

## *Challenges Presented to Paraguayan Teachers by the Measures Adopted due to Covid-19*

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### **Abstract**

Due to the pandemic caused by COVID-19, educational systems around the world have been disrupted as they were forced to stop face-to-face classes in at least 70% of institutions. Paraguay was not the exception, interrupting classes early and abruptly forcing teachers to quickly adapt to this new reality. This mixed quan-qual study presents an analysis of teachers' views on the challenges posed by access to technology, teacher training, student and parent limitations in Paraguay. Data were collected using a questionnaire consisting of open and close-ended questions administered during the first weeks of the quarantine. The sample included 1030 teachers from public and private institutions at all levels. Qualitative data were organized according to teacher's access to technology, teacher training before and after the quarantine, student and parent communication and difficulties. The quantitative analysis involved univariate descriptive statistics as well as chi square statistics associating level of difficulty with teacher characteristics such as location, internet connection, experience, ICT use, and ICT competence. Results show that the main difficulties are associated with internet access, the frequency of ICT use and the scarce training in the use of educational ICTs as well the change in the structure of the classes. Opportunities noted by teachers include the creation of a new "collective conscience," and "restructuring the current systems." As ensuring the continuity and quality of education constitute the main challenges in this new context, it is imperative that educational institutions focus on teacher training and support.

Keywords: COVID-19, Teachers, ICT, Challenges

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## 1. Introduction

The pandemic caused by the new COVID-19 virus has led governments around the world to take extreme measures to reduce its spread and prevent the collapse of health systems. The pandemic has affected all educational systems worldwide as academic activities have been disrupted at all educational levels for about 70% of students worldwide (Chang & Yano, 2020). In this manner, with the implementation of remote learning strategies due to school closure and the current confinement regulations caused by COVID-19, the maxim: the education system should guarantee equality of opportunities for all has been challenged (Cáceres-Muñoz et al., 2020; Trujillo et al., 2020).

The advent of epidemics is nothing new. Several countries have turned to school closure and the use of technology to ensure the continuation of education, namely, China, Mexico, and Nigeria (Trucano, 2014). In past situations, in the face of flu epidemics and the SARS virus, it was important to establish social distancing measures to prevent transmission (Uscher-Pines et al., 2018; Fox, 2004). In Hong Kong, the sudden closure of schools and the introduction of other teaching methods (remote education) highlighted the lack of skills or experience with the use of ICTs from the teachers' perspectives (Fox, 2004; Guðmundsdóttir & Hathaway, 2020). Currently, due to the nature of the COVID-19 virus, prolonged closure of educational institutions could have a more negative than positive effect as it could exacerbate social, economic, and health inequalities. On the other hand, the return to face-to-face classes could generate a resurgence of the virus (Esposito & Principi, 2020). Researchers have questioned the efficacy of prolonged school closure at preventing the spread of the virus (Wang et al., 2020) and others proposed implementing less disruptive measures since the effectiveness of mass school closures in the face of the COVID-19 pandemic is unknown (Viner et al., 2020).

A report on education in the COVID-19 era presents an analysis of government responses to the pandemic (Reimers & Schleicher, 2020). Researchers noted that, in countries where classes were cancelled, governments have encouraged schools to continue through online learning or mass media such as television. Similarly, teacher training became a priority in order to support and guide the teaching-learning process through digital media. Some priorities and challenges in response to the crisis include the well-being of students and teachers, professional support for teachers, support for students who lack independent study skills, and ensuring educational continuity (Reimers & Schleicher, 2020). In Latin America, some see this situation as an opportunity for digitalization (Almazán Gómez, 2020) and for creating links between families and schools (Muñoz Moreno & Lluch Molins, 2020), but challenges have been especially evident due to the unequal conditions of education systems (CEPAL, 2020; Cifuentes-Faura, 2020; Monasterio & Briceño, 2020).

Paraguay registered its first case of coronavirus on March 7, 2020 prompting authorities to take immediate measures to contain its spread. On March 10 of that same year, confinement restrictions took place, and all public and educational activities that involved gatherings of people were suspended (Britez, 2020). As a result, The Ministry of Education and Science (MEC) developed a continuity plan called "Your School at Home". This plan follows the UNESCO guidelines (2020a) and includes an analysis of the means available to students and teachers such as cell

phones, the content provided through the official MEC website (<https://aprendizaje.mec.edu.py/aprendizaje/>) and other media, as well as the distribution of printed materials, classes through TV, radio and newspapers (MEC, 2020). Similarly, higher education institutions have implemented technology-mediated classes. On April 16, the National Council of Higher Education (CONES) published a set of guidelines for the implementation of digital tools to face-to-face classes. As of January 10, 2482 academic programs have been approved both in universities and higher education institutions across the country (CONES, 2020). This study presents an analysis of the perspectives of teachers at the beginning of these measures with respect to the challenges presented, taking into account the preparation that existed related to infrastructure and access to technology, training, student and parent limitations, as well as the changes in schedules and workload generated by this new way of working.

## **2. Methods**

A mixed quan-qual methodology was used with closed and open question questionnaires adapted from Wozney, Venkatesh and Abrami (2006) to the conditions of confinement by COVID-19, followed by focus groups with volunteer participants. The study was conducted during the fourth week of academic confinement (late April and early May) and the sample included 1030 teachers from public, private and subsidized institutions at all levels throughout the country. Seventy percent of the teachers who participated in the survey reside in the country's capital and in the Central Department, the rest in the other departments. Approximately 65% of the teachers who participated in the study work in public educational institutions and the rest in private and subsidized institutions. The majority of the teachers (49.3%) teach in universities and higher education institutes, 25.9% in high school and a smaller proportion teach in pre primary (kinder), primary and elementary schools.

