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# The Impact of Digital Tools on the Education Process in Times of Pandemic in Ecuador

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## ABSTRACT

In the context presented by COVID 19, given the closure of educational centers worldwide, the frequent and varied use of technological tools in the classroom has been evidenced, which requires an analysis of the impact of its application in the educational context. For this reason, it has been raised as an objective of this study to know the influence that technology has had on the educational process. To this end, an issue that generates great interest in the current educational scenario was addressed: digital tools applied within the current situation experienced in the pandemic; which is eminent because through its use you can continue with the teaching/learning process between teacher and student in difficult times such as those that society in general is currently experiencing. This in turn is quickly shaping what education will look like and how it will be delivered in the coming years. With the advanced pace of educational technology in the world of information and communication technologies, essential enablers have been detected. These currently help institutions to find opportunities and broader solutions in education and have demanded of teachers a rapid adaptation to digital work tools that were not usual in their daily work; that had to learn to work cooperatively by sharing knowledge about the use of tools, impressions, doubts, resources, among other elements within their daily work. The proposed methodology is positivist, with a quantitative approach and confirmatory type because it required a previous explanation or a series of assumptions or hypotheses. The sample was made up of 250 teachers from the Sierra educational system in Ecuador. The survey technique was applied and a questionnaire was applied as an instrument, with an overall score in the dimensions of perception on the impact of ICT in education. In this dimension they were asked about their perception of various aspects related to the teaching-learning process, by means of a five-point Likert scale and the use of inferential probabilistic statistics by the causal study of variables to determine the digital tools used in the educational field during the time of pandemic in Ecuador. As a result, it was obtained that the communication tools used were Microsoft Teams and gamification kahoot and quizziz. The hypothesis that allowed knowing about the use and use of information and communication technologies in virtual contexts was validated, which although they were forced due to the new reality that the pandemic has generated, caused a positive impact within the Ecuadorian educational process.

**Keywords:** TIC, Educación, Covid-19

## INTRODUCTION

The closure of educational centers worldwide as a consequence of COVID 19 context, has led millions of students to turn their interest towards online learning. Undoubtedly, developed countries are in position to offer and guarantee connectivity and access to technological equipment. According to UNESCO (2020), about 70% of the world's student population is being affected. Higher education was impacted by not being able to put into practice specialization topics in some disciplines which needed a classroom learning environment, generating knowledge gaps. An improvement in learning processes and results will be possible getting to know which elements should be improved based on the experiences faced.

According to Márquez (2021), emerging technologies do not belong directly to the educational field, although some tools are currently being designed for this purpose... applied and incorporated into education through didactic means and resources that simplify to a certain extent the traditional teaching-learning process. Society's needs have changed, current technologies have been used to facilitate access to information, decision making, communication and monitoring processes under technologies and with a greater tendency to cell phones use.

Professionals must adapt to these new technologies' usage. As a result, educational centers are a key element to train digital competences that can be used in a ubiquitous environment.

COVID-19 pandemic has led to an unavoidable increase in the use of digital technologies, due to social isolation regulations. Individuals and organizations around the world have had to adapt to new practices for working, studying and living (De', Pandey and Pal, 2020).

The uncertainty about the future and the improvisations made in the face of the health emergency have been decisive regarding to face-to-face education. The latest worldwide events forced the educational system to seek new study alternatives, driving in a certain way the adoption of other learning modalities to help its execution.

In this sense, an immediate solution to this tough scenario is undoubtedly to adapt the diverse teaching processes to online education, virtual learning or, also known e-learning. The Ecuadorian ministerial agreement number MINEDUC-MINEDUC-2020-00020-A of April 3rd 2020, ratifies the suspension of classes effected under the Ministerial Agreement 2020-00014-A of March 15th 2020 throughout the national territory for all public educational institutions, fiscal-commissioned and private schools located at the Sierra- Amazonía region in all their journeys and modalities. In this context, the Ministry of Education is responsible for guaranteeing compliance with the constitutional mandate that establishes the right to an adequate, contextualized and organised training throughout the educational process in the National Education System, in its levels, sublevels, offerings -ordinary and extraordinary- and modalities.

