

Perspectives of the Technological Pedagogical Environment and Teaching Adaptation in Times of Pandemic in Ecuador. Retrospective Study

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Abstract

The purpose of this research is to know the perspectives of the technological pedagogical environment and teaching adaptation in times of pandemic in Ecuador regarding online education within the framework of the health emergency within Ecuadorian middle-level institutions; since, current education represents a methodological challenge characterized by digital tools during teaching, and processes that have abruptly modified the space and forms of teaching. Therefore, the retrospective level study assisted by case study methodology used as data collection techniques, questionnaires applied to the selected sample, made up of volunteer high school teachers, whose responses were stored through the Google Forms platform, in categories that detected quantitative and qualitative perception indicators. In this sense, teachers consider that, in this modality, the workload entails greater dedication time and the speed of content advancement is affected by the short synchronous interaction times. Consequently, teacher perception indicates a drastic change and little flexibility for the development of their digital skills or accessibility to resources that provide an adequate space for virtual education, thus highlighting their preference for in-person work.

Keywords: Perception, Teaching, Digital.

INTRODUCTION

Undoubtedly, the most relevant event during 2020 has been the pandemic caused by the COVID-19 virus, which began in December 2019, in the city of Wuhan, Hubei province, China. Later, it spread to the remaining continents until it reached most of the world. Therefore, as a starting point regarding containment measures against contagion, the Ministry of Education of Ecuador made the decision to suspend in-person classes in all establishments without distinction of levels. This involved the suspension of classes in the Regions of Ecuador in order to implement an online education platform for continued educational progress. Specifically, for the Coastal Region, the measures were applied during the 2020-2021 period. Given the above, the pandemic has revealed to the entire educational community the teaching limitation in the face of emerging cases; However, this limitation is directed by the highest authorities of the different educational centers, as well as the MINEDUC. So, given this position, the teacher must find the update or training that helps face the challenges of the contemporary world (Calle, 2020).

Now, attention must be focused on teacher perception and its influence on pedagogical practice. Accordingly, currently, it has been stated that beginning teachers and teachers who study to be one, based on their beliefs, provide implicit theories about what teaching is and how to put it into practice. Their perception about students, learning and the contexts in which teaching/learning takes place are generated from their previous experience, which is ultimately what determines that intuition (Díaz et al., 2010). In short, it has been pointed out that beliefs about teaching and schools are established very early in the lives of individuals, through the experience of schooling itself; It is from there that the strong resistance to change arises. But, according to what was stated above, we can distinguish between the rational bases of knowledge and the affective bases in the configuration of beliefs. For some, beliefs are a type of knowledge, while for others they are two very different entities.

Consequently, it is very important to address the meanings of teaching constructions, since they constitute the central axis of pedagogical practice and interest in this line of research. Therefore, the purpose of this research

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work is to explore the experience of online teaching/learning in the midst of the COVID-19 health crisis from the perspective of teachers of a private educational institution located in the city of Guayaquil, Ecuador. Given that, during these new scenarios and experiences to be acquired, a contribution to the construction of new meanings in Education can be evident. Now, to explore the impacts on subjective aspects, your face-to-face learning/teaching experience must be compared to your online learning/teaching experience. These are the main purposes of the research where the information will be collected through a questionnaire adapted from the studies "Remote teaching experience Teacher questionnaire" and "Effects of Communication Mode on Social Presence, Virtual Presence, and Performance in Collaborative Virtual Environments ", cited in the methodology. Likewise, the study has an exploratory-descriptive level, and its methodology uses the case study.

Finally, the development of the research has presented some difficulties, among them, mandatory confinement is the greatest limitation caused by the health emergency. In turn, the secondary limitations caused during the pandemic are: increased bias due to the fundamental role of the researcher as the object of the study, limited collaboration of the sample of participants in providing answers to the questionnaire, and procedures for consent to the research. of educational institutions or authorities.

Theoretical Framework

LITERATURE REVIEW

For decades, the pedagogical environment has focused on the need to change teaching praxis in the classroom through the integration of ICT in teacher training. It is based on the theory of connection as a teaching method that involves combining skills and fields of study, therefore, a collaborative work environment is foreseen, in which the learning environment is distinguished by the creation, cooperation and analysis of information resources (Vera et al., 2021).

