current times, where technological advances are evident and involve us in practically all of our daily activities, from entertainment to the search for information and communication, information and communication technologies, in the form of cell phones, video, internet, digital platforms, etc. are consolidated as elements of our daily lives that can and should be used in this new way of understanding and teaching. (13)

There has been an increase in the use of information and communication technologies in response to the biosecurity measures implemented during the pandemic, according to our results. This is contrary to expectations. It was expected that teachers would already have a more up-to-date view of communication, taking advantage of all forms of language inside and outside the classroom, using the available technological resources appropriately from a didactic point of view.(14)

Most students in the study had a computer or smartphone to help them search for knowledge. The use of these technologies can increase study alternatives and provide greater interaction between students and between students and teachers. There is the advantage of favoring learning beyond the walls of the classroom, as the association between face-to-face and virtual methods should be valued as complementary.(13)

The percentage of students who believed in facilitating learning with the use of technological resources was high. Today's students hope that these technologies that are part of their routine will also be incorporated into school life. They must serve to broaden and enrich the teaching-learning process. (3, 7, 15)

Some authors draw attention to the risk of misuse of these methodologies and technological resources, with the creation of an anarchic pedagogical space where the teacher is not able to facilitate learning, which can occur if he does not plan properly or do not master sufficiently the techniques you intend to use. (16, 17)

Unfortunately, there is also the economic issue, since the availability of technologies (devices and internet signal, for example) are not always available equally in underdeveloped countries like Brazil.(7)

V. CONCLUSIONS

The pandemic revealed possible weaknesses in the training of teachers and lack of structure in institutions for a rapid adaptation of the educational system to the necessary changes, introducing greater creativity into the educational process without losing the efficiency of the teaching-learning process.

REFERENCES

- [1] Novsimapera G, Mawardi M. Development Of A Guided Inquiry-Based Flipped Classroom Learning System On Thermochemical Material. *International Journal of Progressive Sciences and Technologies*. 2021;27(2):482-8.
- [2] de Matos MAE, de Sá CGP. As metodologias ativas e a docência para a educação profissional científica e tecnológica. *REVISTA INTERSABERES*. 2020;15(34).
- [3] Pontes JKPO, Pontes AB. A TIC atuando como mediadora na educação superior brasileira durante a pandemia do Covid-19. *Filosofia e Educação*. 2020;12(3)..
- [4] Mian A, Khan S. Medical education during pandemics: a UK perspective. *BMC medicine*. 2020;18(1):1-2.
- [5] Farias PAMd, Martin ALdAR, Cristo CS. Aprendizagem ativa na educação em saúde: percurso histórico e aplicações. *Rev bras educ méd*. 2015:143-50.
- [6] Mesquita SKdC, Meneses RMV, Ramos DKR. Metodologias ativas de ensino/aprendizagem: dificuldades de docentes de um curso de enfermagem. *Trabalho, Educação e Saúde*. 2016;14(2):473-86.

- [7] Karakose T. Emergency remote teaching due to COVID-19 pandemic and potential risks for socioeconomically disadvantaged students in higher education. *Educational Process: International Journal*. 2021;10(3):53-62.
- [8] Libaneo JC. Tendências pedagógicas na prática escolar. *Revista da Associação Nacional de Educação–ANDE*. 1983;3:11-9.
- [9] Wall ML, Prado MLd, Carraro TE. A experiência de realizar um Estágio Docência aplicando metodologias ativas. *Acta Paulista de Enfermagem*. 2008;21(3):515-9.
- [10] Mello CdCB, Alves RO, Lemos SMA. Metodologias de ensino e formação na área da saúde: revisão de literatura. *Revista CEFAC*. 2014;16(6):2015-28.
- [11] Alves MNT, Marx M, Bezerra MMM, Landim JMM. Metodologias pedagógicas ativas na educação em saúde. Id on Line *Revista Multidisciplinar e de Psicologia*. 2017;10(33):339-46.
- [12] Cotta RMM, Mendonça ÉTd, Costa GDd. Portfólios reflexivos: construindo competências para o trabalho no Sistema Único de Saúde. *Revista Panamericana de Salud Pública*. 2011;30:415-21.
- [13] Moran JM. Mudar a forma de ensinar e aprender com tecnologias. *Interações*. 2000(9):57-72.
- [14] Silva BDd, Osório AJ. As tecnologias de informação e comunicação da educação na Universidade do Minho. 2009.
- [15] Moran JM. *Novas tecnologias e mediação pedagógica*: Papirus Editora; 2000.
- [16] Arbix G, Consoni F. Inovar para transformar a universidade brasileira. *Revista Brasileira de Ciências Sociais*. 2011;26(77):205-24.
- [17] Elumalai KV, Sankar JP, Kalaichelvi R, John JA, Menon N, Alqahtani MSM, et al. Factors Affecting the Quality of E-Learning During the COVID-19 Pandemic from the Perspective of Higher Education Students. *COVID-19 and Education: Learning and Teaching in a Pandemic-Constrained Environment*. 2021:189.