All the while the health emergency caused by the COVID-19 coronavirus pandemic takes place, it is mandatory to investigate some issues like: the needs of each of the actors, authorities, teachers and instructors, to recognize

**Table 1.** Dimensions and variables.

Research area	Dimension	Variable	Description
Activities leading to the continuity of classes during Covid 19 emergency	Management activities	Communication with students. Communication with parents. Communication with managers and other teachers	Digital tools usage to follow up the course.
	Teaching activities	Digital tolos	Digital tools usage for students to learn at home.
		Traditional teaching resources	Traditional resources usage for students to learn at home.
		Didactics.	Didactic strategies used in distance education.

how successful has been the adjustment from face-to-face conditions to virtual classes, what have been the difficulties during the last academic periods and how new educational technologies can provide effective solutions. The objective was to analyze the current situation of the use of technological tools during the educational process in times of pandemic.

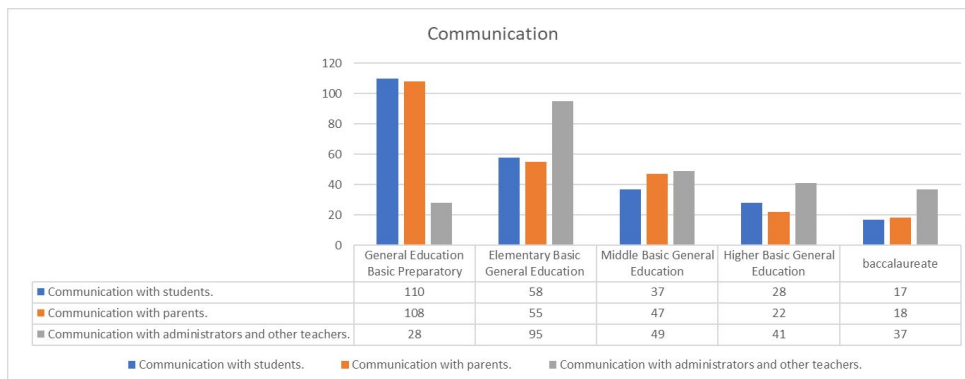
## METHODOLOGY

The current research was carried out under a positivist methodology, with a quantitative and confirmatory approach. It required a previous explanation or a series of assumptions or hypotheses. The sample was compound by 250 teachers from the Sierra educational system in Ecuador. The survey technique was applied questionnaire instrument with an overall score it measured the dimension: perception of the impact of ICT in education. Teachers were asked about their perception of various aspects related to the teaching-learning process using 12 questions, based on the area of inquiry about the activities they are currently carrying out to give continuity to learning. In the area of interest, management/communication activities and those related to teaching-learning. Teachers were asked about the tools he/she is using for his/her communication. Table 1 shows the areas of inquiry, dimensions and variables measured on the questionnaire.