The questionnaire consisted of 37 questions including some referring to access to technology, teacher capacities and training, time dedicated to planning, types of activities used, media and instruction, accompaniment of parents, possibilities and difficulties encountered. The open questions aimed to record the perspectives of the teachers not recorded through the other items and to be able to deepen on the challenges presented by the extraordinary situation presented by the COVID-19. The questionnaire was designed on Google Forms and distributed through digital media including mailing lists, social networks such as Facebook and WhatsApp groups.

The data was analyzed using descriptive univariate statistics (counts and percentages through statistical tables and graphs) and tests of association or difference in proportions such as chi-square. The Excel spreadsheet was used for the manipulation and arrangement of the data, while the statistical analysis was done through the statistical software R (R Core Team, 2020) with the integration of some packages such as ggplot2, ggpubr and RcmdrMisc. The open answers as well as the transcripts from focus groups were analyzed qualitatively through coding and categorization in order to understand the perspectives of the participants in relation to their answers in greater depth. The results were grouped into three main categories including: a) accessibility to technological resources, b) communication and exchange of academic activities, and c) difficulties, challenges and opportunities presented to participants.

### 3. Results

#### Access to Technology

Approximately 99% of teachers have responded by having at least one smartphone in the home. This is to be expected because of the great usefulness of this electronic device in many areas of academic life. On the other hand, teachers' responses showed less home computer ownership compared to cell phones. This may be due to the fact that computers have a higher cost and are more difficult to access. In this sense, a high percentage stated that they had only one computer for the whole family (48%) or even no computer at all (7.4%). However, a not-so-low percentage of teachers (35.2%) have stated that the home has at least one computer for each school-age member. This was shown mostly in cities such as Asunción and the Central Department. The distribution in terms of internet connection is very different for the factors that have been considered. A high percentage of teachers who reported having an Internet connection through fiber optic, cable, antenna or wifi services were observed, which normally have high costs compared to mobile data packages. Following the same line, an important proportion of teachers (37.7%) indicated that the only Internet connection they have is through a cell phone. About 60% of the participants stated that the Internet connections they have at home are unlimited, this is also supported by the results that most teachers have Internet services through fiber optics, antenna, cable or wifi, which are usually unlimited. The gaps are important and significant among teachers with limited and unlimited connection who reside in Asunción, Central and the rest of the country ( $\chi^2=81.8$ ,  $p<0.001$ ).

		<b>%</b>
<b>Smartphone ownership</b>	Yes	99.3
	No	0.7
	<b>Total</b>	<b>100</b>
<b>Household computer ownership</b>	None	7.4
	One computer per family	48.0
	Less than one per school-age family member	9.4
	One per school-age family member	23.4
	More than one per school-age family member	11.8
	<b>Total</b>	<b>100</b>
<b>Internet connection</b>	Mobile, from the cell phone	37.7
	Mobile, via modem	11.3
	Fiber optic, cable, antenna or wifi	62.4
<b>Type of internet connection</b>	Limited	40.4
	Unlimited	59.6
	<b>Total</b>	<b>100</b>

Table 1: Access to technology from home

<b>Communication channels used</b>	<b>With the institution</b>	<b>With students</b>	<b>With parents</b>
There is no communication	0,3	1,6	36,6
Text Messages	4,5	3,9	3,1
WhatsApp	82,2	76,5	50,4
Facebook	6,7	4,2	1,7
Email	45,3	34,3	11,5
Online Education Platform	38,1	43,5	7,4
Videoconference	27,2	26	3,8

Table 2: Communication channels used by teachers

WhatsApp and email are the most used communication channels by schools where teachers work to transmit notices about educational issues (82% teachers use the first communication channel while 45% use email). Similarly, for communication with students and parents, teachers use the WhatsApp messaging service more frequently (76% and 50%, respectively). It should be noted that the use is not exclusive, teachers use more than one communication channel with the institution and with students and parents (Table 2). At the beginning of the distance classes, more than half of the teachers (55%) used synchronous activities such as videoconferences, live chats, among others for the development of academic activities. It should be noted that most of those who carried out these synchronous activities maintained the class schedule used in the face-to-face mode (45% of the teachers), 32% indicated that adapted class schedules were established for contingency, while 23% did not use fixed schedules but rather carried out the synchronous activities according to the need and circumstances presented as the educational process advanced, which was new for many educational actors (Table 3).

<b>Synchronous activity schedule</b>	<b>Count</b>	<b>%</b>
Class schedule used in the face-to-face mode is maintained	250	45
An adapted class schedule was established for the contingency	175	32
We do not use a fixed schedule, meetings are scheduled when the need arises	127	23
<b>Total</b>	<b>552</b>	<b>100</b>

Table 3: Distribution of teachers according to schedule of activities synchronized with students

### **Training and skills in the use of ICT before and after the declaration of quarantine**

Figure 1 shows high percentages of teachers who had had some training in the use of ICT for teaching before the health emergency was declared and the partial closure of the country's educational institutions. More than 47% of the teachers expressed having been trained at least 3 hours before the quarantine. In this regard, it was noted that about 31% of those teachers who did not receive any training before the quarantine, have received it once declared. However, there was a high proportion of teachers who had not yet received any training in the use of ICTs, at the time of this study ( $\chi^2=211.9$ ,  $p<0.001$ ). Regarding the stages of the process of integration of ICTs in teaching, according to Wozney, Venkatesh, and Abrami (2006), 13.7% of the teachers declared

themselves to be in the stage of Awareness (I am aware that technology exists, but I have not used it, perhaps I am even avoiding it. The possibility of using computers makes me anxious) before quarantine. However, in the course of the quarantine this percentage decreased significantly (approximately 10%). Slight increases were evident in the Familiarity, Adaptation, and Creative Application stages. In the case of the Creative application stage the increase was around 10% ( $\chi^2=54.4, p<0.001$ ).