For Sáez (2019), the practice of ICT in learning entails the constructivist paradigm that provides the learner and the instructor to share experiences, digital resources, pedagogical suggestions and their fruits within the classroom, building a prosperous learning society for both subjects. The progress of ICT generates mutations in educational scenarios, which favors the development of educational approaches with optimal adaptation to the needs of students (Pérez Zuñiga et al., 2018).

The teaching/learning process in the virtual environment, using ICT, requires a different strategic approach than traditional teaching. Therefore, diagnosing this learning modality should not focus on appreciating success in faithfully acquiring the content but on the empowerment of 21st century skills such as critical thinking, reflection, problem solving, and collaborative and cooperative learning (Almerich et al. , 2018).

Now it has changed in terms of management over teachers. Because the teacher is the leader, not the protagonist, because the student is observed as the axis of teaching/learning (Viñals and Cuenca, 2016). In the learning environment, the role of cognitive mediator on the part of the instructor towards the student optimizes the teaching/learning process in an essential way when any cognitive conflict occurs; without ruling out that the learner has prior knowledge, which leads to obtaining a significant learning experience (Schunk, 2012).

The teaching/learning process based on online models focuses on the work of the students; Lebenichnik et al. (2015) in online education the student gains freedom, responsibility in learning time and resources, that is, they control the learning path. The teacher also plays the role of mediator, so when he uses body language in real lessons, his role is limited to teaching, observing and evaluating the skills of his students, thereby approving more learning (Quesada, 2006). Furthermore, as Gisbert and Esteve (2011) point out, platforms provide adaptation factors to the teacher such as communication tools, the space available for the integration of technology and, above all, their ability to cope with the use of the software.

Something that will strengthen communication between student and teacher, since the focus has changed, according to (Gonzalez, 2014) this relationship is redefined when the face-to-face class is replaced by the classroom. According to Ibrahim et al.(2017) argues that e-learning does not replace the traditional classroom, but rather supports by providing opportunities for collaboration and communication between students and teaching staff.

Regarding teaching competence (Beltran et al., 2020), according to students in the online model, they say that it is weakened by the lack of personal or face-to-face communication that the teacher is accustomed to practicing. The author shows that the student can lose knowledge over time, making it impossible to predict demotivation, which leads to intellectual formation. However, a strong relationship between student and teacher stimulates the attention process, allowing them to act effectively in any situation, increasing the student's external motivation. Furthermore, as Hartnett (2018) suggests, the lack of person-to-person interaction makes it difficult for course instructors to predict when students will become bored, and the anonymous nature of online learning allows students to become demotivated whenever they wish.

In line with the same argument, Suárez and others (2016) present the main design elements that teachers should include to allow students to participate in real learning and improve their understanding:

Provide students with a curriculum that adjusts to their social reality and put it into practice for the well-being of society.

Add multimedia presentations that activate the learner's interest.

Insert learning activities that imitate reality.

Develop content at the level of difficulty that is in the student's immediate development zone.

Offer students practical projects that awaken their interest in learning and society.

Provide students with feedback on their academic performance.

Create a student-friendly website. For example, providing social interaction in learning with a technical support teacher or mobile teaching staff.

Education in emergency situations must develop the skills to cope with life with the evidence of these problems to find an effective solution of reference and the ability to cope with new tasks that allow children, young people and adults to work through emergency responses. solution to a crisis (Pérez, 2014).

According to (Mora, 2014), emergency education should focus on the importance of people's concerns as a factor that influences their ability to recover after the shock of the crisis, therefore, it should be emotional and social. when implementing a vocational training program. and the economy of the affected communities. For this reason, Zuluaga (2018) says that the emergency learning approach should focus on studies that develop the skills and abilities that will allow people to work after the crisis.

Therefore, multiple international reports are in favor of the idea of rethinking the educational model in its entirety, from administrative practices to classroom exercises, and this view is not foreign to many members of educational communities. This health emergency has revealed the deficits, but it also allows us to provide feedback and reconcile the great capacity for work to design an optimal educational system for the well-being of societies and, above all, for the protagonists of the teaching/learning process.

