Reflections Among The Triad Of Education, Pandemic, And Technology

Claudia Esperanza Saavedra Bautista[1] ,
Pedro Alfonso Sánchez Cubides[2]
Claudia Figueroa[3]

[1]Professor and researcher at the Universidad Pedagógica y Tecnológica de Colombia (UPTC), Doctor in Educational Sciences and Master in Information Technology at the UPTC. E-mail: claudia.saavedra@uptc.edu.co
[2]Professor and researcher at the UPTC. Post-doctorate in education, social sciences and interculturality from Universidad Santo Tomás de Bogotá, doctorate in educational sciences from UPTC, master's degree in municipal government from Universidad Externado de Colombia.
E-mail: pedro.sanchez02@uptc.edu.co
[3]Professor and researcher at UPTC. PhD in educational sciences and master's degree in history from the UPTC.
E-mail: claudia.figueroa01@uptc.edu.co

Abstract

This writing provides a reflection on the challenges caused by the pandemic in the teaching and learning processes, which revealed various difficulties and needs in the educational field. The analysis presented is installed from a hermeneutical approach that facilitates the understanding of reality from a holistic and broad perspective. It is concluded that despite the various limitations faced by some actors in the educational process today in the face of access to technological scaffolding and teacher qualification processes, it is considered an opportunity to put into practice the discourses that are professed in the classroom versus the contribution of ICT in education. In addition, it is a scenario that is difficult to live again, so this current reality calls for reconfiguring pedagogical practice and rethinking the meaning of education today.

Keywords: education, teaching, pandemic, challenges, ICT.

Resumen

Este escrito aporta una reflexión sobre los retos y desafíos provocados por la pandemia en los procesos de enseñanza y aprendizaje, que reveló diversas dificultades y necesidades en el campo educativo. El análisis presentado se instala desde un enfoque hermenéutico que facilita la comprensión de la

realidad desde una mirada holística y amplia. Se concluye que a pesar de las diversas limitaciones con las que se encuentran hoy algunos actores del proceso educativo frente al acceso de andamiajes tecnológicos y procesos de cualificación docente, se considera que es una oportunidad para poner en práctica los discursos que se profesan en el aula frente a el aporte de las TIC en la educación. Además, es un escenario que difícilmente se vuelva a vivir, por lo que esta realidad actual convoca a reconfigurar la práctica pedagógica y a repensar el sentido de la educación en la actualidad.

Palabras clave: educación, enseñanza, pandemia, retos, TIC.

Introduction

The current global contingency has revealed significant educational, social, economic, cultural, and other challenges. In the educational scenario, various issues became evident, such as the lack of technological infrastructure, the absence of teacher training in the use of ICT, the lack of media literacy skills in students, and a lack of a culture of autonomous learning, among others. These issues prompted emergency actions in educational institutions that sought to continue academic activities. Undoubtedly, "COVID disrupted the world's agendas. A pandemic that did not respect borders, nations, social classes, ages, or genders put a halt to the dynamics of the 21st century; all human activities felt the impact. In the educational realm, the slow progress of some universities towards the implementation of digital strategies in their programs was accelerated to the point that traditional schools had to transform into remote education in a matter of weeks" (Ramírez-Montoya, 2020, p. 36), which highlighted the limited capacity of schools to understand that home is not school (Plá, 2020, p. 5).

The pandemic situation led to the transition from face-to-face learning environments to virtual settings. As a result, teachers had to adopt foreign teaching methods, which, coupled with the lack of technical knowledge, complicated the pedagogical practice in that distant scenario. This technological circuit they entered led them to recognize the didactic value that technologies can provide in teaching and learning contexts, but also to face the challenge of teaching under adverse spatial and temporal conditions, far from what had traditionally been done.

However, the learning in ICT that both teachers and students have achieved in the framework of this remote or technology-assisted modality has been evident, which will surely be

complemented with face-to-face practices in the post-pandemic period. However, it is considered that, after this pause in traditional face-to-face teaching, there is a need to assess the quality of disciplinary learning that students are achieving under this concept of remote education. So far, didactic strategies have been proposed for the remote learning of "regular" students, but there is a need to plan and implement strategies to address diversity, integrating resources, tools, and opportunities available on the internet that meet the learning needs of these populations (Coll Salvador, 2013, p.12).

Perspective Theory

The combination of education and technology has become a fundamental complement in pedagogical renewal. However, this period of pandemic has revealed the difficulties that arise when technological conditions are not aligned with the digital knowledge required to implement a teaching and learning experience. Thus, the role assumed by teachers is crucial, as they adapt technology-mediated strategies to be implemented with their students. Therefore, it is necessary to have teachers capable of modeling the conditions, realities, and situations that shape the act of teaching. As "technology is just a tool. It is their commitment, creativity, and care that will make a difference in the remote learning experience of their students" (Tan-Choi, et al., 2020, p. 93).