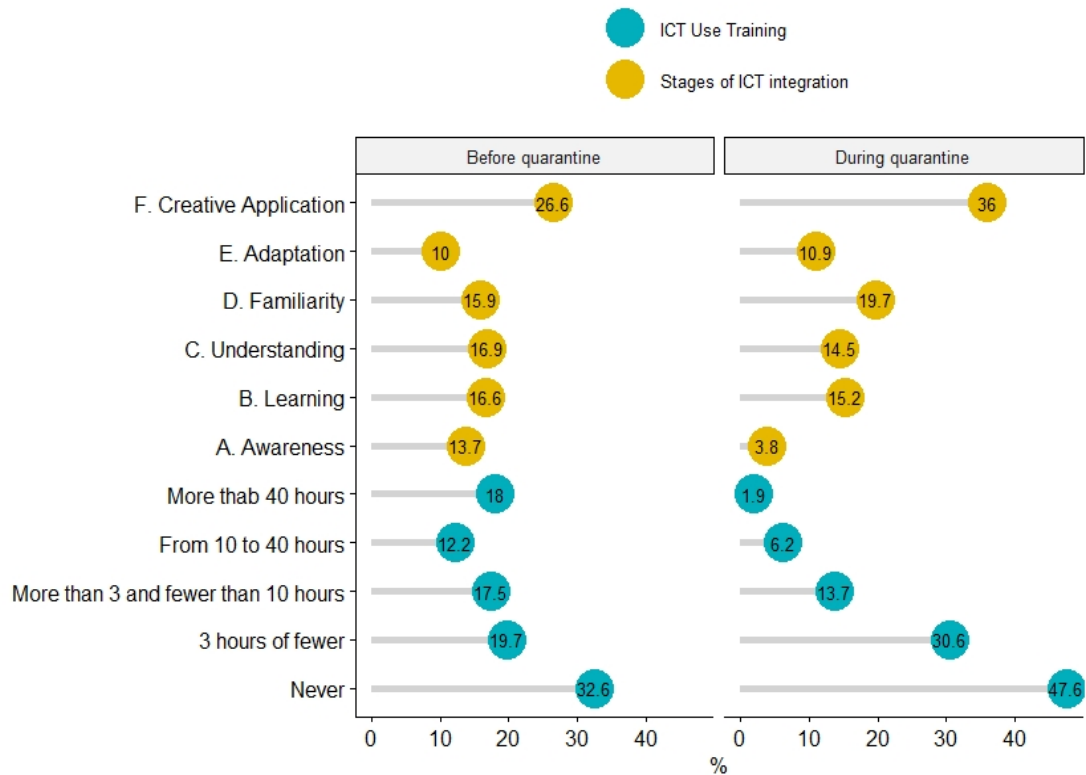


Figure 1: Training and skills in the use of ICT before and after the declaration of quarantine

### Difficulties and opportunities presented

The main difficulties that teachers have experienced in distance education from the measures taken by the government due to the COVID-19, according to their own statements, are related to problems with internet connection (39%), lack of knowledge in the use of technological tools (29%), lack of technical support (18%) and lack of technological tools (17%). To a lesser extent, difficulties associated with the lack of materials (10%) and the lack of support from educational institutions were also shown. It should be noted that 22% of the teachers indicated that they had no difficulties in this process of distance learning (Table 6). On the other hand, most of the teachers (52%) agreed that the main difficulty seen in the students for the realization of the activities proposed in this modality is centered in problems of internet connection. Similarly, difficulties such as lack of knowledge in the use of technological tools, lack of time or interest in the proposed tasks, limited access to ICTs, lack of understanding of the assigned tasks and to some extent difficulties related to lack of support from parents or guardians and lack of motivation were highlighted. In this opportunity only 7% of the teachers stated that they do not see difficulties in the students to carry out the proposed activities. There was a significant

increase in the time that teachers spent on preparing classes and pedagogical activities as well as on correcting work sent in by students. However, between 6% and 11% expressed that these activities decreased significantly. This may be due to the fact that some higher education institutions had not continued with the educational process through digital means or even some had not started the school year at the beginning of the quarantine and were not yet returning to academic activities.

