ICT in Teaching, Learning, and Inclusion: Benefits and Difficulties in Ecuador

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Abstract

This investigation aims at shedding some light on the benefits that the application of ICTs has brought to education. As the use of digital tools has represented many challenges for the country, this research also pretends to uncover the difficulties that professors, teachers, pre-service teachers, and students may face. The approach used was qualitative and the instrument was a structured survey that sought to identify the perspectives of professionals with a wide range of experience in the field of ICTs and education in Ecuador. The research could evidence that there is a law that promotes the inclusion of ICTs in teacher´s daily practice; however, teachers lack continuity in their use. Professionals identified some positive impact of ICTs in the students´ learning process. Additionally, technological tools open space for the inclusion of students to education. On the other hand, connectivity still stagnates the process of ampler use of ICTs in education and the lack of appropriate training and hardware still represents a problem in the use of ICTs in regular classes.

Keywords: ICT, teaching and learning, inclusion, connectivity, improvement, access, training, motivation.

Introduction

The advances in technology have brought distance learning or web-based courses to an increased level of popularity. The development of platforms, apps, and many other technological tools are offered around the world through the Internet. These courses have benefited a lot of students, but mainly those who are constrained by distance or time (Chang, Wu, Chiu & Wen-Ching, 2003). Tomczyk and Oyelere (2019) bring positive feedback on the inclusion of people in education. However, designing and implementing such tools and platforms represent a serious work to be taken in the field of education as every single activity designed embodies not only time but critical reasoning regarding the outcomes expected from students. This brings to mind the term of digital literacy.

Digital literacy represents an ability to use information and communication technologies to assess, create, and convey information. These processes require cognitive and technical skills. Spires and Barlett (2012) divide these processes into three categories: "a) locating and consuming digital content, b) creating digital content, and c) communicating digital content. Critical thinking is a transversal skill to all three aspects.

The first process refers to effective web search skills, which should be reflected on proper incorporation with the teaching practice. According to Pérez-Tomero and Varis (2012), digital education sets out the didactic, pedagogical concerns, and knowledge regarding digital tools. Moravei et al, (2011) mention domain knowledge, use of search engines, literacy skills knowledge regarding resources in the web, knowledge about web search terms as examples of web search skills. However, an extensive knowledge regarding the variety of tools offered on the web is also desirable to guarantee a match between a good teaching practice and a good learning process.

About the second process, digital resources take time to be developed, but they free up teachers as they do not necessarily have to lecture or grade. However, mastering how to develop or use web tools is a must to engage students in their learning process so that students don't spend time in learning how to work with a digital tool, but focus on what is necessary to learn. This part may often represent a challenge to teachers, even when the creation of digital content or tools are becoming simple since this simplicity demands teachers to reach every single student (Spires, Medlock, & Kerkhof, 2018). The third process refers to the understanding of how to manipulate information in multiple digital forms. As the internet is so popular these days, it has become a great source of information. However, there is a need to know what information is

reliable in this endless digital world and how students can synthesize the information provided so that their learning process is enriched.

To some teachers, developing these skills may lead to frustration. Technology indeed offers potential to teachers in their instructions, but it may also be overwhelming as they need to find ways to overcome the many challenges that the use of technology brings, especially if their background lacks preparation in this field.

Purcell, Heaps, Buchanan, & Friederich (2013) state in their study that "internet and other digital tools have added new demands" (p. 2) to the teachers´ lives. They have also increased their need to know about content and skills in digital terms and have had an impact in their work. In their study, the researchers mention three main problems that teachers face when working with digital tools: training, support, and access. Concerning preparation, they mention that education technology is constraining if the schools do not have fast internet connection or enough number of computers. Regarding training, the researchers consider that this aspect needs to be adequate to help teachers use technological tools to the most. Finally, they consider that the lack of technical or administrative support can also become a barrier when teachers start using digital tools.

Ecuadorian sample characteristics

The study was carried out between December 2019 and February 2020. The sample was purposefully chosen to attain the objective of this study. The three participants are well-known professionals in the area of virtual communication, education, and the teaching of English not only in Ecuador, but in Latin America. The first two respondents are full time professors in a private university. The third respondent represents an editorial from a famous university that publishes books and materials to teach English.