The Information and Communication Technologies (ICT) have been considered as vehicles for the development of various activities, including education, where computer science, microelectronics, and telecommunications open up new ways of sharing and creating information. Therefore, "they expand the possibilities that audiovisual and computer media have traditionally played, such as transmitting information, structuring it, motivating, capturing attention, structuring reality, providing feedback, stimulating new learning, offering feedback, or being carriers of content" (Aparicio, 2009, p.2). In this sense, it became evident that technology proved to be "a useful and necessary tool to help ensure that local and regional governments on the front lines of the emergency continue to provide essential public services during the COVID-19 crisis" (CGLU, 2020, p.2), including education. However, it requires "a culturally diverse pedagogy that does not develop within the framework of curricula unrelated to the real contexts and interests of individuals" (Bautista, et al., 2018, p.2), but rather is thought from the realities that students experience. According to Saraza and Silva (2015) "adolescents have an open mind to change, and this makes

them an accessible audience to educate through a libertarian pedagogy" (p.301) which challenges the actions of teachers in the face of the challenges caused by the education, pandemic, and technology triad, because from the perspective of Sibilia (2008) "school is a machine incompatible with our young people: those parts do not fit well in its gears, they get stuck, produce friction and damage, in short, they do not work well together.". (p.137)

Methodology

The methodological support of this reflection is based on a qualitative approach supported by a hermeneutic perspective, which privileges the subjective dimension and seeks to understand the reality of a phenomenon. Understanding "implies projecting layers of meaning, based on our preconceptions, onto what we seek to understand" (Quoted in Echeverría 1997, p. 245). In this sense, regarding the object of analysis of this paper, the processes of understanding reality open up to recognizing and interpreting the episodes that have emerged as a result of the education, pandemic, and ICT triad, a close relationship that was consolidated due to the global contingency caused by COVID-19. In this regard, some reflections and perceptions of the studied phenomenon are offered.

Initially, a literature review on education and COVID-19 was conducted, focusing on articles published in indexed journals, which were subsequently coded using Nvivo software. This process helped uncover perceptions, features, and experiences that were witnessed in different educational scenarios around the world. The purpose of this activity was to contrast the authors' own experiences in this new educational reality within the framework of their pedagogical practice. Additionally, a survey was administered to a focus group of 89 higher education students to try to understand their perceptions of the educational process.

Discussion and Results

1. Pandemic and Education

Undoubtedly, the pandemic made it necessary in all levels of formal education to use information and communication technologies (ICT) to teach and learn specific disciplinary knowledge. This circumstance led society to reflect on the importance of ICT and the new way of conducting educational work - "Remote teaching, mediated by ICT." This new modality generated uncertainty among older teachers, who quickly had

595

to learn about the necessary technology and informatics to guide children and young people. It was a major challenge for teachers, who had to adopt foreign methodologies and develop digital competencies in a short time. Undoubtedly, it was a great challenge and opportunity for advancing knowledge, as anticipated by Alvin Toffler, the father of the digital revolution. In his book "The Third Wave" (1980), he proposed global development based on a knowledge society, and in "Powershift" (1990), he studied the new transformations of wealth that would be driven by the domains that control technology. He also provided teachers of the 21st century with pathways for the school of the future. "This emergency has also highlighted the deficiencies and inequalities in the availability of resources and the preparedness of teachers and students to transition to distance education modalities" (Alcántara, 2020, p.76).

2.   Pandemia and ICT

The relationship between the pandemic and ICT highlighted the importance of technological and computer skills that were previously undervalued in the educational process and sometimes stigmatized by traditional teachers and parents. "Education mediated by technology - including analog and digital media - has been disregarded by various social agents, including decision-makers and public policy designers, school administrators, teachers, and parents" (Trejo-Quintana, 2020, p.123). Now, both teachers and parents are recognizing the contribution that technology has in continuing education despite confinement. Undoubtedly, the pandemic positioned ICT as an important actor in educational processes, facilitating communication and access to knowledge through various platforms that became the classrooms where educational activities took place. "The Covid-19 pandemic has caused a complex and atypical situation at all levels of higher education worldwide, particularly in Latin America. Almost without realizing it, the pandemic quickly transformed the teaching in our universities from models strongly rooted in the transmission of knowledge and face-to-face teaching to a situation that cannot be considered as a model - or model-like - where learning would be strongly mediated through technology" (Cabero & Llorente, 2020, p.1).