Main difficulties experienced in distance learning	Teachers		Students (according to teacher perception)	
	Count	%	Count	%
There are no difficulties	224	22	68	7
Lack of motivation	-	-	181	18
Lack of institutional support	57	6	-	-
Lack of materials	103	10	-	-
Lack of knowledge in the use of technological tools	296	29	296	29
Lack of technical support	181	18	-	-
Lack of technological tools and/or access to ICT	173	17	245	24
Lack of access to information (for the completion of tasks)	-	-	125	12
Lack of time or interest	-	-	306	29
Lack of understanding of assigned tasks	-	-	193	19
Lack of support from parents/guardians	-	-	171	17
Internet connection problems	400	39	532	52

Table 4: Main difficulties experienced in online learning

In table 5 it can be observed that the years of experience that the teacher has did not influence his manifestation of having difficulties in distance education in this time of confinement. Moreover, this is verified with the square chi statistics ( $\chi^2=5.22$ ,  $p=0.73$ ). However, it should be noted that the percentages of teachers who indicated having difficulties ranged from approximately 71 to 84%, considering the years of experience. On the other hand, an interesting relationship was found between the frequency of the use of ICT in the regular classes and the difficulties in the academic process. It was observed that the greater the use of ICT, the less likely it is to manifest difficulties. The differences in the percentages are statistically significant ( $\chi^2=42.26$ ,

p<0.001). Similarly, as the teacher manifested an advanced level of competence in the use of computer technologies, the probability of having difficulties decreased ( $\chi^2=55.12$ ,  $p<0.001$ ). Also, difficulties were observed in greater proportions in teachers who expressed limited internet connection. Nevertheless, a high percentage (>70%) of teachers with difficulties was observed in spite of having unlimited access to the Internet. The area of residence of the teacher was not a discriminating factor for the presence of difficulties. That is, no significant differences were evident in the manifestation of difficulties by department of residence ( $\chi^2=4.77$ ,  $p=0.09$ ). It is important to indicate that although there are no significant differences between the groups studied, high percentages of teachers with difficulties in the teaching-learning process were evidenced.

		Difficulties (%)		
		No	Yes	Total
<b>Area of residency</b> $\chi^2 = 4.77, p = 0.09$	Asunción	26,2	73,8	100
	Central	21,0	79,0	100
	Rest of the country	19,3	80,7	100
<b>Internet Connection</b> $\chi^2 = 47.12, p < 0.001$	Unlimited	29,2	70,8	100
	Limited	11,1	88,9	100
<b>Teaching Experience</b> $\chi^2 = 5.22, p = 0.73$	0 - This is my first year	18,8	81,2	100
	1-5 years	24,4	75,6	100
	6-10 years	22	78	100
	11-15 years	20,5	79,5	100
	16-20 years	24,8	75,2	100
	21-25 years	18,4	81,6	100
	26-30 years	16,1	83,9	100
	31-35 years	25	75	100
	More than 35 years	28,6	71,4	100
<b>Frequency of ICT use</b> $\chi^2 = 42.26, p < 0.001$	Never	12,9	87,1	100
	Seldom	12,0	88,0	100
	Occasionally	18,6	81,4	100
	Frequently	23,1	76,9	100
	Often	31,1	68,9	100
	Always	43,7	56,3	100
<b>Level of competence in the use of ICT</b> $\chi^2 = 55.12, p < 0.001$	Unfamiliar	8,3	91,7	100
	Beginner	16,6	83,4	100
	Advanced	30,6	69,4	100
	Expert	45,7	54,3	100

Table 5: Difficulties Associated with Teacher Characteristics

The qualitative responses aligned with the information above and provide more in depth information of the perspectives of teachers regarding the measures taken and the opportunities identified in the situation. In relation to the difficulties, the participants referred again mainly to issues related to access to technology reporting difficulties with "internet connection and technological equipment... In the vast majority of families there is only one cell phone and there are several children who have to use it for their homework" or that there is "low internet connectivity... [and]



lack of mastery of technology for virtual meetings with teachers, administrative and service staff". Moreover, teachers noted that the lack of training is one of the most important difficulties not only for them but also for students and their parents. On the one hand, teachers, as seen in the quantitative results above, admit their limitations in transferring their lessons through digital tools. They especially referred to the organization of time in this modality since "now you have no time or rest... weekends are no longer weekends because they believe that working from home you are always resting". This leads to "mental burnout" as expressed by teachers.

Moreover, teachers indicated that parents and students were not prepared to assume a new educational modality either. On the one hand, "parents are not prepared to accompany their children in their homework" was one of the difficulties expressed. On the other hand, neither were the students, despite being "digital natives", prepared to do their homework at a distance as indicated by the teachers. Thus, teachers noted difficulties for students and parents to understand the instructions sent through the various means used; and, many of them indicated that communication with students represents one of the greatest difficulties, stating that "the greatest challenge is to reach all students in the same way as I would do it in person". The latter is closely related to the concern of all members of the community to not only reach everyone but to "take care of the quality" of the teaching-learning process in this extraordinary context.

Despite difficulties, and that some participants did not find opportunities in this situation, several of the participating teachers were able to identify some opportunities presented. Sub-categories were identified regarding the opportunity to continue studying, for training, learning, implementing improvements, investing in infrastructure and rethinking the entire system to carry out digital migration. With respect to training, participants noted that this situation "presents incredible opportunities to apply differentiated instruction... to encourage creativity on the part of the student and the teacher. "It is providing the opportunity to grow in the use of technology and to access a world of possibilities. On the other hand, they also mentioned the opportunity to invest in infrastructure, especially technology. Finally, several referred to the "opportunity to restructure the systems we have" in order to effect change from the purview of teachers and use technology to "POWER the learning process." In this way, they see the possibility for the "creation of a COLLECTIVE AWARENESS" that may change our vision of education.