The first respondent (R1) has a background in teaching English in several places that range from schools to colleges and universities. He has sparkled the use of technology in the teaching of English not only in Cuenca, the city he lives in, but all over the country. He designs and teaches modules in universities and in pre-service teacher´s programs aimed at encouraging blended learning and the use of platforms like Moodle to motivate future teachers to apply principles of blended learning and break the barriers that digital literacy may bring to their minds.

The second respondent, (R2) is the director of the Open University Department, which is the department in charge of all virtual programs created in the university. This professional is in charge of opening and

developing courses in Moodle mainly applied to social and arts subjects. He has been in charge of this position for about seven years and has led several distance programs aimed at students from different parts of the country. One thing that is worth mentioning in his background is that under his leading, those distance courses have shown a very low number of dropouts, which is an aspect he finds challenging given the situation that this type of programs have in our country. He established the first team in Ecuador to set up the basis of virtual education and the use of social media in 2007 as well as a program to train professors in different areas of the country. He has significant experience in the creation of virtual classes in universities from Spain and Ecuador.

The third respondent (R3) is a Key Account Manager of an international university editorial team. He also holds the position of digital coordinator in Ecuador and the north part of Latin America. He started as a digital specialist in the editorial and has been in charge of platforms and digital tools aimed at teaching English for nine years. He has also worked in the academic field in conjunction with the digital area of teaching. He is currently developing training programs for TEFL (Teaching English as a Foreign Language) teachers all over Ecuador to support their job and encourage them to go over the technological barriers that the use of ICTs may bring. He is developing courses in digital media to reach teachers in different areas and work collaboratively through the use of ICTs.

Methodology and data collection tool

This qualitative research gathered information in the form of open-ended questions by means of personal structured interviews. As literature states, interviews are a commonly used form of qualitative research; furthermore, it is less concerned in generalizability and it focuses on fewer participants as is the case of this research (MacKey and Gass, 2011).

The interviews were carried out face to face and lasted between fifty and sixty minutes. In order to keep ethical protocols, all participants were asked for the proper consent to have their interviews recorded. Also, they were informed that they could withdraw at any moment from the interview and their identity and anonymity were guaranteed since their names were kept anonymous. The interviews were in Spanish and then translated and transcribed into English. After the transcription was done, it was reviewed by the Language department academic board of the University of Azuay to reinforce the validity and accuracy of the transcript.

As Creswell (2014) suggests, not all the information gathered can be used since it is rich and dense in content. Therefore, the data was condensed into relevant themes by a process of coding, and some parts were

not used. The questionnaire was devised to gather general information about the participants but mainly it was focused on the use of ICTs, its inclusion in the teaching process, the main obstacles in using ICTs, as well as its strengths or limitations, the use of ICTs in vulnerable or disfavored groups, among others. The set of questions used in the interview are presented in Annex 1.

Results

In this part, the findings are summarized and condensed by themes as follows.

Lack of continuity in the use of ICTs and technology

One recurrent concern was the aspect of continuity on the use of ICTs by the teachers. The interviewees expressed that there is still a common denominator by teachers and that is the resistance to continuously use technology and ICTs. Their main impressions reflect the fact that if there is any use of ICTs it is minimal and the perception of the use of tools such as virtual campuses are merely to upload documents so students can download later. The participants' opinions are presented.

"There was a study in the university and it was concluded that the Language department and the Engineering faculty were the ones that most tend to use ICTs in the form of a virtual platform. About a year ago, I made an analysis on the use of the virtual campus of all the courses and between 50 to 60 percent of the cases the virtual campus was only used as a repository and there was still not a clear perception that the use of the campus needs to be updated and framed as a teaching tool with the necessary instructions, deadlines for homework, etc. Nevertheless, I want to be positive on that regard since I see that some people are slowly starting to upload learning tools in the Moodle platform which before were nonexistent". (R1)

"Many teachers are not willing to use technology, even though they may use technology, as in the case of smartphones, they still have a big resistance in trying to include technology within the classroom. I think that it is mainly out of fear, fear of ridicule since the teacher may not feel safe or in control to confront his/her use of technology with the students. Therefore, some teachers are not willing to implement a tech-nological tool in their classes. It could also be a generational issue instead of the age factor" (R2).