However, it is important to clarify that the proposal to use the internet and other media suggested by ICT for educational purposes did not arise from the COVID-19 pandemic. It had already emerged with the birth and development of computational and technological advancements worldwide, accessible only to students with optimal economic conditions.

Now, despite ongoing social and financial problems in many communities, there is a need to massify the use of ICT to ensure that knowledge reaches different communities accessing formal education, non-formal education (vocational and technical education), and informal education (through mass media). "Disparities in access to technology are a sign of social inequality; in the midst of a health crisis like the one we are experiencing, these disparities become gaping chasms" (Trejo-Quintana, 2020, p. 125). It is now important for authorities in territorial entities to propose alternative solutions to ensure the continuity of learning for children and youth, supporting the purchase of equipment and access to the internet, actions that can mitigate the social gaps that may arise from this situation, as "any quarantine is always discriminatory, more difficult for some social groups than others" (Boaventura de Sousa, 2020, p.45).

3.   Adaptation of Curricula and Study Plans in the Context of the Pandemic (Sense of Current Education)

The use of ICT in the educational process is proposed in the Tuning Europe and Latin America document from 2001, which was developed with the participation of academics from leading universities worldwide and organized by major knowledge areas. This document explicitly states the generic and specific competencies that 21st-century professionals need to engage with the current world. According to Tuning Latin America, graduates in the 21st century should possess competencies related to the technological field, associated with aspects such as "selecting, using, and evaluating communication and information technologies as teaching and learning resources" (Salinas, 2007, p. 32). This is especially important as the education sector currently encompasses both physical and remote (virtual) classrooms with emerging generations of learners who have very different learning processes compared to young people in the 20th century (who were more accustomed to traditional education). "It is a moment that forces us to rethink the meaning of the school institution and the formal curriculum, the disciplinary contents detached from reality, the hegemonic teaching practices, and the academic-administrative management tied to obsolete regulations" (Barrón, 2020, p. 69). Therefore, it is essential for current teachers to develop digital competencies to effectively manage the information found on the internet and ensure the continuity of different educational processes.

Furthermore, it is necessary to consider that, beyond the need for a methodological rethink by teachers in response to this contingency, there is a need to restructure current curricula and study plans. It is well known that the proportion of ICT

training in study plans is minimal compared to other types of training, or that it is divided and distant from disciplinary training, which indicates its undervaluation in the comprehensive education of any professional. The pandemic has clearly demonstrated the need for this type of technological and digital training to be integrated into all areas and subjects within a study plan, ensuring that both teachers and students have general and specific digital tools based on the profiles of education and the competencies proposed in the study plans. Only through a new curricular structure and the explicit integration of this type of training in study plans, teachers will have to theoretically and practically appropriate their subjects in a different way, aligning with the learning attitudes and styles of the emerging generations that have contemporary cultural profiles and expect educational processes that resonate with their ways of learning to achieve meaningful learning outcomes that can be applied in professional practice.

Despite remote education, the educational process continues to develop under similar conditions. Through pedagogical reflection, the same questions and essential elements arise when structuring a curriculum, study plan, pedagogical model, or educational intervention in the classroom (respecting the level of breadth and complexity of each term). The following questions, along with their respective answers, are key elements of the educational process: "For what purpose?" - Purpose-End; "Why?" - Justification-Competencies: "What?" - Content; "How?" - Methodology; "With what?" - Resources; "Where?" - Place; "When?" - Time. As explained by Coll (2013), when educational activities are based on technology and digital platforms, these basic elements remain. According to the author, we have transitioned from universal schooling to distributed and interconnected educational action. Therefore, all teachers need to adapt to continue the educational process. However, it is essential to assert that "the physical school is not automatically replaced by distance learning because didactics cannot be reduced to technology, nor can pedagogy be reduced to using the internet. These are two modalities with their own logics and functioning, and this must always be considered" (Trejo-Quintana, 2020, p. 126).

4. **Qualification of teachers and ICT to reconfigure pedagogical practice**

In the 21st century, the need for digital literacy is not a new topic. It has become necessary for work, business, politics,

economics, family, and education. In the educational context, digital literacy is required for the development of plans, programs, and projects at all levels. However, there is still resistance to its adoption in several educational settings. "This was indicated by Recommendation 2006/962/EC of the European Parliament and of the Council on key competences for lifelong learning, which includes digital competence as a key aspect and emphasizes the need for a good understanding and broad knowledge of the nature, function, and opportunities that digital technologies provide in everyday situations, whether private, social, and/or professional" (European Council, 2006, p.11). "Unfortunately, a large part of the teaching staff still perceives technology as a mere addition to the teaching process, rather than as levers for change and educational innovation, through which strengthened scenarios for collaboration, interaction, and the construction of new ways of relating to reality can be built" (Cabero & Llorente, 2020, p. 27).