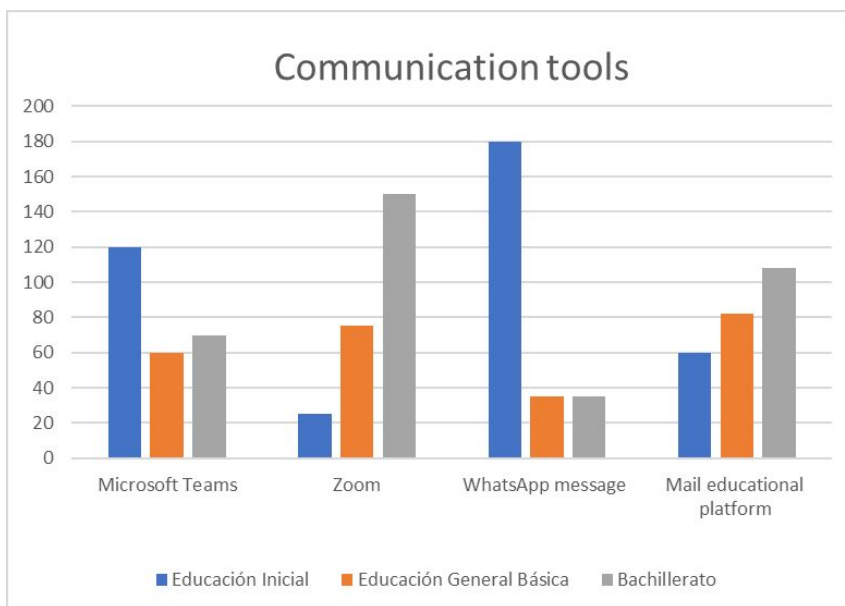
## RESULTS

In order for teaching and learning to occur, the teacher has to carry out a series of management activities. The teachers mentioned maintaining communication with their students and parents, as well as the average number of students per teacher according to the educational level and their related values.

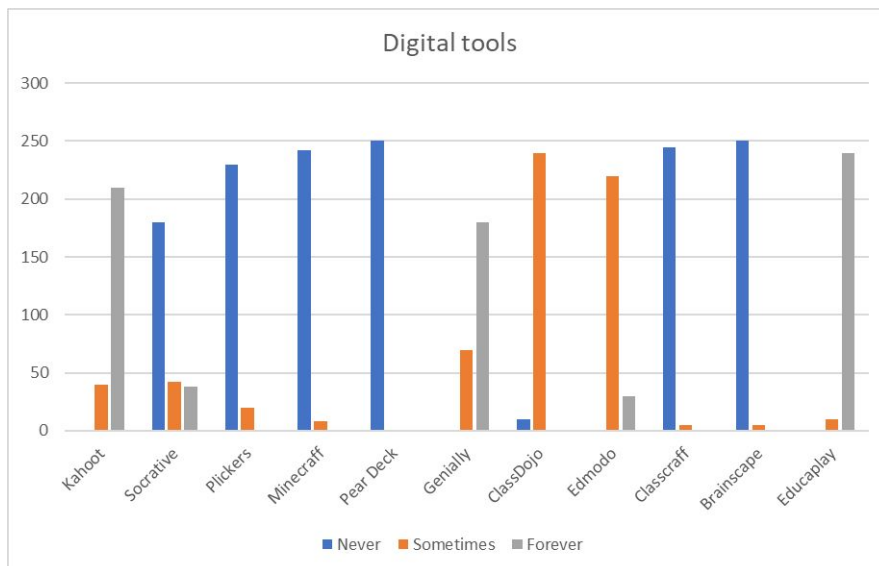
The results show that pre-school and elementary school teachers maintain close communication with students and parents, while at the high school level, communication with parents is low.



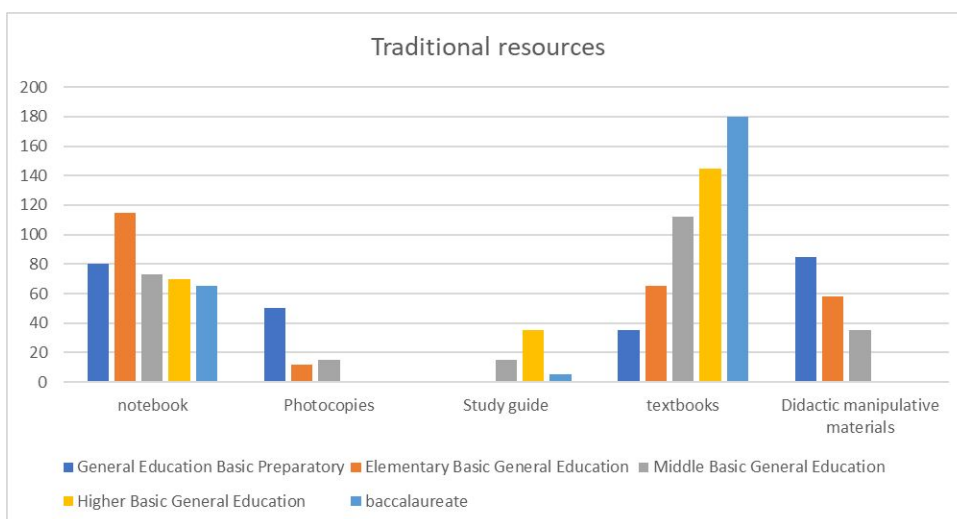
The communication of teachers with their students according to the educational level is described. The use of Microsoft Teams, the mail educational platform in upper secondary education and WhatsApp message call in initial. All levels use WhatsApp.