"The teachers need to start creating their own learning instruments, but they are not taking advantage of ICTs to create their own instruments

since they are not using the tools such as a virtual campus to its fullest. They may know how to create a campus but only as a repository but they are still lacking in understanding the technologies to make the change and create their own instruments to generate the interaction in the classroom. In most cases, teachers only use a virtual campus just to upload a file so students can download it and that is it. Therefore, I consider that it is important to train teachers for them to continuously use ICTs, this way they will open their eyes to the possibilities that technology has to offer" (R2).

"According to my own experience, one of the main factors for the lack of continuity or even implementation of ICTs from teachers is that they do not want to leave their comfort zone and so a teacher feels afraid or it has some sort of rejection to explore and implement new fields such as technology and ICTs. Another problem, for this segment of teachers, also known as digital immigrants (generational factor), is that if they decide to use ICTs they do so but very succinctly. For example, in the case of using a virtual platform, the teachers sometimes limit themselves to use ICTs just to send an assignment and that's it. This could be due to two reasons: lack of knowledge and motivation to use ICTs" (R3).

An important consideration is worth mentioning is practice makes it perfect. Teachers need to understand that the road to learn and successfully apply ICTs in their classes requires commitment and constant practice as one interviewee mentions:

"Also if a teacher is not constantly using technology it is very easy to forget something he/she once learned. For example, if a teacher learns how to create a blog today but then he doesn't continue using it and enriching it with material or reviewing and coming back to it, he/she will most likely forget about it. So practice and continuity are key when it comes to properly learn about ICTs. Finally, a teacher should become aware that the use of ICTs is part of their teaching process in their daily lives and as such, they should use it constantly" (R3).

The preceding findings and opinions concur with a recent study on teachers' attitudes and perceptions towards the introduction of ICTs in Ecuadorian public schools as conducted by Alvarado, Aragón, and Bretones (2020). After interviewing fifty-six teachers from several public schools in the city of Guayaquil, the researchers found that all participants reported feelings of fear of technological change due to the implementation of ICTs.

Impact on students' improvement by using ICTs

All the participants agreed on the fact that the correct and guided use of ICTs brings more benefits than trouble, and if any problem shall arise, it could be easily corrected if the teacher is knowledgeable enough in the use of technology. Their own words are listed below:

"In my own experience there is definitely an improvement in students' progress as long as it is linked to previous planning of a class, not only implementing a technological tool is important, but planning its use is key. For example, planning the formative and summative evaluation which at the end provides parameters to show the improvement of the students is a must. Regarding how much a group actually improves, I once had a control group study, and the group that didn't use ICTs maintained their scores but the group that used ICTs had an improvement in a percentage of around 70%, which was really high. Nevertheless, those who didn't use ICTs at all depended on the old methodology by using only books and they didn't have the necessary motivation if they had had a motivated teacher perhaps they could have also improved their scores" (R1).

"The use of ICTs has a positive impact on students' results. The teacher needs to understand that teaching tools are not only limited to the virtual campus but also that the students already live in a digital world that is full of social networking. On one side a student could use the virtual campus but they also have a myriad of social networks and a teacher should start thinking about fitting within that context as well. In fact, I think that a student will give its best if he/she is not only graded within the classroom, but their work is also exposed to their friends and the whole world if they upload their work on social networks for everyone to see. As an anecdote, in one of my classes, I teach Design History and I asked my students to create a community blog so they can contact and interview Latin-American designers, the students also created a video to be posted on social networks and with that they felt rewarder since their names appear in the blog and are in front of the whole world, thus giving them a sense of recognition" (R2).

"If an ICT program is implemented correctly it certainly presents more advantages than disadvantages. Mostly I see more chances of impacting positively our students by using ICTs. Nowadays, since everything revolves around technology and everything is interconnected, and students are not aliens to technology, the use of ICTs in the class is a way of promoting engagement and interest. One of the main characteristics of using ICTs is that the teacher can take the knowledge from the classroom to the students' home, not in the way of transporting it but extending it, which means that the learning process does not end when the day

at school is over but it goes beyond and the students have the chance to continue digging and learning at home. By doing so, this translates in giving students access to information no matter where they are" (R3).

An important consideration arose in one of the interviews, and that was the subject of interaction. Certainly one cannot expect to have the necessary attention and engagement from the students if the class does not include elements of interaction such as forums, chats, surveys, games, etc.