One of the major problems currently evident in the education sector is the lack of training for teachers in the efficient use of digital tools, which are essential for remote education processes. Therefore, there is a need for human adaptability to new circumstances. To foster this adaptability in the education sector, specialized training for teachers is necessary to establish essential communication links in the learning process. Otherwise, it may widen the generational gap between traditional teachers and children and young people. "University professors have not only had to learn the technical mechanisms of virtual education in isolation but are also likely experiencing adaptation processes to the new situations imposed by online education, especially considering that the effectiveness of teaching in the classroom relies on good social interaction between teacher and student" (Ruiz Larraguivel, 2020, p.110).

Now, after a year with this new modality of remote education, it is worth asking about its quality, the relevance of the knowledge imparted, the training received, and the ethics being fostered by today's students who will become tomorrow's professionals. In this historic moment of global pandemic, it is observed how both teachers and educational administrators strive to adapt, train, organize, and give their best to meet the demands of this new challenge. However, there are still questions for society and the academic community to reflect upon: Did learning take place? Was the work done well, or was the year lost? Were the training objectives achieved? Did disciplinary knowledge expand? Did citizens make progress? Were children and young people

happy with this system? Do families agree with this process? Did society advance with virtual education? Who benefited from the integration of technology into all daily activities? What happened during this pandemic year that many want to erase from their minds? Educational institutions and their administrators had no choice but to trust the responsibility of teachers: "to trust teachers' judgment to adjust lesson plans and task distribution" (Aguilar Nery, 2020, p.49).

Similarly, it is necessary to consider the role of the family in children's home learning. "It is impossible to assert that all parents are in intellectual and psycho-affective conditions to handle the program content and the technologies implemented for different grade levels" (Ducoing, 2020, p.58).

Once society turns the page on the pandemic, it becomes necessary for the technological and digital learning acquired during this contingency to be maintained and continued to be implemented in the post-pandemic period. For some time now, students have been demanding changes in pedagogical and didactic teaching strategies within the education sector, providing the opportunity to integrate the use of information and communication technologies to achieve a more active, participatory, and interactive learning experience. In this regard, Saavedra et al. (2019) state that "Contemporary theories should serve as a guiding principle for teachers with old teaching traditions since today's teachers face a changing and diverse scenario, where they encounter young people who have been labeled as emerging generations, implementing old strategies in new diverse contexts. The contemporary era demands a new technological profile for teachers, and it is essential for nations to develop capacity-building and initial training programs for teachers with a strong technological component." (p.90).

On the other hand, in his text "The Cruel Pedagogy of the Virus," De Sousa Santos highlights how various populations have been affected by the social pandemic, such as women, precarious and informal workers, self-employed individuals, street vendors, homeless individuals, people with disabilities, and the elderly. These groups face many problems that society overlooks and fails to address, assuming that their lives should remain as they are without any further support. In Latin America, there are scarce attention and support policies for these vulnerable populations. Prompt and viable alternative solutions proposed by the authorities and governments in power are needed to help them bear their burden, overcome their inequalities, and ensure they can surpass the pandemic without enduring additional traumas culturally imposed on

them. "Unequal access to the right to work has created significant gaps, even among those involved in formal labor" (De la Cruz, 2020, p.40). It appears that, at this moment of the pandemic, instead of closing social gaps, they are widening further, creating disparities between students who have the necessary resources and can engage in remote education, and those who, due to social, family, and economic circumstances, cannot. It begs the question: What are educational institutions and teachers doing to reach out to these individuals and enable them to continue accessing education? "Education is a fundamental human right, essential for exercising other rights to which women and men on this planet are entitled" (Chehaibar, 2020, p. 83).

5. Development of students' media competencies

The relevance that media competencies have been occupying in society enables the streamlining of communication processes and the dissemination of information. Therefore, it is considered crucial for technology-assisted education processes to permeate students' learning. "In this context, considering competencies along with knowledge offers countless advantages that are in harmony with the demands arising from the new paradigm. This implies a shift from a teaching-centered education to a learning-centered education. Reflecting on the different aspects that characterize this trend, the relevance of a competency-based approach is evident. The previous paradigm emphasized the acquisition and transmission of knowledge. Elements for changing this paradigm include a more student-centered education, a transformation of the educator's role, a new definition of goals, a shift in the focus of educational activities, a move from emphasizing knowledge supply (input) to outcomes (output), and a change in the organization of learning." (Salinas, 2007, p.8) It is worth asking to what extent current students are achieving disciplinary competencies and whether the training purposes defined in the curricula and study plans are being achieved.