Investigation Methodology

In this framework, the present study was developed under a qualitative approach with an exploratory descriptive design that glimpses the teaching perception and seeks to describe part of the Ecuadorian educational context, specifically in terms of the challenges or difficulties that teachers faced during the COVID-19 health emergency. in the 2021-2022 school year.

The research tool is a questionnaire adapted from "Distance education for teaching practice" by Isabel Sarrade and Roland Tormey of the Education Support Center and Digital Learning Center. These final questionnaires used to evaluate teachers were developed by the research team, validated by two experts and finally, the test scores of 10 subjects in each part of the evaluation were and are used to validate the tests. . Similarly, each section uses a Likert scale grading system that allows for four preset grading levels for teachers. Therefore, the systematization of the data would be more analytical than quantitative, since although the examples would not be representative, they must be carried out as confirmed by Saldana et al. (2017) among others. theoretical

topics or examples that allow the analysis of a particular topic. Similarly, each organization studied is considered a case study from which general trends in other similar organizations can be gathered.

On the other hand, Navarro (2021) considers that qualitative research should follow a sampling logic in which participants are consciously selected at the beginning of the research based on criteria that the researcher finds useful to obtain the necessary information. Therefore, within the framework of this document and the COVID-19 emergency system, teachers from two education departments are invited: case G-1 and case G-2.

Both participating educational institutions are located in the city of Guayaquil and have a total of 207 teachers. However, our research interest focuses on the diversity and heterogeneity of the respondents only at the secondary level, with the aim of having a spectrum of teacher perception at a middle level. Therefore, to select the participants, voluntary sampling was used, which, as explained by Sánchez and his collaborators (2015), “consists of forming a sample by asking members of the population to voluntarily respond to a survey or to participate in an experiment”. Thus, 35 teachers from case G-1 and 47 teachers from case G-2 were integrated into the research, leaving a total of 82 volunteer participants as the unit of analysis.

RESULTS

The evidence collected through the research is organized by well-defined categories in a qualitative and extrapolated to quantitative way, which describe the explicit argument of teacher perception.

Category I: Available Resources and Working Conditions.

During online class sessions there are factors that contribute to the advancement of educational processes, for example: connectivity, accessibility and physical teaching space. Figure 1 shows the trend achieved by teachers during their online teaching from their workplace within the framework of the Covid-19 health emergency.

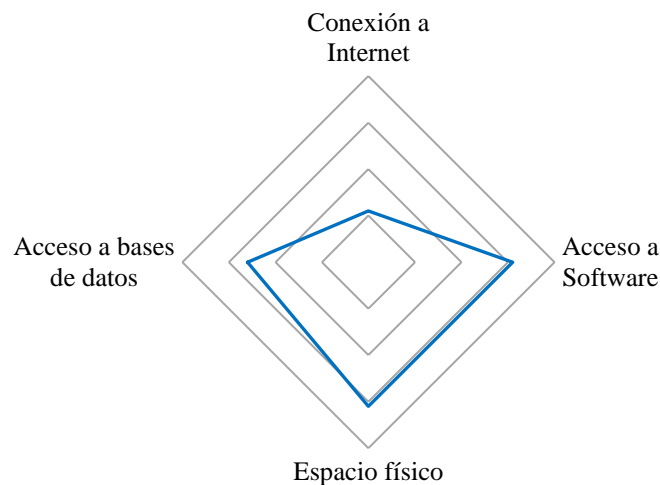


Figure 1: Trend Of Resources And Conditions Available During Teaching In A Health Emergency.

In this sense, the answers to the four questions posed in the category are managed using a Likert-type scale; where teacher choice is averaged to represent perception. Thus, the category identifies a “somewhat agreed” positioning between resources and working conditions to address online teaching during the health emergency; However, internet connectivity turns out to be a limiting factor for the advancement of content.

By virtue of this, the majority of teachers indicate that they have physical places that allow them to carry out their work online, as well as access to digital tools for knowledge. As Stephenson and Sangrá (2014) argue, education under the e-learning modality is taught by different educational platforms which strengthen learning;

However, if these environments are hindered by accessibility issues, online working conditions represent a hostile environment for teachers.

Category II: Teaching/Learning Experience.