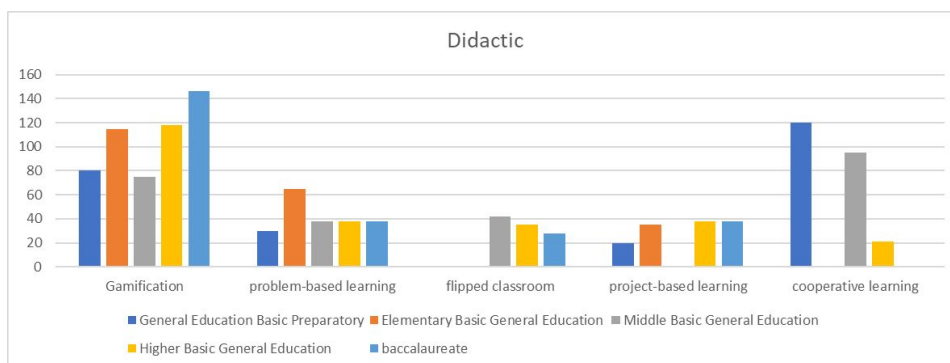
The digital tools that they are using to give continuity to the course, it is observed in The teaching digital tools, which allowed the students to learn at home are shown. The application which teachers feel more comfortable with were Kahhot, Educaplay and Genially; they are easy to apply, generate challenges and motivate students using playful strategies, their use needs of innovative educational strategies, which allowed them a meaningful collaborative learning.



Among the traditional didactic resources for students to learn at home, it is observed that, in the first levels, the use of study guides, manipulative materials and photocopies is what is most used as non-digital tools in distance teaching and learning, being a support or tool for the student to put into practice the contents. Regarding the levels of Higher General Basic Education and High School, the use of didactic material, textbooks and notebooks are the most used as non-digital tools.



In reference to didactics, active methodologies are used for teaching that focuses on the student in a constructive manner, since the student is an active part of the teaching-learning process. In addition, the teaching is contextualized in real-world problems, including gamification at all levels, the project-based learning and the flipped classroom were used at the higher basic education and bachelor degree levels.



## CONCLUSION

The process that education has undergone, due to the covid19 health emergency, leaves challenges for the educational actors. On the one hand, the way of thinking of a society accustomed to face-to-face and traditional classes has to change. Teachers are key actors of education, they had to adapt and assimilate the change of a pedagogical model that is in line with the new era of learning, although they are the so-called digital natives, they are not prepared to face this change in its entirety. It should include adaptation processes to students, who have not received in recent years schooled computer preparation. In this sense, the educational reforms have eliminated this subject from the curriculum. Teachers during this time have faced the technological challenge and understand that technological platforms or resources are not the change, but the pedagogical approach and the interaction that must be created between teacher-student is. How to leave aside the important role of fathers, mothers or representatives, who play a relevant role in education, because the acceptance of these new challenges depends on them. Nothing is impossible, human beings are adaptable to the conditions and society and our future education challenges. This study reveals that most of the teachers in education in Ecuador, with their efforts, were able to manage information, work collaboratively with their colleagues, communicate with parents and school principals. It is also clear that it will be necessary to strengthen their skills for distance learning; where the application of technological tools allow strengthening the teaching and learning process. It is necessary to emphasize that this change of methodology implies predisposition and collaboration of the educational community; where we want to be agents of transformation, we must awaken the interest of students to learn, facilitate the work of the teacher and develop meaningful learning.

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