"The impact on students' improvement will also depend on the level of interaction with the students. Using ICTs by focusing on the interactive factor is key not only to students' improvement but for their engagement and motivation during a class" (R3).

Connectivity and access to ICT in education in Ecuador

In a study carried out in Ecuador by Valdivieso and Gonzáles (2016), they mention that there is a gap in education between private and public schools regarding ICTs. Teachers working in private schools integrate digital tools more frequently than those working in public schools for many reasons, one of them is connectivity. Private schools invest more money in access to the internet; parents have better incomes and invest more in hardware for their kids. All three respondents concur with this study as the three of them mention that in their experience connectivity is a major problem especially in remote areas of the country, not only for professors and teachers but also for students.

"Basically, the obstacles that are present in the use of ICTs, is poor connectivity, which happens all over the country. Today it is common to talk about the BYOD, which means bring your own device. The MALL is very common. It is mobile-assisted language learning. For the first one, students have to bring their own electronic devices to class and many times, students can't afford to do it, so the solution is to provide students with the material…, but it is an obstacle in the case of bringing your own device, it is all responsibility of the student, and the one who can´t afford it, well, it is on him to find a solution. That is a real obstacle. This lack of equity when students need to have their own hardware is one of the highest problems in the country" (R.3).

This problem also may arise among disadvantaged groups. However, ICTs itself can provide a solution to these disadvantageous groups. The person in charge of developing programs to teach English in Ecuador mentioned that in a study he carried out among persons deprived of their

liberty, he was able to find that although connectivity was restricted, the use of ICTs to teach English was successful.

"if in the center there were ten computers for two thousand prisoners, the whole program would have flunked as there were not enough computers for all of them, the same would have happened for internet connectivity. However, the program in teaching English to this group of persons was successful because those taking the course had their own devices. Although connectivity was restricted, it was enough for the course" (R.1).

To the third respondent, access to ICTs rounds up all problems related to the use of ICTs in education. Connectivity is a portion of it. Special efforts should be made to ensure equity of access in all parts of the country to ensure a proper application of ICTs in education. By access, he does not mean only connectivity, but ICT networks and equal opportunities to acquire skills to find information by using ICTs.

"Teachers and professors are studying courses to learn about how to use ICTs. However, the courses should aim at how to use ICTs correctly in their classrooms, and that teach them to take the risk to use ICTs, with the passing of the days the use of the ICTS in the classes will improve and the professors and teachers will become more confident in the use of the tools in-class time. Now most teachers use platforms like Moodle to save files and do not know how to exploit the tool to the full. This is because they lack proper training on how to access different tools and because there should be more investigation about the results obtained. We learn more with practice. We need to teach our teachers that they can work independently and by themselves, so we need people who can teach this to our teachers" (R.3).

Inclusion and ICTs

In 2010, the Higher Education Act (LOES, as per its Spanish acronym), was created and aimed at pushing universities and colleges to make use of digital platforms to improve education and research with special emphasis on the inclusion of students with special needs and different learning styles. In this way, aspects such as interactivity, the relationship between students and professors, and access to information are fostered in all universities in the country. This meant that professors had to be trained in using ICTs in their classes. Additionally, pre-service teachers had to be trained in how to use and develop creative courses by using ICTs. In 2009, the National Plan for Well-Being was launched and aimed at creating a new economic paradigm that sought equal distribution of wealth, a new type of relationship between man and nature, and a pur-

suit of social justice. To reach these goals, the plan demands the democratization to free access to water, land, loan, technology, and information. This plan takes higher education as the main aspect to reach good living conditions. It linked higher education and research, tied with technology. Thus, the country should guarantee access to all citizens to higher education as a way to increase the productivity of the country. The plan considers the use of ICTs as a way to foster interculturality. Thus, this plan goes further, as it requests all institutions in the education field not to count only with cutting-edge computers, but to teach students to generate tools that aim at hold the transformation of the country (Consejo Nacional de Planificación, 2009).

"The problem is that our major does not prepare us to work with children or elders. Instead, it is a general education that we receive. We are taught to teach everyone, but not to to one specific area of the population. Thus, if pre-service teachers receive any type of formation in this aspect, they are studying how to implement the use of ICTs in their syllabus, but they do not receive any formation aimed at disadvantaged groups. Thus a government policy is mandatory to create a law to first protect this group of people, and second to create computer centers aimed at teaching these people" (R.1).