#### **4. Discussion**

While the use of technology presents opportunities for teacher professional improvement (Schleicher, 2020), the abrupt closure of schools left many teachers confused about their roles and without the tools necessary to use ICTs efficiently (Beteille et al., 2020; Flack et al., 2020). Brammer & Clark (2020) state that education has seen "the largest and quickest transformation of pedagogic and assessment practice ever seen" (p. 454) generating some negative effects, namely; loss of learning and human capital and diminished economic opportunities for students (Azorin, 2020; World Bank Education, 2020), the rise of school dropouts, and social and economic gaps in relation to access to technology (Álvarez et al., 2020; Armitage & Nellums, 2020; Esposito & Principi, 2020; Li & Lalani, 2020; Lloyd, 2020; Sanz, Sáinz González & Capilla, 2020; Vivanco-Saraguro, 2020).

The information collected in this study showcases that the lack of access to technological tools, and lack of limited or unlimited internet connection represent a challenge to the continuation of academic activities. While some teachers are familiar with ICT, this does not guarantee their efficient use in their classrooms (Salehi & Salehi, 2012). This becomes more evident when implementing abrupt measures such as closing institutions and adopting remote education. Considering this, Daniel (2020) proposes that instead of implementing teaching and learning complex methods, educational entities should focus on student learning. Likewise, the objective of remote education is not to imitate a robust learning system but to provide temporary access to education (Álvarez Marinelli et al., 2020). In other words, the educational strategies that took place in light of the pandemic confinement measures, only served to mitigate the effects of school closure since proper online education delivery would require more planning depending on the context and subject to be taught.

In the same vein, the results indicate that access to technological resources to carry out emergency remote learning poses difficulties for teachers regardless of their place of residency, years of experience, and internet connection. This could be the case due to the implementation of large scale technology-mediated instruction, lack of proper training and skills to efficiently use ICTs, and lack of time to prepare lessons that should have been delivered face-to-face (Cóndor-Herrera, 2020; Pérez-Narváez & Tufiño, 2020). Other researchers indicate that teachers encounter difficulties such as lack of access to technological tools, problems adapting content to the virtual environment, workload and work from home, and students' attitudes towards remote learning (Sánchez et al. 2020). Similarly, in a study on perspectives on the use of ICTs, Jones (2004) found that the barriers that hinder the use of technology are lack of confidence and skills in the use of computers, lack of technological and pedagogical training, lack of access to technological tools and lack of time, among others. The presence of barriers when dealing with technology-mediated education are present in the literature and has been explored by other researchers (Koptcha, 2012; Francom, 2016; Voogt & McKenney, 2017; Siefert et al., 2019) These difficulties are even more evident when planning classes, which in reality, would have to be developed face-to-face, if the benefits and limitations of remote education are to be maximized (Dunlap, Verma, & Johnson, 2016).

The study shows that there was an increase in the workload for teachers regarding the time they spend in planning and preparing their classes and correcting homework. On this note, Tomei (2006) indicates that planning for online classes requires 14% more time than planning for traditional lessons and that work overload tends to be more common during evaluation periods. However, in a study in which researchers explored the implementation and use of technology in the classroom, they found that teachers would spend much of their time providing “one-on-one support and immediate feedback to students” instead of providing whole-class instruction, grading and keeping track of students homework (McKnight et al., 2016, p. 204). In today’s context, the increase of time for school workload could be linked to working from home. This factor implies finding a balance between household tasks, having a workspace free of distractions, having the necessary technological tools and stable internet, which is not the reality of many teachers (Monasterio & Briceño, 2020; Zhang et al., 2020). It is important to consider that much of today’s teaching is also affected by increasing concerns about income and job security (UNESCO, 2020b) which could lead teachers to make a great effort to maintain their jobs to support

themselves and their families. This is why the role of the teacher has so far been of utmost importance since the beginning of the quarantine, since the continuity of education in the face of this unprecedented situation is a necessity (Hincapié, 2020).

Furthermore, results show that teachers received training in the use of technology before and after the confinement measures. It is important to note that through training received during the quarantine, levels of knowledge on the use of technology slightly increased. Considering Wozney, Venkatesh and Abrami's model (2006), the increase in the stages of creative adaptation, adaptation and familiarity could be due to the context of lesson development. Once confinement was implemented, the main means of instructions was mediated by technology. It is important to note that the results do not consider what kind of technological training these teachers received nor what the content of such training was. Such information could shed some light as to why some teachers' integration of technology on stages of understanding, learning, and awareness decreased. Other research indicate that teacher use of technology might depend on teachers' confidence in their use of technological tools (Li et al., 2018), their pedagogical beliefs (Heitink et al., 2016; Li et al., 2018), and also the kind of training they receive (Koptcha, 2012). On this note, a study by Koptcha (2012) demonstrates that sustained and situated professional development could have long-term positive effects in promoting student-centered use of technology throughout the years of teaching. Such training could serve as an opportunity to explore the different technological tools available and their limitations, such as the WhatsApp messaging service (Vilches Vilela & Reche Urbano, 2019), especially when their use is widespread for communication and sending tasks. It should be noted that some Latin American countries have been implementing strategies in the use of ICTs for student education, and these could serve as a model for the implementation of emergency strategies as well as for strengthening education and the use of ICTs (Cobo & Sánchez, 2020).