In this sense, it is advisable to analyze the influence of the family environment on the educational process, as "the shift from school to home has made it evident that teaching processes require training and professionalization, thereby reclaiming the teaching function" (De la Cruz Flores, 2020, p. 44). Transitioning from Universal Schooling (Traditional) to a Distributed and Interconnected Educational Action (Remote Teaching, mediated by ICT) can be enjoyable for students who have the necessary and essential material resources for it. "The potential integration of text, images, and sound in the

same system, interacting from multiple points, at a chosen time (real or delayed) across a global network, with open and affordable access, fundamentally changes the nature of communication" (Castells, 1996, p.35). Currently, many students can learn in an informal and autonomous manner with the mediation of ICT, clarifying that this requires a high personal motivation to learn, greater responsibility, organization, time management, ethics, and honesty to achieve true understanding of the subject. In light of the learning process of today's youth, it is important for teachers to "explore less encyclopedic, more open and flexible paths" (Aguilar, 2020, p. 53). However, despite the independent and autonomous learning of current students, which is essential in remote education, the mediation of the teacher is still necessary, especially for more complex processes.

But, what about students who do not have the adequate and necessary computer resources to continue their learning process? They experience a great lack of motivation, distress, stress, apathy, and disinterest in continuing. They feel cornered by the educational demands of the new remote education process, the lack of opportunities, and their financial inability to respond. Many fell behind in academic activities and ultimately decided to cancel the semester or drop out of the program. As anticipated by Castells (1996), "the emergence of a new electronic communication system, characterized by its global reach, integration of all media, and potential interactivity, is changing our culture, and it will do so forever. However, the problem arises regarding the conditions, characteristics, and actual effects of this change." This translates into education access being limited by people's access conditions" (p.112). Among the factors that condition access to quality online education are social class, race, ethnicity, gender, geographical location, and the type of educational institution they belong to. Together, these factors shape the so-called digital divide between those who can take advantage of ICT and those who are excluded" (Lloyd, 2020, p.115).

The problems of access to remote learning for young people in these times of pandemic seem to be very similar to those in other contexts. "There are also significant differences depending on the type and sector to which educational institutions belong. In Mexico, as in other countries, students from private schools have greater possibilities to access online classes, while in public schools, the government has resorted to tactics such as broadcasting educational material through open television or radio. However, the divide is not only related to the economic condition of families but also to the

institution itself, as private schools usually have more experienced teachers and access to online technologies" (Lloyd, 2020, p.117).

In this historical and social moment, there is a generic talk about young people's affinity with technology. "Currently, in the educational field, the way of teaching and learning is constantly and rapidly changing due to the internet and social networks" (Uribe-Canónigo, 2017, p. 30). However, when it comes to applying their knowledge in an academic context, the situation is not as effective. It has been revealed that while young people have an affinity for social media, they lack the development of media literacy competencies that would allow them to better take advantage of everything that information and communication technologies offer. "Now more than ever, it is necessary for students to develop skills for online research, such as self-management and critical analysis of the information they find on the internet, as well as in traditional media. In this sense, learning about, from, or with computers and media requires overcoming structural obstacles, as well as political-administrative and, of course, ontological obstacles" (Trejo-Quintana, 2020, p.127).

Given this, after a period of teaching in higher education contexts under the concept of remote education, some successes and failures of this new reality have been unveiled:

Successes: Ease of accessing information (everything is on the internet); appropriation of resources, tools, and programs that facilitated learning; no time was lost in commuting to physical facilities; autonomous learning was fostered, with greater student responsibility for time management; collaboration groups were organized for group work; consultation and research were facilitated according to the student's interests and needs.

Failures: Connectivity issues, especially in rural areas and even in urban areas, as all sectors, especially education, were using the networks (which often collapsed); adequate participation of all students was not achieved in large groups, as everyone wanted to intervene at the same time; there was a communicative distance between teachers and students (nothing beats direct interaction); due to a lack of familiarity with didactic tools, some classes became boring and demotivating as teachers simply conducted traditional classes using technological platforms; some had to borrow computers and there was an increase in internet expenses for families. "The COVID-19 pandemic involved multiple changes in households, including the forced transfer of school activities

603

to the dynamics of family life" (De la Cruz, 2020, p.39); some teachers overwhelmed students with assignments (they received a large number of assignments that they couldn't adequately review); educational quality decreased as many teachers were not concerned about whether students learned or not; emotional and family relationship problems arose due to confinement (lack of going to classrooms and socializing with teachers and classmates); many students had to pay for external tutoring to achieve the competencies required by teachers using their own resources; due to the cost of internet access, classes were limited to focusing on the most important aspects, which affected student learning.