"In one of the courses I taught, one question arose regarding how I could dare to implement digital tools in schools with low income. It was complex for me and I understood the point teachers had. However, they were unaware that currently, all students have a technological device that can use not only for communication but to learn as well. Thus as a teacher, you won't have to ask your students to buy expensive products, but you can teach them how to work with what they already have" (R.2).

The use of ICTs also represents knowing the other, knowing who my students are and what their interests are. This also represents an obstacle in the use of ICTs in education as they may seem like it is the simple application of a tool and that problems in education will vanish as if we were using a wand. Unfortunately, the use of ICTs requires a lot of critical thinking and the application of otherness to get the most of them.

"We need to know who our students are before we design any course or use ICTs in our classes. It is a human theme that is key in the use of ICTs. Once I know who my students are I can design properly, so it is not a matter of thinking generally about a level 1 as a whole, thinking in the students as persons" (R.1).

In education, there is a term named hidden curriculum, which according to Jung (2015) refers unspoken rules, social values, attitudes, and

norms that govern behaviors in various situations" (p. 141). Thus there are certain rules and forms of acting that show that inclusion criteria or laws set by the government are not being followed. An institution can offer access ramps, but omit changes in the curricula, minority groups and disabled people are still being ignored.

To the professional in charge of developing programs in virtual platforms, colleges, in general, do not have open access to education, especially to those disadvantaged groups.

"Many people don't study because they cannot attend classes in colleges. Distance education should be the alternative. The same principle could work for minority groups. However, universities do not worry about them. For instance, if a blind student logs in the university´s platform, he won't get much as he won't be able to read what is in there. Not all tools offered are accessible to all students. Universities are not meeting accessibility standards for disabled people. MOOCs are a solution to reach wider audiences of students, but still, they have not been designed for disadvantageous groups. I think first there should be correct planning to develop courses aimed at minority groups, oriented exclusively to them. Not only courses aimed at everyone with one particular feature for disabled students" (R.2).

Hardware and training in education

According to Reina (2012), permanent training on the use of technologies in and out of the classroom is fundamental. Such training should be developed in two stages: the first on the relationship between the teacher and the student and the second one is more about a follow up on how the ICTs are used. This involves pedagogical concepts about the learning environment and how technological tools can corroborate with them.

According to the interviewers, this is the aspect that colleges lack in their curriculums

"The training should consist in two parts. First, how to use ICTs in class as part of the curriculum instructions in colleges and a second moment aimed at teaching pre-service teachers how disabled people learn. In this way, future teachers can learn how to get the most of ICTs to benefit disadvantaged groups" (R3).

Flipped classrooms may represent a good opportunity to show off the use of ICTs in education, as the expert in the use of ICTs applied in teaching English states.

"Technology is here to help teachers in their practice, not to generalize. It is all the way around; technological tools were created to personalize teaching according to the different learning paces" (R1).

The teacher needs to have a clear vision of what a flipped classroom is so that he chooses the best material for that. It is not about telling the student what they are going to learn the day after and leave every material in free access so that the student learns, if so, it is enough with sending students a questionnaire of things to be ready for a test. A guide is basic.... Flipped classrooms are one of the tendencies that are growing in popularity each time more. I wish it is well implemented in all institutions through good training in this area. There are people with a wide range of knowledge in the area. The lack of training, however, has turned the use of ICTs classrooms into a complementary tool, when all it has a wider choice of use to help students to pass a course. In certain institutions, a platform can be used only up to 10%. From here, this vicious circle starts again. There is little attention of the teacher and a short interaction with ICT tools as well" (R.3).

The training that pre-service teachers receive in ICTs is scarce in terms of the use. Pre-service teachers learn to work with ICTs but as students not as teachers. This also reflects the lack of training in this field in colleges and universities.

Pre-service teachers learn about ICTs as students. There are only a few majors, actually, the recently-created majors are implementing the use of these technological tools as part of their instructions. One part of the curriculum focuses on teaching students to handle ICTs in classes, but it is still very scarce. Pre-service teachers know about these tools as students not as administrators. However, the need is pushing colleges to increase this training (R.2).