Despite the barriers faced by teachers, qualitative results demonstrate that opportunities still arise from adversity. Among the answers provided, it can be seen that some teachers believe there is a need to restructure the education system, and some see this chance as a way to work together for a common good: the continuity of the teaching and learning process. On this note, Azorin (2020) states that due to the pandemic, schools were forced to reconfigure their academic offers and adapt to the complex context we are now living in. In the same vain, she emphasizes the importance of networks in education in times of hardship, and how such collaboration among professionals, with its focus on collectivity instead of individuality, "has proved the power of professional capital" (Azorin, 2020, p.3). Tailoring content and learning new technological skills were also seen as growth opportunities by the teachers in this study. On this note, Zhao (2020) considers the short break caused by the pandemic, a great opportunity to rethink and change what and how students learn and where this process takes place. The emphasis is placed in the need to make curriculum content more flexible, shift to more student-centered approaches, and view learning as holistic activity that happens everywhere, not only on school grounds (Zhao, 2020). Lastly, such a view on education, places great responsibility not only on teachers as the main educational agents, but also on the school staff, the community, parents and students.

## 5. Conclusion

The evolution of technology has indeed affected different areas of our lives and one of them is education. With the advent and spread of COVID-19, technology played a major role in uniting the educational community in the task of continuing the educational process. Technology does provide an opportunity to enhance the teaching and learning process if implemented properly and with the right amount of training and planning (Koptcha, 2012). Unfortunately, emergency remote learning required educational systems to make swift changes that, at times, may have rendered teachers' efforts and technology's potential insufficient. The Paraguayan response towards the spread of the virus was fast and consistent, cancelling all face-to-face activities after the confirmation of the second case (Britez, 2020). The rapid response of the Ministry of Education in light of confinement measurements allowed for education to continue for those with access to technology and the knowledge to use it.

The results of this study showcase that the main challenges presented to teachers at the onset of the pandemic correspond to issues of connectivity and the technological tools necessary to approach lessons. Other difficulties, namely, lack of knowledge in the use of technological tools along with lack of materials and institutional support might have been accentuated by home office. Working from home and balancing various responsibilities, could represent a challenge to teachers who might otherwise be able to prepare their materials and have more support from institutions if they were working at school. Regarding material preparation, an important challenge was met by teachers since, overnight, they had to adapt class content, not only for online lessons, but also for other means of distribution such as TV, radio or printed materials to be sent by email (Hiancapé, 2020). Furthermore, it can be seen that while many teachers were trained, a significant number were not and had yet to be trained after the start of quarantine, which is evidenced by their accounts on the main difficulties such as the lack of knowledge related to the use of technological tools.

Considering the uncertain times in which we are living, and the fundamental role that teachers play as facilitators of both face-to-face and distance learning, it is essential to understand their perspectives in relation to the reality they are living. Institutions through public policies can organize and implement mechanisms of accompaniment and support so that the educational quality provided to students, in these times of crisis and uncertainty, is the best that can be given within their educational context, especially taking into account that the existing gaps in society were highlighted by the COVID-19 pandemic. Moreover, it is important not to note that adaptation in times of crisis can lead societies to become more resilient and effective. Knowing the context, implementing innovations and evaluating responses are processes to consider in a proactive society. Such steps should be taken to ensure the mitigation of negative effects and the preparation for future growth (World Bank Group, 2020). Based on these results, a follow-up study is in process to compare the perspectives of educational actors during the different phases of the interruption of face-to-face education due to COVID-19.

## References

- Almazán Gómez, A. (2020). Covid-19: ¿Punto Sin Retorno de la Digitalización de la Educación?. *Revista Internacional de Educación para la Justicia Social*, 9(3). Recuperado a partir de <https://revistas.uam.es/riejs/article/view/12089>
- Álvarez, M., Gardyn, N., Iardelevsky, A. y Rebello, G. (2020). Segregación Educativa en tiempos de Pandemia: Balance de las Acciones Iniciales durante el Social por el Covid-19 en Argentina. *Revista Internacional de Educación para la Justicia Social*, 9(3).
- Álvarez Marinelli, H., et al. (2020). La educación en tiempo de coronavirus: Los sistemas educativos de América Latina y el Caribe ante COVID-19. Banco Interamericano de Desarrollo.
- Armitage, R., & Nellums, L. B. (2020). Considering inequalities in the school closure response to COVID-19. *The Lancet Global Health*, 8(5), e644. [https://doi.org/10.1016/S2214-109X\(20\)30116-9](https://doi.org/10.1016/S2214-109X(20)30116-9)
- Azorín, C. (2020). Beyond COVID-19 supernova. Is another education coming? *Journal of Professional Capital and Community*, 5(3/4), 381–390. <https://doi.org/10.1108/JPC-05-2020-0019>
- Beteille, T., Ding, E., Molina, E., Pushparatnam, A., Wilichowski, T. (2020). Three Principles to Support Teacher Effectiveness During COVID-19. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/33775>
- Brammer, S., & Clark, T. (2020). COVID-19 and Management Education: Reflections on Challenges, Opportunities, and Potential Futures. *British Journal of Management*, 31(3), 453–456. <https://doi.org/10.1111/1467-8551.12425>
- Britez, M. (2020). La educación ante el avance del COVID-19 en Paraguay. Comparativo con países de la Triple Frontera. [Preprint]. <https://doi.org/10.1590/SciELOPreprints.22>
- Jones A., (2004) A review of the research literature on barriers to the uptake of ICT by teachers. British Educational Communications and Technology Agency (Becta).
- Cáceres-Muñoz J., Jiménez A. S., y Martín-Sánchez M., (2020). Cierre de escuelas y desigualdad socioeducativa en tiempos del Covid-19. Una investigación exploratoria en clave internacional. *Revista Internacional de Educación para la Justicia Social*, 9(3e), 199-221. <https://doi.org/10.15366/riejs2020.9.3.011>
- Chang, G. C., & Yano, S. (2020, March 24). How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures. *World Education Blog*. <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/>

CEPAL, N. U. (2020). América Latina y el Caribe ante la pandemia del COVID-19: efectos económicos y sociales.