Now, to understand students' perception of their preference between face-to-face teaching and virtual or remote models, a survey was conducted. The results revealed that 78.7% of students express a preference for face-to-face teaching, while only 4.5% of students prefer to engage in training processes in virtual settings. Undoubtedly, this student sentiment reflects all the difficulties they have had to overcome in terms of access and technological connectivity.

Certainly, there are several shortcomings encountered by students in this new process of remote education; something contradictory (some would say), that students known as Digital Natives are more interested in returning to the classrooms and traditional education than continuing with open academy mediated by technology. In this sense, it is important to highlight that "learning is a human, dynamic process, generated and determined by the quality of thoughts with the ability to change behavior and develop intelligence, produced by the interaction and collaboration of the individual with their environment, which implies acquiring and developing the necessary skills and competencies" (Uribe-Canónigo, 2017, p.30). Therefore, the need for social and communicative relationships among human beings in the educational process is evident.

6. Provision of technological infrastructure

It is pertinent to note that, in order to achieve true digital literacy and bridge the digital divide, the conditions of technological infrastructure in educational institutions must be guaranteed, and teachers must be trained in the development of digital and didactic competencies that contribute to better guiding the educational process. The pandemic has made evident the inequity of access to technologies, which is nothing more than an expression of government neglect. "(...) various governments have been

inefficient in creating infrastructure and providing technological resources. (...) public programs have overlooked the need to adapt curriculum plans to the current media ecosystem. (...) due to the insufficient and misunderstood didactic training of teachers regarding the creation of media and digital learning environments, as education that includes technologies requires, among other things, that teachers understand the logic suggested by media and digital literacy" (Trejo-Quintana, 2020, p.126).

In the face of this situation, it is pertinent to propose creative solutions that contribute to the mitigation of digital and technological gaps, as the pandemic has highlighted the inequity of the population in terms of access to the internet. Therefore, the government must promote policies that aim to address this situation and support families in this regard. In response to this significant problem, "UNESCO has expressed itself in many ways, articulating the intertwined condition of education-pandemic-economic crisis. Therefore, it has redirected the work of its national and regional offices to prioritize actions in favor of the most vulnerable and disadvantaged sectors, and to facilitate the continuity of education for all through remote learning, although not exclusively, given the wide digital divides among countries" (Didriksson, 2020, p. 157).

In this regard, Pedró (2017) points out that "one of the educational issues that generates the most interest in Latin America is the use of technology. This interest is clearly reflected in the investments in technology made in recent years to equip schools and, in a significant number of countries, directly to each student, with the aim of transforming teaching to make it more in line with growing social and economic expectations. Ultimately, it is about laying the foundations for Latin American countries to have a base of citizens who know how to take advantage of the opportunities offered by the knowledge society and contribute as workers to the economic development of their community and country" (p.7). However, it is necessary to consider from the curricular proposal of academic programs the meaning or place that technology should occupy within teaching and learning processes, as it is essential to move beyond the instrumental dimension of technology and integrate it into a framework that contributes to innovation and pedagogical renewal. "Knowing how to use digital tools implies systematically integrating them into the educational process, taking into account the needs and particularities of

different contexts" (Arrieta and Montes, 2011, as cited by Díaz Delgado, 2020, p.147).

7. The challenges of educating during a pandemic, what is proposed to be done?

This reflection has allowed us to glimpse three major challenges associated with the lack of technological infrastructure, the need to qualify teachers in ICT, and the development of media literacy skills in students. The sudden arrival of the pandemic has revealed the difficult conditions that educational institutions sometimes face, so it is worth rethinking education and its social function in communities. "The pandemic brings to the forefront a series of tensions that we must analyze in order to envision paths of change in the educational field—immediate, medium-term, and long-term—that allow us to move towards more comprehensive, critical, and productive educational conditions for a greater number of citizens" (Chehaibar, 2020, p. 85). These are problems that international organizations are analyzing in relation to higher education. The UNESCO Institute for Higher Education in Latin America and the Caribbean (IESALC) is promoting a regional reflection project on the role of higher education institutions in the current pandemic, emphasizing the living and study conditions of millions of students who have abruptly entered an unplanned dynamic of distance learning, which affects their daily life at home with their families, their expenses, but above all, the development of their learning capacities and, in some cases, their stay at other universities or their international mobility" (Didriksson, 2020, p. 158).