Training is a lifelong learning process, therefore, as teachers, we should always look for paths to find new access to new theories in pedagogy and tools that can be applied in technology. "The recommendation is first never to stop learning, always look for more training and course, more methods and access to all kinds of resources." (R3).

"Constant education is the key. As education is not exclusive to one single group of students, teachers should be eager to keep learning and updating their knowledge in the field of technology. The only way to learn about a tool is by using it, by getting to know the most of it" (R1).

In a recent study carried out by Balladares-Burgos (2018), it was found that there is a high interest in training pre-service teachers in the

digital world in Ecuador. Most universities are developing programs with specific curriculums that may help future teachers apply technology in their classrooms. Nevertheless, this implementation requires attendance to workshops, and informal and non-formal space to learn about how to use ICTs in a class by different means of communication.

"Teachers here know about some mechanic aspects of ICTs, but they do not actually belong to a community of practice. Teachers mostly use ICT for communication rather than education itself. This is precisely where the lack of training can be seen" (R.1).

"Teachers and professors should create leaning nets. That is the best way to learn about ICTs because I set goals and then I try to reach them. Then I share them with my group or net and expand the chances to grow technologically" (R.2).

The director of the Open University Department, this aspect also depends on the background that people have. Less education means less ability to adapt to technological changes. He does not agree with the fact that age can be a limiting factor.

"Education and technology depend on the level of schooling rather than age. If a person has not graduated from high school, adapting to technological changes is harder. I have had students who are not that young but have been able to catch up with these changes. People who haven't used technology in their schools, in the 1980s more or less may also find it difficult to use tools to teach" (R.2).

The digital coordinator of the editorial considers that lots of effort have been put on the training, but the quality is an aspect that needs to be improved.

"Probably the training that teachers and pre-service teachers have received is enough, but not efficient. Today there are a lot of free programs that train teachers, but they may lack quality. They do not aim in the use of the tools. If you ask a teacher that has taken some of the workshops whether a tool offers synchronous or asynchronous work and they won't be able to know. This happens because training tends to be shallow... The training show take into account the specific needs of the teachers" (R. 3).

Attitudes and use of ICTs in education

Meaningful use of technological tools in education can be influenced by the attitudes that teachers and professors can have towards the use of ICTs. Teacher´s attitudes constitute the major predictor in the use of new technologies (Edmunds, Thorpe & Grainn, 2012). The attitudes that teachers and professors have affected the use of technologies in the classroom. The attitude that professionals have furthers or hinters the amount of technology used in class because attitudes determine the reaction of teachers. It is this positive or negative reaction that encourages or diminishes the use of technological tools. For some teachers, ICTs can be scary, while for others it can be challenging and even rewarding. This aspect is something that is mentioned in all three participants of the study.

To all the interviewed respondents, attitude is a key factor that can favor or discourage the use of computers or any technological device. The simple fact of having to work with a mobile phone can be a barrier to some teachers and students, while for others is just a mechanical step.

In his experience respondent 2 expressed in this topic that "for a group of students in a course that I had, it was negative to work with the android, but at the moment of working with a computer it was simpler, even when they knew that the android had better characteristics than the computer and had better software to do certain things" (R.2).

To this interviewee, all physical disadvantages can be reduced with a positive attitude and wanting to work with technological tools. He happily recalls a group of students in one of his training programs where there were a lot of older participants. Some of them were just about to retire. It was a diploma course that opened with the purpose of setting the basis for teaching online. There were also indigenous people who lived in remote areas of Manabí, which is located in the coastal region of the country, far from the city where this professional works. He said:

"Although they did not have access to the internet, they had to travel to another town to go to a café net and be able to have connectivity. In spite of the limitations, most of them finished the course meeting the highest expectations, just because they were motivated" (R.2).

To the third interviewee, the lack of proper application of ICTs in education is a double-sided problem. On the one hand, there is a comfort zone that teachers may be afraid to leave aside. They might feel that they lose control and even won't be able to predict factors that can happen

regularly in a traditional class. Although ICTs can help them improve their teaching practice, they do not prefer to move to a risk zone.