The high percentage of teachers judge that in the online modality the work tension entails greater dedication, and the speed of advancing the curriculum slows down, that is, the results of the surveys reveal the priority for face-to-face work. According to Gisbert and Esteve (2016), the virtual ecosystem limits the teacher and for McCormick and Scrimshaw (2001) this change in learning theory must redesign the teaching methodology applied by him. However, Lebeničnik et al. (2015) state that, in the online modality, the learner learns to be autonomous, while the teacher reduces his role, why does he not have the comfort of using his body language in the classroom, so his task is limited to teaching by via observation. Therefore, the online teaching experience causes discomfort in teachers due to their lack of instruction, but not due to the nature of the virtual environment.

Table 1 examines trend indicators that contribute to the educational process of online teaching during the health emergency.

Table 1. Relevant Aspects of Education.

Indicator	Percentage
That students have clear explanations of how to use technology to learn online	48.6%
That students can ask questions to the teaching team.	22.9%
That students can work on exercises that allow them to acquire the content and skills of the class.	68.6%
That students have the recording of the classes so that they can access them outside the scheduled periods.	25.7%
That students have a clear indication of what they should be able to do at the end of the course.	20.0%
That online classes provide sufficient opportunities for students to interact with their other classmates.	25.7%
Make online classes interactive and motivating.	62.9%
That students can see their progress in the skills they are developing.	34.3%
That students can follow online classes at the established time.	17.1%

Without a doubt, the results show that it is a priority for teachers to focus on “that students can work on exercises that allow them to acquire the content and skills of the class,” while giving less importance to “that students follow online classes.” at the established time.”

Category III: Effects Of Online Teaching: Interpersonal Communication.

For the analysis of Figure 2, one of the predominant effects during an online class is to feel very socially present, while for some teachers it is difficult to understand or perceive students' reactions during the session.

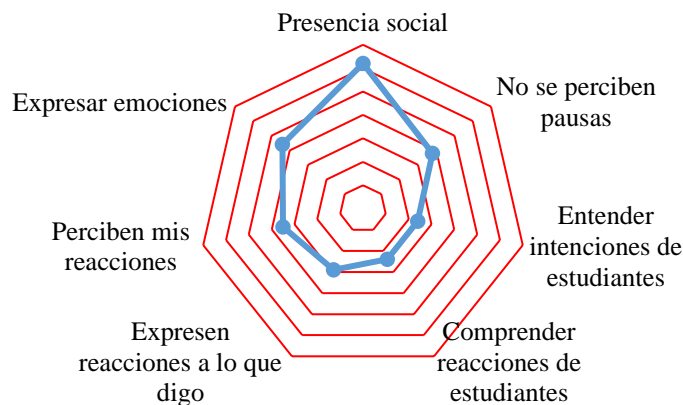


Figure 2: effects of interpersonal communication during teaching in a health emergency.

In this sense, human behavior is extremely complex to explain and objectify; due to the gradual increase in difficulty when subjects (teachers) are in interpersonal communication situations assisted by virtual environments. However, in distance education, the interpersonal relationship exists in the sense that the act of communicating is intentional and challenges the perception of each subject. Students must possess the personal skills to understand what the teacher indicates in feedback or in a class, and thus represent a negotiation of shared meanings for an interaction.

Category Iii: Effects Of Online Teaching: Social Interaction.

In Figure 3, teachers claim to have greater comfort in virtual environments, so that they become so involved during the class session that they lose track of time and some disconnect from the world around them. Likewise, they have detected that virtual environments allow greater interaction with educational content and resources.