Cifuentes-Faura, J. (2020). Consecuencias en los Niños del Cierre de Escuelas por Covid-19: El Papel del Gobierno, Profesores y Padres. *Revista Internacional de Educación para la Justicia Social*, 9(3)

Cobo C. & Sánchez Ciarrusta I. (2020, April 22). *Successful examples of scaling up teaching and learning in response to COVID-19*. World Bank Blogs. <https://blogs.worldbank.org/education/successful-examples-scaling-teaching-and-learning-response-covid-19>

Cóndor-Herrera, O. (2020). Educar en tiempos de COVID-19. *CienciAmérica*, 9(2), 31–37. <https://doi.org/10.33210/ca.v9i2.281>

CONES. (2020, January 10). Educación Superior del Paraguay en Tiempos de COVID-19 | Consejo Nacional de Educación Superior CONES. Recuperado de <https://bit.ly/388uwAu>

Daniel, S. (2020). Education and the COVID-19 pandemic. *PROSPECTS*. <http://doi:10.1007/s11125-020-09464-3>

Dunlap, J. C., Verma, G., & Johnson, H. L. (2016). Presence+experience: A framework for the purposeful design of presence in online courses. *TechTrends*, 60(2), 145–151. <https://doi.org/10.1007/s11528-016-0029-4>

Esposito, S, & Principi, N. (2020). School Closure During the Coronavirus Disease 2019 (COVID-19) Pandemic. *JAMA Pediatrics*. <http://doi:10.1001/jamapediatrics.2020.1892>

Flack, C. B., Walker, L., Bickerstaff, A., Earle, H., & Margetts, C. (2020). Educator perspectives on the impact of COVID-19 on teaching and learning in Australia and New Zealand. Melbourne, Australia: Pivot Professional Learning. [https://www.pivotpl.com/wp-content/uploads/2020/04/Pivot\\_StateofEducation\\_2020\\_White-Paper-1.pdf](https://www.pivotpl.com/wp-content/uploads/2020/04/Pivot_StateofEducation_2020_White-Paper-1.pdf)

Francom, G. (2016). Barriers to technology use in large and small school districts. *Journal of Information Technology Education: Research*, 15, 577–591. <https://doi.org/10.28945/3596>

Fox, R. (2004). SARS epidemic: Teachers' experiences using ICTs. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 319-327). Perth, 5-8 December. <http://www.ascilite.org.au/conferences/perth04/procs/fox.html>

Guðmundsdóttir, G. & Hathaway, D. (2020). "We Always Make It Work": Teachers' Agency in the Time of Crisis. *Journal of Technology and Teacher Education*. 28 (2), 239-250

- Heitink, M., Voogt, J., Verplanken, L., van Braak, J., & Fisser, P. (2016). Teachers' professional reasoning about their pedagogical use of technology. *Computers & Education, 101*, 70–83. <https://doi.org/10.1016/j.compedu.2016.05.009>
- Hincapié, D. (2020, May 15). Docentes: Los otros trabajadores esenciales durante el COVID-19. *Enfoque Educación*. <https://blogs.iadb.org/educacion/es/docentestrabajadoresesenciales/>
- Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. *Computers & Education, 59*(4), 1109–1121. <https://doi.org/10.1016/j.compedu.2012.05.014>
- Li, C., & Lalani, F. (2020, April 29). *The COVID-19 pandemic has changed education forever. This is how*. World Economic Forum. <https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>
- Li, Y., Garza, V., Keicher, A., & Popov, V. (2018). Predicting high school teacher use of technology: Pedagogical beliefs, technological beliefs and attitudes, and teacher training. *Technology, Knowledge and Learning, 24*(3), 501–518. <https://doi.org/10.1007/s10758-018-9355-2>
- Lloyd, M. (2020). Desigualdades educativas y la brecha digital en tiempos de COVID-19. En H. Casanova Cardiel (Coord.), *Educación y pandemia: una visión académica* (pp. 115-121). Ciudad de México: Universidad Nacional Autónoma de México, Instituto de Investigaciones sobre la Universidad y la Educación.
- McKnight, K., O'Malley, K., Ruzic, R., Horsley, M. K., Franey, J. J., & Bassett, K. (2016). Teaching in a digital age: How educators use technology to improve student learning. *Journal of Research on Technology in Education, 48*(3), 194–211. <https://doi.org/10.1080/15391523.2016.1175856>
- MEC, Ministerio de Educación y Ciencias. (2020). Plan de Educación en Tiempos de Pandemia "Tu Escuela en Casa" [Ebook]. Asunción. Recuperado de [https://www.mec.gov.py/cms\\_v2/adjuntos/15716?1589908264](https://www.mec.gov.py/cms_v2/adjuntos/15716?1589908264)
- Monasterio, D., & Briceño, M. (2020). Educación mediada por las tecnologías: un desafío ante la coyuntura del Covid-19. *Observador Del Conocimiento, 5*(1), 100-108. Recuperado a partir de [http://www.oncti.gob.ve/ojs/index.php/rev\\_ODC/article/view/132](http://www.oncti.gob.ve/ojs/index.php/rev_ODC/article/view/132)
- Muñoz Moreno, J. L., & Lluch Molins, L. (2020). Educación y Covid-19: Colaboración de las Familias y Tareas Escolares. *Revista Internacional De Educación Para La Justicia Social, 9*(3). Recuperado a partir de <https://revistas.uam.es/riejs/article/view/12182>
- Pérez-Narváez, M. V., & Tufiño, A. (2020). Teleeducación y COVID-19. *CienciAmérica, 9*(2), 58. <https://doi.org/10.33210/ca.v9i2.296>