"The use of ICTs depends on the interest that teachers have on using technological tools in their classes. As a teacher (interviewee, in reference to other teachers) I am used to what I have, so I am reluctant to explore new paths, which includes the digital forms. Additionally, it can also happen that as teachers are forced to use digital tools in their teaching practices, they do it only in a shallow manner. They just use the tool to exploit the general features such as communication, and sometimes they even skip this, such as when the teachers tell their students, during their face-to-face classes, they have to do an assignment. The teacher only closes the activity or sets a deadline, or to get the grades. The use of ICTs is then limited to these simple boundaries" (R.2).

Another aspect mentioned in this category is that excitement can also create problems in the use of digital tools. As the first interviewee said,

"If a teacher learns about a tool and gets excited on how to use it, this excitement can take the teacher to the use of the tool without accurate planning, just because the tool shows great potential, the results won't be positive" (R.1).

Conclusions

In conclusion, the law establishes the use of ICTs in colleges and schools, it also requests professors and teachers to use them in their classes. However, connectivity and the scarce preparation on how to apply ICTs in the classes for disadvantaged groups represent still an inconvenience. In Ecuador, teachers still need to develop skills that ease the creation of learning environments to enhance the development of cognitive, social, and critical skills in their students through the use of digital tools. The curriculums for basic, elementary, and high schools have already been developed by the national government, so what teachers need to do is create the digital spaces to further develop the skills mentioned before. Training is offered now more than ever, but it should focus on two aspects, to focus on specific needs teachers have and to ignite a spark to promote lifelong learning skills. One important aspect is the attitude that teachers have about the use of ICT. It was evidenced in the interviews that too much excitement and too much disdain can affect the expected goals in education. Thus, training should also reinforce these emotional aspects, so that teachers find the use of ICTs challenging and yet rewarding. A recurrent comment was also the motivational factor. It is necessary to change the paradigm of "regular" classes and start aiming for a "new" approach in teaching according to the ever-changing world

in which education plays a major role. Technology and ICTs is not the future, on the contrary, it is right here right now, it is time for teachers to leave their comfort zones, explore, dream, and learn the infinite opportunities presented by technology, and after all, one cannot be an analog player in a digital world.

ICTs are here and they are opening a wide range of opportunities in education. Thus, training aimed at teachers should focus on their use and the experiences that teachers can have regarding each tool that is used in class. That is, educational policies should aim at fostering communities of practice rather than training on a specific tool so that a real collaborative approach can be practiced in the ICTs-education world.

Through the collaborative approach, teachers can become committed to the use of ICTs as the sharing of experiences with their peers and thus support real ICT use for teaching. Besides, ICTs may hold surprises to some naïve teachers and that is precisely the moment when support is needed to encourage the use of technological tools in class.

All three respondents reckon that the proper use of ICTs is a great opportunity in education as it defeats educational barriers and it promotes immersion in different fields. They awaken curiosity from students to further participate in the elaboration of their class material. ICTs also ignite a spark in students to explore new media tools to share knowledge so that they can expose the products of their learning work with their contemporaries.

Given the much positive impact that ICTs have on education and that the drawbacks of their use are manageable in our country, the question stands on to what prevents our educational system from fully taking advantage of them?

FINDINGS SUMMARY					
	Lack of continuity in the use of ICTs and technology	Impact on students improvement by using ICTs	Connectivity and access to ICT in education in Ecuador	Inclusion and ICTs	Hardware and training in education	Attitudes and use of ICTs in education
(R1)	I made an analysis on the use of the virtual campus of all the courses and between 50 to 60 percent of the cases the virtual campus was only used as a repository and there is still not a clear perception that the use of the campus needs to be updated and framed as a teaching tool with the necessary instructions, deadlines for homework etc.	Improvement on students' progress as long as it is linked to previous planning of a class, not only implementing a technological tool per say but planning its use beforehand starting with formative and summative evaluation which at the end provides parameters to show the improvement of the students.	Having devices is important to assure the programs becomes successful	In applying technology in education, several principle s of otherness and empathy are necessary	Technology is important to mark a different pace in the teaching process	Good planning is relevant to the application of ICTs in education
(R2)	Many teachers are not willing to use technology, even though they may use technology, as in the case of smartphones, they still have a big resistance in trying to include technology within the classroom. I consider that it is important to train teachers in order for them to continuously use ICTs, this way they will open their eyes to the possibilities that technology has to offer.	The use of ICTs has a positive impact on students' results. The teacher needs to understand that teaching tools are not only limited to the virtual campus but also that the students already live in a digital world which is full of social networking.		Socie-economic factor may interfere in the application of ICTs, but not always.	It is important to train teachers to use ICTs as teachers not as students.	Remaining in the comfort zone does not bring positive effect on ICTs in education