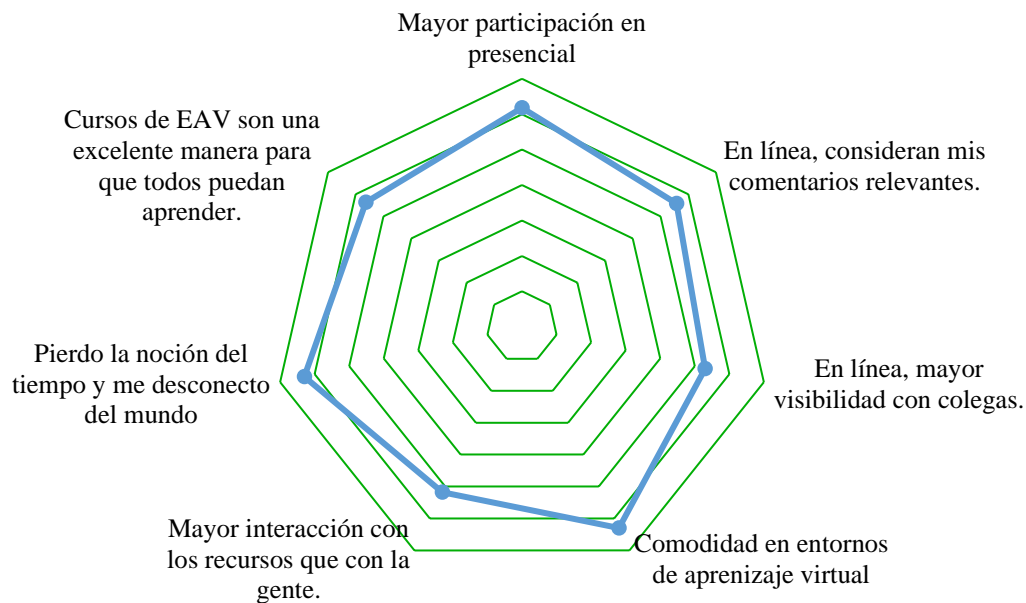


Figure 3:effects of social interaction during teaching in a health emergency.

Based on the above, the majority of teachers assure that social interaction during online teaching due to the COVID-19 health emergency has been a component that enhances the development of interactive skills. Teachers are more involved with their activities due to the comfort of virtual environments and active listening within the new educational scenario, so they try to manage the times necessary for online teaching without taking into account the number of hours required. in front of the computer.

The predominant result for teachers in interpersonal communication is to feel socially present, while for students, communication is complicated due to the difficulty in detecting internal feelings such as reactions or emotions; However, it is natural to detect the tiredness or boredom of the students when they see their face on the camera of the communication platform. On the other hand, students do not have the same intrinsic motivation in the virtual environment, therefore, educators must be assertive when building learning activities, since the main element is found in the content; which must be guided and connected with the objectives, to identify personal aspirations (Avello and Rodríguez, 2020).

Category IV: Impact On Subjective Aspects of Online Teaching.

Board.Qualitative analysis of teacher perception.

Code of Category	Category – Position of authority	Frequency
500	The position of authority before his students has not been affected.	16
507	Problems with classroom control or student behavior control.	5
508	Problems with specific negative attitudes, indiscipline, boycott, lack of cooperation.	7
101	NA	7
Code of Category	Category – Transmission of Knowledge	Frequency
501	The possibility of transmitting knowledge has not been affected.	14
506	Issues with interaction/communication/visibility due to the nature of the virtual environment.	7
510	Problems with the synchronous time available to interact or work.	6
511	Problems with the resources available to the teacher/student to work during online classes.	6
101	NA	2
Code of Category	Category – Motivation of Knowledge	Frequency
502	The possibility of motivating students to build their own knowledge has not been affected.	17
509	Mention of strategies used in new virtual environments.	5
510	Problems with the synchronous time available to interact or work.	1
512	Problems with the new methodologies necessary for online teaching.	9
101	NA	3
Code of Category	Category – Being a Teacher	Frequency
504	The idea of what it means to be a teacher has not been affected.	twenty-one
510	Problems with the synchronous time available to interact or work.	3
512	Problems with the new methodologies necessary for online teaching.	8
101	NA	3

Regarding the question asked, the table reflects that at the level of categories, the perception of teachers indicates that digital platforms do not affect their authority. On the other hand, when it comes to demanding discipline in the virtual classroom, authority is affected by specific attitudes of the students, due to their lack of cooperation. Likewise, teaching through digital platforms does not affect the transmission of knowledge; however, factors such as the nature of the virtual environment and the available times of interaction with students are key pieces in affecting the transmission of a knowledge. know.

On the other hand, during online teaching teachers have managed to motivate their students to build their own knowledge through the use of strategies, interaction and technological resources. However, some have had problems with the new methodologies used during the teaching/learning process due to the speed of technology. Finally, the majority maintains their idea of what it means to be a teacher, in any modality; face-to-face or virtual, but teaching online presents new challenges with technologies that try to focus methodologies in an active way to involve students.

