



The Technological Revolution and its Impact on Current Education: Educational Response to COVID-19



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Abstract

The Technological Revolution is one of the most important processes that emerged in the current era, better known as the "knowledge society", which implies the introduction of Information and Communication Technologies (ICT) in the various contexts of society, such as in education. The subject of this document arises from the problems experienced around the world and the ignorance of the impact that the pandemic has caused in different aspects of current life. And it is that, because of one of the most serious diseases, countless strategies have been used that allow human beings to mediate their activities as they did previously. Education is one of the contexts that have been affected by this virus, in addition to being considered essential for the development of society, a National Educational Plan has been chosen within Ecuador, giving an immediate and favorable response to the process of teaching-learning, having technology as the main means of interaction. The information contained in the text is closely related to the compilation of various bibliographic sources using the deductive method, which significantly contributes to the conclusion of the problem raised, achieving effective and efficient results from the development of the same research.

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1 Introduction

The Technological Revolution is a process that has had a great impact within the history of humanity, since it has allowed the introduction of new Information and Communication Technologies (ICT) in the various spheres that coexist in society, from health, safety, economics, politics, and education. The new technological revolution has brought with it a large number of events, having as its main characteristic virtuality and the connection of individuals through a digital tool, thus linking each of man's activities in the global era (Ambesi, 2019). At the same time, it is possible to emphasize the close relationship that exists between science and technology in the enhancement of the globalized era, given that thanks to the link between these disciplines, technology has taken a predominant role in the field of society, becoming an essential axis for the development of humanity, since ICTs have been introduced in the various social spheres, in such a way that they are considered essential in the various contexts of the modern era (Díaz & Folguera, 2017; Rivas et al., 2020; Guston & Sarewitz, 2002; Minh, 2004).

A study carried out in 2017 expresses that the introduction of ICTs in Latin America in 2000 had optimal results, thus observing the presence of technological tools in certain homes, especially in developed countries, however, currently both households have a computer, which has even exceeded the purchase and sale of one of the oldest digital media, radio (Quiroga et al., 2017). For this reason and more is that it can be asserted that "technologies are the new communication and information tools, and their influence in the current era is a real fact", therefore, living with them is one of the great challenges of the current era, being these introduced in the various fields of society, thus achieving influence in any area of the social environment, since, from health, politics, culture, economy, and education, this has been present to make positive changes, which go hand in hand with the evolution of man to communication and information processes (Molina et al., 2015).

One of the most interesting aspects in modern society is updating, learning, and digital literacy, since it is not only enough to have a computer, but also knowing how to use it for the benefit of the whole home, alluding to the great importance given to these tools that from one moment to the next became part of people's daily lives, especially in the educational field (Breilh, 2015). Today, education in Ecuador has great technological challenges, and one of them is to make the population understand the benefits and advantages of digital convergence and how it favors human knowledge. That is why government initiatives are considered important, which are responsible for promoting, updating, and demonstrating the necessary knowledge about the network to teachers, students, and the community in general (UNESCO, 2016). Education is one of the rights that every Ecuadorian deserves, so it cannot be excused by the government, since it integrates one of the public policies that guarantee Good Living, (Const., 2008, art. 26) who also must ensure that this right is guaranteed in all its splendor. Information and Communication technologies have had a great impact on educational processes, causing major transformations, disconnecting the teacher's way of teaching with student learning, as in the case of the modalities that arise from it, as are face-to-face, blended and virtual (Villarreal et al., 2019).

Referring to the virtual modality, which is the one that is most closely related to the introduction of ICTs, it can be said that students simply need a technological tool and internet access to learn, a fact that has been developing for some years back, and that, especially due to the current situation in the entire world, regarding COVID-19, which is a disease considered a pandemic, since it does not affect a single territory, but has spread throughout the entire world, negatively impacting universal citizens, great changes have been generated in the various countries thus promoting an education, where the main tool is not the blackboard or the scoreboard, but a computer, tablet, cell phone, or television (Ríos et al., 2015; Dashraath et al., 2020; Zhang et al., 2020). As mentioned above education, apart from the economic, labor, and health sector is one of the sectors that has been most affected by this situation, so the Ministry of Education, which is in charge of Ecuadorian national education in the initial, basic, and high school levels, has generated a new alternative that allows the continuity of this essential process for the development of the country, such as the new Educational Plan, "We learn together at home", developing strategies that reinforce the process of teaching-learning in the country, and that no student is affected by the situation that Ecuador is going through (Ministry of Education, 2020).