(R3)	According to my own experience one of the main factors for the lack of continuity or even implementation of ICTs from teachers is that they do not want to leave their comfort zone and so a teacher feels afraid or it has some sort of rejection to explore and implement new fields such as technology and ICTs. Also if a teacher is not constantly using technology it is very easy to forget something he/she once learned. Finally, a teacher should become aware that the use of ICTs is part of their teaching process in their daily lives and as such they should use it constantly.	If an ICT program is implemented correctly it certainly presents more advantages that disadvantages. Mostly I see more chances of impacting positively our students by using ICTs. Aspects such as engagement and interest of the students since everything nowadays revolves around technology and everything is interconnected. The impact on students' improvement will also depend on the level of interaction with the students.	In Ecuador, there are still problems with connectivity. That affects the use of technology in education		Pre-service teachers need to be trained on how disabled people learn	

References

Alvarado, L. E., Aragón, R. R., &Bretones, F. D. (2020). Teachers' Attitudes Towards the Introduction of ICT in Ecuadorian Public Schools. *TechTrends*. https://doi.org/10.1007/s11528-020-00483-7

Balladares-Burgos, J. (2018). Diseñopedagógico de la educación digital para la formación del profesorado Instructional design of digital education for teacher training. *Revista Latinoamericana de Tecnología Educativa*, 17(1), 41-60, doi: http://dx.medra.org/10.17398/1695-288X.17.1.41

Chang, W., Wu, Y., , C., & Yu, W. (2003). Design and implementation of a Web-based distance PLC laboratory. *Proceedings of the 35th Southeastern Symposium on System Theory.* Morgantown, WV, USA, 2003, pp. 326-329.

Consejo Nacional de Planificación (2009). Plan nacional del buen vivir, Quito, Ecuador.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Thousand Oaks, CA: Sage Publications.

Edmunds, R., Thorpe, M., Grainne, C. (2012). Student attitudes towards and use of ICT incourse study, work and social activity: a technology acceptance model approach. *British Journal of Educational Technology*, 43(1) pp. 71–84.

Jung, H. (2015). Cultural Factors Related to the Hidden Curriculum for Students with Autism and Related Disabilities. *Intervention at school and clinic*, 46(3), p. 141-149, doi: 10.1177/1053451210378162

Mackey, A., Gass, S.M. (2011). *Second language research. Methodology and design.* New York, NY: Routledge.

Ministerio de telecomunicaciones y de la sociedad de la información (2018). Libro blanco de la sociedad de la información y del conocimiento. Quito, Ecuador.

Ministerio de educación y cultura (2006). Plan decenal, Quito, Ecuador

Purcell, K., Heaps, A., Buchanan, J., & Friederich, L. (2013). How Teachers Are Using Technology at Home and in Their Classrooms. Pew research center. Washington, DC. Retrieved from: https://www.pewresearch.org/internet/2013/02/28/how-teachers-are-using-technology-at-home-and-in-their-classrooms/

Spires, H., & Bartlett, M. (2012). Digital literacies and learning: Designing a path forward. Friday Institute White Paper Series. NC State University.

Spires,H. Medlock, C., &Kerkhof, S. (2018). Digital Literacy for the 21st Century. In Khosrow-Pour, M. (Ed.). *Encyclopedia of Information Science and Technology, Fourth Edition*, pp. 2235-2242

Tomczyk, Ł. & Oyelere, S. S. (2019). ICT for learning and inclusion in Latin America and Europe. Cracow: Pedagogical University of Cracow, doi 10.24917/9788395373732

Valdivieso, T. & Gonzáles, M. (2016). Competencia digital docente: ¿dónde estamos? Perfil del docente de educación primaria y secundaria. El caso de Ecuador. Digital teaching practice: where are we? Teacher profile of elementary and secondary education. The case of Ecuador. *Revista de Medios y Educación*, 49, 57-73, doi: http://dx.doi.org/10.12795/pixelbit.2016.i49.04