Likewise, the teaching/learning process through b-learning platforms does not affect class control; However, demanding discipline in an authoritarian manner in the virtual classroom generates rejection in students and inappropriate behavioral attitudes. Beltrán (2020) proposes that the authority of the teacher before his students under the online modality is weakened by the absence of personal interaction or presence. However, optimal monitoring enables us to react accurately to a situation such as student indiscipline.

The online modality does not limit the transfer of the cognitive process; However, one of the advantages is that it reduces the apprehension of skills. Zuluaga and Caicedo (2015) propose the approach to education in emergency, it should be aimed at a curriculum that develops skills that allow working for the common good of post-crisis society. Indeed, the fundamental principles of instructional design focus on providing relevant and useful content for students, integrating activities that simulate real situations, and designing difficulty levels close to the zone of proximal development.

Thus, under the online modality, teachers at this level encouraged their students to create their own knowledge through gamification, contact with simulators and technological tools. However, some have had problems with the use of new methodologies during the teaching/learning process. For this reason, Zamarro (2011) postulates the following points as a motivation guide: (1) level all students with learning strategies that generate greater capacity for analysis, (2) facilitate work opportunities for different learning styles, teaching the value of what they learn from a globalized perspective and (3) exchanging knowledge collaboratively, in response to the need to build new perspectives.

CONCLUSIONS

Education in an emergency situation highlights that, during 2021-2022, the exodus from in-person modality to an online modality is permeated by the context of a health emergency, where the teacher must empower students with skills to face the situation through a flexible virtual environment. Fundamentally, in experiencing life skills, working for post-crisis recovery and developing digital skills. The optimal use of educational strategies demonstrated by this research is the interaction with students through the gamification of content, simulators, digital resources, e-learning and b-learning platforms, among others. However, considering the results, contrary to what was expected, the project demonstrates the lack of prior training of the agents of the educational community. Furthermore, a limited element is the time available for classes, due to the reduction in the workload for each affected subject in the two study institutions.

When comparing the face-to-face learning/teaching experience with the online learning/teaching experience, there is greater concentration in classes by teachers; one consequence is that teachers do not pay attention to time due to the nature of the virtual environment, also, of the adversities inherent to the educational field. Thus, if the teacher has more time to scrutinize his actions, think about the information received, reflect objectivity on the interaction with his classmates, in this case, he will be able to build solid beliefs. On the other hand, if the instructor does not have the necessary time to reflect on his teaching/learning process, the beliefs he develops are limited and, consequently, they will not be able to contribute assertively to the construction of his professional identity, which is necessary for teachers without experience and in apprentices. Therefore, teachers construct significant experiences based on the experience conceived through praxis; these experiences originate from their beliefs and certain knowledge about education and the education/society relationship.

Therefore, when speaking about teaching praxis, it is necessary to insist that it is about the different experiences built on it, because, in ordinary experience, institutional and personal elements coexist according to the role they address; because each teacher is unique in his professional practice. This is due to their heterogeneous and historical formation where they reject previous meanings, some they reject, they incorporate others into their own practice and they in turn provide new meanings when faced with the resolution of their work in educational contexts. However, this discovery strengthens educational research, as a skill that allows us to observe phenomena as events treated from theory and not only from belief.

The training of teachers in the use of ICTs must focus on the optimization of virtual tools and not be limited to their operational use. The competencies of 21st century teachers must extend to the reflection of new behaviors, socialization models, the teaching interface, informal areas for the exchange of information that range from social networks. In this aspect, the teacher must correctly manage the use of platforms and evolve in their learning, since their current role places them as a mediator between the institution (the classroom, the school) and the media ecology, where students create and reside.

Finally, the research indicates that teacher perception positions student learning and teaching as unique characteristics of the virtual environment that slows down the advancement of content during the health emergency; There are progressively impacts on subjective aspects, since teaching through digital tools is not easy due to extrinsic and intrinsic motivations that students need. Consequently, the relevant challenges regarding the online modality, found in the study, were: disciplinary control in the virtual classroom, transfer of knowledge, stimulation of the construction of knowledge and the change of the teaching role towards the guidance or mediation of content under synchronous guidance.

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