In many countries, distance education strategies have been implemented, since this favors the continuity of the educational process and the not contagion by a coronavirus (face-to-face education), more, however, others of them have not yet commented on this process, since they were not prepared to implement virtual education (Elacqua & Schady, 2020; Saiki & Biringen, 1996; Astur et al., 1998). In the case of Ecuador, it has been possible to strengthen education with the technological tools that were already at hand, and despite being a new challenge in education, it is considered the most appropriate strategy to avoid the contagion of COVID-19. At the same time avoid dropping out of education. Despite this, this type of education is considered an alternative to the changes generated in the last year,

so virtuality was considered as the provisional solution to achieve this national objective (Álvarez et al., 2020). More, however, in Ecuador, many figures show that the country is not yet capable of providing distance education, since:

- a) In 2018, the INEC or National Institute of Statistics and Censuses, through a study revealed that 37, 23% of households in Ecuador have a computer, and of this percentage, 23.27% belong to rural areas.
- b) In March 2020, it was found that 37% of households in Ecuador have internet access, and of this percentage, 16% belong to rural areas. Likewise, it was known that of this 37% total, only 24% have computers at home, and of this percentage, 8% belong to rural areas (Oviedo, 2020).
- c) 6 out of 10 children in Ecuador will not be able to continue studying virtually, since they do not have computers or internet access (United Nations Children's Fund [UNICEF], 2020).

At the end of April 2020, 180 countries had closed their schools, and 85% of the students were not attending school, this aims to ask the question: What would happen if Ecuador did not create policies in the sector of education to avoid future student dropout? (World Bank Group, 2020). From this question arises the objective that governs the work in a general way: Identify the impact that the technological revolution has had on current education, as a strategic response to COVID-19 that contributes to the continuation of the educational policies of the Ministry of Education. To finish with this part, the emphasis is placed on a question that will be answered in the development of the work, which is: Has the Educational Plan adopted by the Ministry of Education "We learn together at home" been efficient and effective against the health situation in Ecuador?

2 Materials and Methods

The present work has as a transversal axis to " technology ", thus achieving to identify the most important aspects that are inferred from the education that is developed at present, as an alternative to the teaching-learning process from the situation that is experienced around the world, the COVID-19 pandemic. This work is developed under a qualitative approach. The type of research used is documentary research, which is currently of great importance due to the amount of information, reliable sources, and the variety of them that allow having a wide range of options available in the field network (Ortega, 2017). Also, it facilitates its understanding, starting from the premise of discovering specific knowledge from the search for relevant content that will help the development of future research work.

The present work is feasible to carry out given that it has the interest and motivation of the author, who will describe each of the essential foundations of the investigation, contributing significantly to its development. Likewise, the emphasis is placed on the deductive and bibliographic method, since its development will be related to contributions from various authors, who have made inquiries about the subject in question (Vesper & Gartner, 1997; Calderhead, 1989). From this perspective, it provides the researcher with the necessary information to update knowledge about the impact that the Technological Revolution is causing in current education in Ecuador. The materials that will be used in this work are purely technological, since, from the investigation through the web, the conclusions of the same will be reached.

3 Results and Discussions

The Technological Revolution concept is used to indicate the introduction of technological tools in different countries, thus generating changes in today's society (Mertens, 2018). Thus, achieving a great impact on today's society, since with the advancement of science and technology, man is increasingly being assisted by digital machines capable of meeting his needs in all contexts. The Technological Revolution is taking place amid various social contexts, where great progress can be observed in the application of these tools in the activities and processes carried out by human beings (Economic Commission for Latin America and the Caribbean [ECLAC], 2019). Thus, combining the productivity of man with that of digital tools, trying to achieve success in the various areas that exist in society, such as health, security, and education, Figure 1 shows the digital transformation in Latin America.