Therefore, beyond remote education, it is necessary to "achieve the formation of ethical, caring, collaborative citizens, committed to the planet, in a globalized society, capable of facing uncertainty" (Barrón, 2020, p. 71). This pandemic situation served as the most opportune excuse for students who were already demotivated by studying a program that did not fully satisfy them or who were in adverse personal and social situations to take the easiest path and drop out. The semester cancellation and program dropout rates can be observed in general, both in public and private universities. "Although there is a belief that these students belong to the technological generation, many of them lack the necessary skills to engage in virtual learning activities, as well as the self-discipline required by these modalities, in an environment of stress, uncertainty, and socio-economic restrictions derived from the pandemic" (López and Rodríguez, 2020, p. 104).

In this regard, the lack of digital skills is evident, especially among teachers and the adult population, when it comes to searching, categorizing, evaluating, and analyzing information. There is a lack of participation in online collaborative and intelligent networks, where the voices of everyone are heard critically and reflectively. Therefore, it is urgent to promote media and informational literacy from the university, where media becomes a mediation in teaching and learning processes, overcoming the technological illiteracy that has currently hindered the optimal development of academia. "By digital competence of teachers, we refer to the ability of teachers to mobilize and transfer their knowledge, strategies, skills, and attitudes regarding ICT in real situations in their professional practice to facilitate student learning and the acquisition of their digital competence" (Burgos, 2020, p. 77).

Based on the discussed topics and from the experience as teachers, some pedagogical considerations can be mentioned regarding the question: What processes are required to continue with the dynamics of remote education?

✓ It is pertinent to understand the reality of all actors in the educational process from a holistic and comprehensive perspective that recognizes that social, economic, cultural, and educational conditions differ in each context.
✓ It is essential to ensure equitable provision of technology so that all children and young people can continue to have regular access to their educational process.
✓ Teacher qualification processes need to be strengthened to reconfigure pedagogical practices and rethink the purpose of education today.
✓ Greater commitment is required from decision-makers and policymakers to support educational institutions in ensuring quality within the framework of remote education.
✓ It is essential to foster a culture of autonomous learning where students take personal responsibility for their educational process.
✓ In this digital age, it is crucial to recognize the value of technologies in the daily development of social, political, cultural, economic, and educational life nationally and globally.
✓ It is important to rethink proposals for curriculum adaptation that address the specific needs of diverse populations in different contexts.

- ✓ Promote assertive communication processes between teachers and students that allow for listening, guiding, and advising students' personal life projects.
- ✓ Engage in projects and activities with vulnerable communities where students can take cooperative, supportive, committed, responsible, and empathetic actions for the social development of others.
- ✓ Understand and share resilient activities that highlight the strengths and capacity for overcoming adversities among classmates and family members, fostering social empathy.
- ✓ Find ways to assess students that do not discriminate against those who do not have access to ICT and that take into account the other inequalities that have been exacerbated by the global health and economic crisis.
- ✓ Create spaces for interaction where parents can learn about the educational processes taking place within the framework of remote education.
- ✓ Strategies need to be developed to train parents on the use of necessary technologies in education so that they can contribute to and participate in their children's educational process.

Conclusion

Despite the havoc caused by the pandemic in the social and educational realms, it must be acknowledged that educational institutions and teachers tried to ensure an open school behind the confinement, contributing to the disciplinary education of communities. It cannot be claimed that it provided a comprehensive contribution because not all dimensions of the human being were addressed under this educational modality, but undoubtedly... the school and its teachers made their greatest efforts.

On the other hand, while it is true that the school must anticipate global challenges in order to provide situated solutions that recognize the reality of contexts, the school itself cannot solve all social problems. The pandemic highlighted, among other things, the lack of social responsibility on the part of governments regarding the issue of provision and infrastructure, the minimal or nonexistent social assistance to the most vulnerable communities, the scarcity of job opportunities, and the inequity of policies. These problems caused difficulties for children and young people to access remote education efficiently. Undoubtedly, this social event of the pandemic alerted different thinkers and policy implementers about the future of schooling and the major challenges they faced in trying to keep academia open,

now subject to the possibilities offered by technology. Therefore, based on the concept of resilience, all the negative experiences lived in different countries and contexts should only serve the general population to learn and adapt to other ways of approaching knowledge. The situation experienced this year is an opportunity to put into practice the pedagogical discourses professed in the classroom regarding the contribution of ICT in education because this is a scenario that is unlikely to be experienced again. Thus, this new reality calls for reconfiguring pedagogical practices and rethinking the purpose of education in the future.

Bibliography

Aguilar Nery, Jesús. (2020). Pedagogical Continuity in Upper Secondary Education: Actions and Reactions to the Health Emergency. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 47-54.

Alcántara Santuario, Armando. (2020). Higher Education and COVID-19: A Comparative Perspective. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 75-82.