- R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.
- Reimers, F. M. & Schleicher, A. (2020). A framework to guide an education response to the COVID-19 Pandemic of 2020. *OECD. Retrieved April*, vol. 14, p.
- Salehi, H., & Salehi, Z. (2012). Challenges for using ICT in education: teachers' insights. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 2(1), 40.
- Sánchez, M., Martínez Hernández, A., Torres Carrasco, R., de Agüero Servín, M., Hernández Romo, A. K., Benavides L., Mario A., Jaimes Vergara, C. A. y Rendón Cazales, V. J. (2020). Retos educativos durante la pandemia de covid-19: una encuesta a profesores de la UNAM. *Revista Digital Universitaria (RDU)*. Ahead of print.
- Sanz, I., Sáinz González, J. & Capilla, A. (2020). Efectos de la Crisis del Coronavirus en la Educación Superior. Organización de Estados Iberoamericanos para la Educación, la Ciencia y la Cultura (OEI). Madrid, España.
- Schleicher A. (2020). How can teachers and school systems respond to the COVID-19 pandemic? Some lessons from TALIS. OECD Education and skills today. March 23, 2020. Retrieved from <https://oecdutoday.com/how-teachers-school-systems-respond-coronavirus-talis/>
- Siefert, B., Kelly, K., Yeara, L., & Oliveira, T. (2019). Teacher perceptions and use of technology across content areas with linguistically diverse middle school students. *Journal of Digital Learning in Teacher Education*, 35(2), 107–121. <https://doi.org/10.1080/21532974.2019.1568327>
- Tomei, J. (2006). The impact of online learning on faculty load: Computing the ideal class size for online learning. *Journal of Technology and Teacher Education*, 14, 531-541.
- Trucano, M. (2014, September 16). *Education & technology in an age of pandemics(Revisited)*. <https://blogs.worldbank.org/edutech/education-technology-age-pandemics-revisited>
- Trujillo, F., Segura, A., Fernández, M., y Jiménez, M. (2020). Escenarios de evaluación en el contexto de la pandemia por la COVID-19: la opinión del profesorado [Ebook]. Santillana. Retrieved from <https://bit.ly/3iweQed>
- UNESCO (2020a, March 6). Cómo planificar las soluciones de aprendizaje a distancia durante el cierre temporal de las escuelas. Recuperado de <https://es.unesco.org/news/como-planificar-soluciones-aprendizaje-distancia-durante-cierre-temporal-escuelas>



- UNESCO (2020b). Supporting teachers and education personnel during times of crisis. Abril 2020. Recuperado de <https://unesdoc.unesco.org/ark:/48223/pf0000373338>
- Uscher-Pines, L., Schwartz, H. L., Ahmed, F., Zheteyeva, Y., Meza, E., Baker, G., & Uzicanin, A. (2018). School practices to promote social distancing in K-12 schools: review of influenza pandemic policies and practices. *BMC public health*, *18*(1), 406. <https://doi.org/10.1186/s12889-018-5302-3>
- Vilches Vilela, M. J., & Reche Urbano, E. (2019). Limitaciones de WhatsApp para la realización de actividades colaborativas en la universidad. *RIED. Revista Iberoamericana de Educación a Distancia*, *22* (2), pp. 57-77. doi: <https://doi.org/10.5944/ried.22.2.23741>
- Viner, R., Russell, S., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including covid-19: A rapid narrative systematic review. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3556648>
- Voogt, J., & McKenney, S. (2017). TPACK in teacher education: Are we preparing teachers to use technology for early literacy? *Technology, Pedagogy and Education*, *26*(1), 69–83. <https://doi.org/10.1080/1475939X.2016.1174730>
- World Bank Education (2020). “Guidance Note: Remote Learning and COVID-19”, available at: <https://bit.ly/3ju9T66> (accessed 10 January 2020)
- World Bank Group. (2020). COVID-19: Impacto en la educación, y respuestas de política pública. Resumen Ejecutivo. Recuperado de: <https://bit.ly/30lGYKZ>
- Vivanco-Saraguro, A. (2020). Teleducación en tiempos de COVID-19: brechas de desigualdad. *CienciAmérica, [S.L.]*, *9*(2), p. 166-175. ISSN 1390-9592. <http://dx.doi.org/10.33210/ca.v9i2.307>.
- Wozney, L., Venkatesh, V., & Abrami, P. (2006). Implementing computer technologies: Teachers' perceptions and practices. *Journal of Technology and teacher education*, *14*(1), 173-207.
- Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending classes without stopping learning: China's education emergency management policy in the covid-19 outbreak. *Journal of Risk and Financial Management*, *13*(3), 55. <https://doi.org/10.3390/jrfm13030055>
- Zhao, Y. (2020). COVID-19 as a catalyst for educational change. *PROSPECTS*, *49*(1–2), 29–33. <https://doi.org/10.1007/s11125-020-09477-y>