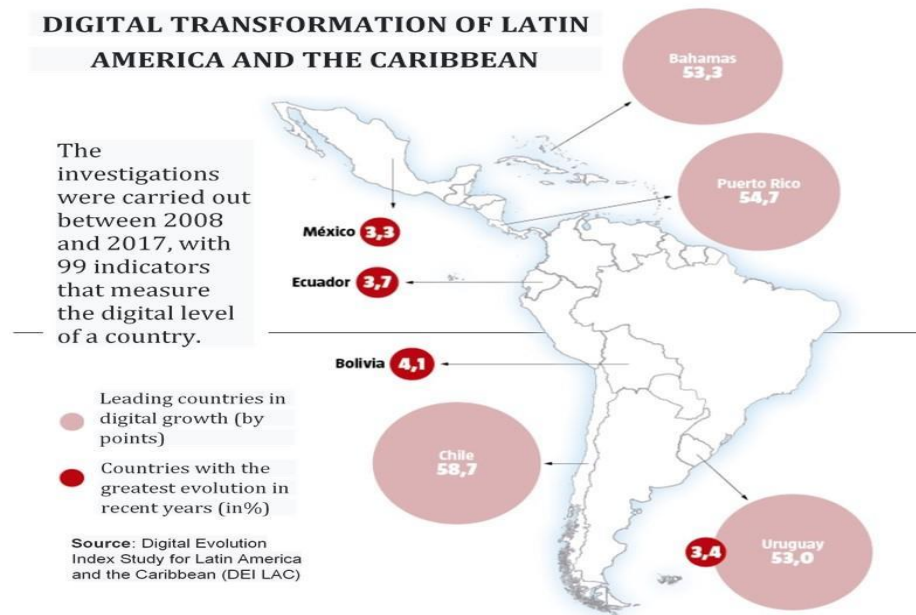


Figure 1. Digital Transformation in Latin America and the Caribbean
Source: (El Telégrafo, 2018)

Latin America and the Caribbean evolve more and more every day, seeing technological growth as an effective tool for sustaining humanity. Ecuador is one of the countries that has had an incredible improvement in recent years, this about technological progress (El Telégrafo, 2018). As can be seen in the image, it can be concluded that in recent years Ecuador has positioned itself as one of the countries with the greatest achievement in the advancement of technology.

As mentioned above, education is one of the key points where information and communication technologies have been introduced, so that, despite having had great acceptance for some years ago, in the middle of 2020 it emerges as a necessity and alternative to the crisis that the world is going through due to the COVID-19 pandemic caused by the coronavirus. The World Health Organization (2020), mentions that coronaviruses are a family of viruses that can directly affect the health of animals and people. In humans, these viruses can cause large infections, thus destabilizing an entire society.

The good management that is given from the national protocols and strategic guidelines are those that will improve this situation, and, within the framework of education, the teaching domain of ICTs can be considered as that scope that is given to strengthen the education that it cannot be given in person for health security reasons. The alternative to the current situation (COVID-19) is to restrict activities that host large numbers of people, therefore, in the educational context, this can be done through technological tools (García, 2020). Thus, achieving a significant contribution to the development of society, especially in the field of education, in which, from an early age, students will have access to a myriad of tools and digital platforms that can demonstrate the advancement of the Technological Revolution in the country, in figure 2, internet users in Latin America.

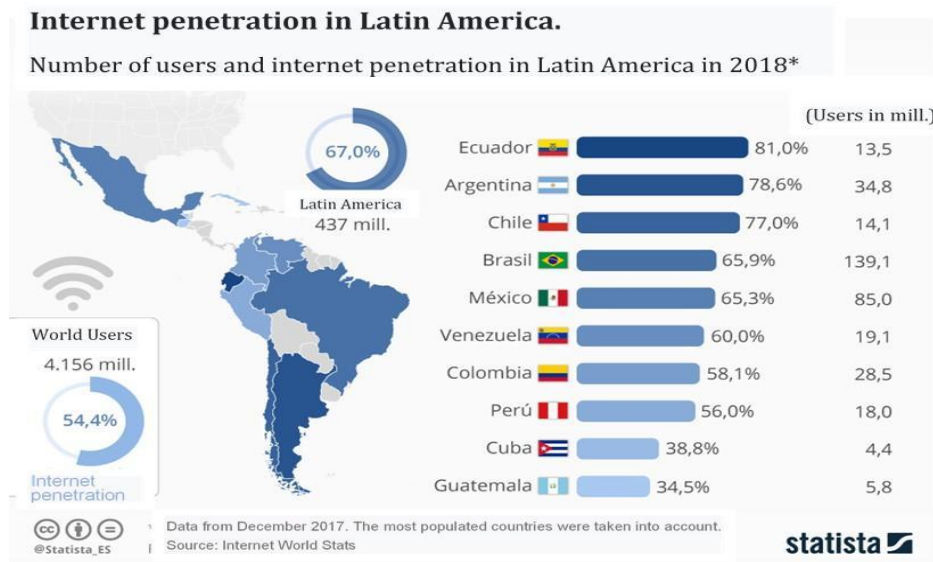


Figure 2. Internet users in Latin America
Source: (Statista, 2018)

As this graph indicates, the average penetration in Latin America is 67%, while the average penetration on the internet in the same region is 54.4% (Statista, 2018). At the same time, it can be determined that there is a large number of users with internet access, so far in 2018, thus allowing each of these people to have access to virtual information and long-distance communication. The pandemic and the urgent need to communicate have shown the benefits of information and communication technologies since it is very normal in this time of quarantine to see how teachers, workers, and others use the zoom tool to meet and discuss matters of interest (Corral, 2020). Figure 3 shows the technological tools in Ecuadorian homes.