Aparicio Llanos, A. (2009). ICT and the Influenza Pandemic: Challenge for Public Health. Costa Rican Journal of Public Health, vol. 18, no. 1, pp. 1-4.

Barrón Tirado, Maria Concepcion. (2020) Online Education: Transitions and Disruptions. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 66-74.

Bautista, C., Figueroa, C., & Socha, Y. (2018). Teachers Facing the Challenges of the 21st Century. Espacios Journal, vol. 39, no. 35, pp. 1-8.

Boaventura de Sousa, S. (2020). The Cruel Pedagogy of the Virus. CLACSO.

Burgos, D. (2020). A New Paradigm in University Teaching Based on Digital Competencies for Teachers. Virtual Campuses Journal, vol. 9, no. 2, pp. 71–82.

Cabero-Almenara, J.; Llorente-Cejudo, C. (2020). "COVID-19: Radical Transformation of Digitization in University Institutions. Virtual Campuses Journal, vol. 9, no. 2, pp. 25-34.

Castells, M. (1996). The Culture of Real Virtuality: The Integration of Electronic Communication, the End of Mass Audience, and the Development of Interactive Networks. Virtual Library of Social Sciences, pp. 1–50.

Coll Salvador, C. (2013). The School Curriculum in the Framework of the New Ecology of Learning. Educational Innovation Classroom, vol. 1, no. 219, pp. 31–36.

United Cities and Local Governments (UCLG). (2020). Live Learning Experience: Beyond the Immediate Response to the COVID-19 Outbreak. Barcelona, Spain.

Chehaibar, Lourdes M. (2020) Curricular Flexibility: Tensions in Times of Pandemic. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020 pp. 83-91.

De la Cruz Flores Gabriela. (2020). Home and School: Tensions in the Face of COVID-19. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 39-46.

Díaz Delgado, Miguel Angel. (2020). Primary Education Management Teams: Improvising Digital Literacy during Quarantine. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 145-152.

Didriksson T. Axel. (2020). Preventing the Reproduction of Social and Educational Inequality in the Face of the Pandemic. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020, pp. 154-163

Ducoing Watty.(2020). An expression of inequality in basic education during the health emergency: the case of a student. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020), pp. 55-64.

López Ramírez, M and Rodríguez SA (2020). Educational trajectories in higher education in the face of the pandemic: continue, interrupt, or abandon?. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020), pp. 103-108.

Lloyd, M. (2020). Educational inequalities and the digital divide in times of COVID-19. in H. Casanova Cardiel (Coord.), Education and pandemic: an academic vision. UNAM, IISUE 2020), pp. 115-121.

Pedró, F. (2017). Technologies for the transformation of education. Madrid, Spain, Santillana Foundation.

Plá, Sebastián (2020). Education between COVID-19 and the emergence of the new normal. Perfiles Educativos, vol. 42, no. 170, pp. 5-13.

Ramírez-Montoya, M. S. (2020). Digital transformation and educational innovation in Latin America in the context of COVID-19. Campus Virtuales, vol. 9, no. 2, pp. 123-139.

Ruiz Larraguivel, Estela. (2020). University teaching practice in distance education environments: tensions and experiences of change. In Education and Pandemic, an Academic Vision. UNAM, IISUE 2020), pp. 109-114.

Salinas, N. H. B. (2007). Competencias Proyecto Tuning-Europa, Tuning. América Latina. Informes de Las Cuatro Reuniones Del Proyecto Tuning-Europa América Latina, 1–27.

Saraza Agudelo & Silva Cañaveral. (2015). Interactive infographics: a socioeducational resource. Kepes, vol. 12, no. 12, pp. 285–303.

Sibilia P. (2012). The school in a hyperconnected world: networks instead of walls? Revista Educación y Pedagogía, vol. 24, no. 62, pp. 135-144.

Tan-Choi; Tinio, L. Dante, C. Cher Ping, L. & Justin G. (2020). Teaching guide for remote learning during school closures and beyond. Perfiles Educativos, vol. 42, no. 170, pp. 188-193.

Trejo-Quintana, J. (2020). The lack of access and utilization of media and technologies: two debts of education in Mexico. Mexico, IISUE-UNAM, pp. 122-129.

Toffler, Alvin (1979). The Third Wave, at: https://www.elcomercio.com/blogs/la-silla-vacia/alvin-toffler-padre-revoluc (Accessed: August 20, 2020)

Toffler, Alvin (1994). The Era of Power Change. El Cambio de Poder. Plaza & James Editores. Spain.

Uribe Canonigo, Rafael (2017). Learning in the digital age. Perspectives from major theories. Aibi revista de investigación, administración e ingeniería, vol. 5, no. 2, ISSN 2346-030X pp. 29-33.