CEST Centro de Estudos Sociedade e Tecnologia
USP Universidade de São Paulo
Bulletin - Volume 4, Number 3, April/2019

Digital transformation in education and its impacts

Vera C. Queiroz

We live in a society highly connected with diverse electronic devices and communication applications that enable one-to-one, many-to-one, and many-to-many interactions. In this scenario, we cannot disregard the importance of thinking and analyzing the transformations, contributions, and trends arising from the use of new Information and Communication Technologies (ICTs) in the various areas of knowledge. It is the digital innovation impacting on education.

When talking about the digital transformation in education, the term is associated with the use of technology to increase the performance of the educational institution as a whole, improve pedagogical management and obtain better students´ learning outcomes.

The technology *per se* does not solve problems...

In the pedagogical field, it is important to remember and consider the generation of students already accustomed to digital technology and who are unhappy with the old traditional teaching and learning models of mere reproduction of information transmitted by the teacher. This generation, when it comes to higher education, wants to have a voice, motivation and commitment, seeks more significant ways of learning and wants to acquire skills and abilities that will help them face the current demands of the labor market.

Therefore, it is up to the educational institutions to equip themselves with resources and technological means that allow them to improve the courses they offer, as well as to give subsidies and support to the teaching staff so that they can better develop their educational work with the new digital technologies.

In teacher training courses, it is essential that future teachers are familiarized and trained to use current technologies, didactic practices and strategies that engage students in the educational process, and more dynamic methods that take the students from passivity and make them more critical, empathic, collaborative, autonomous and responsible for their own learning path and continuous learning process with new technologies.

The future teachers should also be aware that technology does not solve problems *per se,* and that it should not be used as a mere fad. Its use must be in line with the objectives of the educational institution and the discipline or course offered, and different technologies can and must be adapted to the different learning styles and rhythms of students to benefit them more fully and effectively.

Without the proper training and qualification, only the education professionals who are more daring, less resistant to behavioral changes and to educational paradigms; who are not afraid to take risks of learning with their own students (who may master technology), will engage in digital activities and projects that take them from the comfort zone of their pedagogical practices.

Educational trends using digital technologies

Among the various teaching trends that arise with the use of technologies in the educational environment, we can mention: 1. hybrid teaching; 2. flipped classroom; 3. M-learning (mobile learning); 4. Internet games; 5. immersive and interactive technologies.

1. Blended learning

Blended learning is a model that consists of having part of the discipline or course in the classroom and part at a distance, using online educational resources. It combines virtual with face-to-face moments. The basic principle of blended learning is to work contents, materials, and activities done online with those done in the classroom in a structured, joint and complementary way. This type of teaching is centered on the relationship between teacher and student, and student and student with the knowledge, that is, it tries to make the students protagonists of their learning.

2. Flipped classroom

It is a hybrid teaching modality that, although used in the 90s, gained strength in 2007 with the emphasis given to the students´ protagonism and the use of ICTs in lesson planning. This model inverts the logic of class organization. Students do the research and the studies previously in their time and rhythm, outside the classroom. In class students actively participate in sharing what they have learned. The teacher assists and guides the students and clear their doubts individually or collectively, according to the students´ needs.

3. M-learning or mobile learning

It is a teaching model that uses mobile electronic devices (tablets, smartphones, and cell phones) for learning. The invasion mainly of cell phones in the classroom can be helpful. Students often use these devices for several activities in their daily routines so to use them for educational purposes is a plus. With the mobility and portability of the devices, teaching and learning can happen anywhere and at any time in a simpler and easier way.

4. Internet games

It is the implementation of the logic of games in educational activities with the use of technology and the Internet. Games are often used as a complement to the contents studied and as motivation to students´ progress and further studies. Awards and changes in the level of challenges stimulate pair or team competition and /or collaboration. An example of gamification is the Khan Academy, which is worldwide known and used mainly in elementary and high school.

5. Immersive and interactive technologies

It is a model that mixes the real and the virtual in the same environment, seeking to provide immersive educational experiences, as are the cases of experiences of virtual reality, immersive videos, and augmented reality. According to Romero Tori, professor of the Polytechnic School at Universidade de São Paulo (USP) and coordinator of Interlab (Laboratory of Interactive Technologies of USP), "today it is already possible to have access to these immersive and interactive technologies from simple smartphones equipped with low-cost adapters". Tori also states that the trend is that these technologies will be used in the classroom when adapted to the educational purposes to be achieved.

The digital transformation in education has brought deep changes in the behavior and relationship of teachers and students. Among the challenges and opportunities, there is a moment of questioning and uncertainty: How will students deal with the new educational trends in the future? Will digital technology really improve the educational process?

Instruments to face the new demands for better results and quality of teaching and learning exist, however, there is a need to have more in-depth research and studies to assess the real assertiveness of these instruments in the educational scenario.

Vera C. Queiroz *has a Ph.D. in Education from the Universidade de São Paulo and researcher at CEST-USP.*

Academic Coordinator: Edison Spina

This article is a result of the author's ascertainment and analysis, without compulsorily reflecting CEST's opinion.