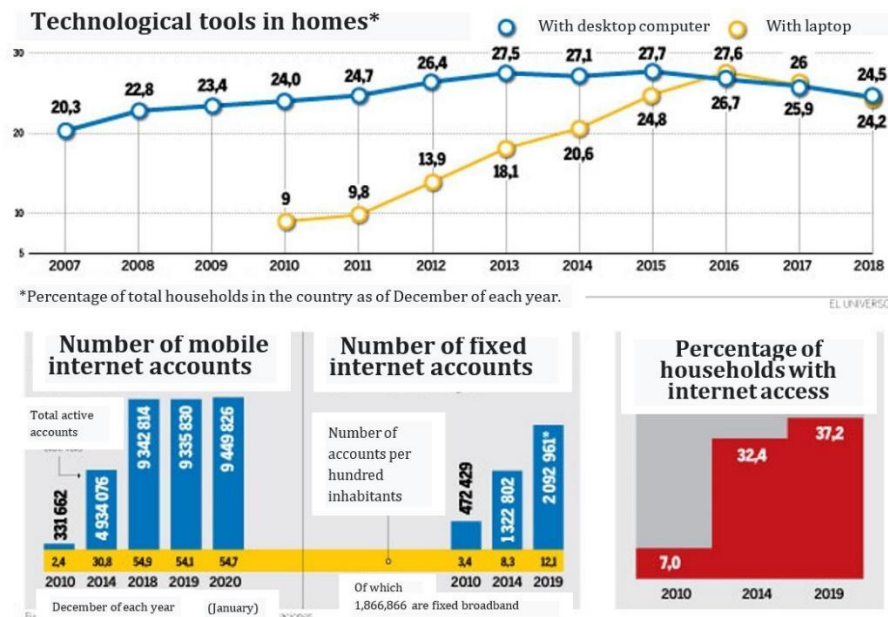


Figure 3. Technological tools in Ecuadorian homes in 2020
Source: (El Universo, 2020)

Faced with this health challenge is the need to maintain education at all levels, despite the problems that arise due to the lack of a computer, internet access, and in other cases electricity. As can be seen in the graph, we can see the great advance and growth in technology in our country, more, however, it is not simply necessary that the majority of students have the possibilities of studying to say that education encompasses everyone Ecuadorians (EL UNIVERSO, 2020). Therefore, it is considered a challenge to be able to achieve the goals proposed for this year, about access to education by Ecuadorian students. One of the consequences of confinement is the loss of those activities that were carried out outside the home, such as education (in most cases), thus achieving a great social disadvantage (Martínez & Azcona, 2020). Taking as its main premise the imperative need not to terminate the educational process, which is one of the rights of every Ecuadorian, embodied in its Constitution.

As Hernández & Alcaraz (2018), mention about the importance of having a computer and internet access in each home, the help of parents and other relatives in carrying out educational activities for minors is also considered essential, so that education is not only an obligation lacking learning but learning without limitations, in turn, it is considered essential that parents and/or student representatives know the management of software and hardware, contributing to the teaching process - learning. It is important to mention that nowadays changes must be created in society, advancing in the development of the technological era, since these tools are not just passing through, but instead came to be installed in all areas and aspects of the environment in which they live. The man (Vinueza & Simbaña, 2017). Every day that technology advances, and by the hand of it is the man who needs to learn to use these tools to apply them in his daily life, and as a product, good results are obtained. The strategy implemented by the Ecuadorian government to give continuity to education has not had the impact that was sought, and this is due to factors such as the scarce knowledge of the use of technological tools by teachers, students, and parents, as well as echoes that not all Ecuadorians have access to a computer, much less the internet.

4 Conclusion

The Technological Revolution has meant a change in Ecuador, since its introduction has managed to favor the various contexts of society, especially at present where due to a contagious disease (COVID-19) it is impossible to give continuity to education face-to-face, choosing to venture into a modality that goes hand in hand with the help of digital tools and educational platforms. Despite the importance of Technology in the current era, it can be concluded by mentioning that the country, the Ministry of Education, and many teachers were not prepared to undertake this modality, since, when introduced as a pedagogical strategy, it did not. It was possible to carry out an antecedent study that demonstrated the true impact that it should have on education.

Digital literacy in society, especially in education professionals, teachers being the guides and counselors of groups of individuals must possess the capacities, knowledge, and skills to use technology as an effective and efficient tool in education. An effective way carried out with updates, training, digital literacy workshops (in Education professionals) could achieve the true global era that leads with positive results to a knowledge society, which is integrated into the desired Technological Revolution.

Conflict of interest statement

The authors declared that they have no competing interests.

Statement of authorship

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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