


EDUCATION IN TIMES OF PANDEMIC: Lessons learned and shared

EDUCAÇÃO EM TEMPO DE PANDEMIA: lições aprendidas e compartilhadas

EDUCACIÓN EN TIEMPOS DE PANDEMIA: lecciones aprendidas y compartidas

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Introduction

About 30 years ago the internet was first introduced in Brazilian schools. Initially, computers introduced in schools were reserved in computer labs where only technicians and teachers were allowed to enter. The computer, "domesticated" by school rituals, met a demand for research and communication between teachers and their peers. In the 1970s, the use of computers in teaching practices in Brazil was initiated in public universities that began to develop research and software aimed at educational computing (SOUZA, 1993; FAGUNDES, 1996). In 1983 the first research group in this area called the Nucleus of Informatics Applied to Education (NIED) was formed at the University of Campinas (VALENTE, 1999). Based on such studies, education experts began to discuss how information technology could contribute to the progress of education.

ABSTRACT:

In 2020, the world was plagued by a pandemic that demanded the social isolation of people from all over the planet to prevent the rapid spread and overcrowding of hospitals. In the educational field, face-to-face classes have been suspended in more than 150 countries. Some institutions started to use technological resources to offer remote education. The pandemic highlighted issues such as the unpreparedness of education systems and teachers, inequalities in access to the internet and students' computers, among others. Considering that technologies have been part of the daily life of schools for more than 30 years, in this atypical moment there is a strangeness among teachers in their improvised use with their students. This article aims to reflect what this pandemic situation has taught us about online education in Brazil and the perspectives that we can see in this field in the post-pandemic scenario.

KEYWORDS: Online education; Pandemic; Digital technologies; Teacher training.

After another 30 years, there has been a considerable advance in the field of studies in this área, and technologies are no longer a new subject in the academic sphere. The world has advanced from the basic technology of desktop computers with tiny memory capacity to small smartphones with features never before imagined in the 1990s, in addition to high-speed internet available on wifi networks. Now, due to the advancement of technologies, it would be reasonable to imagine that they are already pervasive; and with its reach - 51% of the world population has access to the internet, it was to be expected that in schools technology was not a foreign body, something that bothers or distracts learning. What happened halfway through these 30 years when the internet in the educational field seemed so promising? Why do technologies still find resistance in the educational field?

Considering that technology and its artifacts are not neutral, but reflect the plans, purposes and values of a society (SILVA, 2001), in the first part of this article we present the relation between education and technologies and also a brief historical review of the objective of introducing computers and information technology in schools. The second part of the text presents the changes in the teacher's role in the face of expanding access to technologies. The text ends with a discussion on which model of education meets the current scenario and the lessons we can learn from the atypical situation of the Covid 19 pandemic that has plagued the world and how technology has entered the scenario as the protagonist of pedagogical mediations due to the suspension of classes at schools and universities.

The gateway for technologies in educational institutions

In the educational context, the school faces the challenge of becoming a space for building knowledge in the midst of this technified environment. Thus, the role of educational institutions is not only to promote critical and reflective training in these technologies, but also to ensure the democratization of access to technical means of communication. The incorporation of Digital Information and Communication Technologies - digital ICTs into educational practices does not happen naturally. Studies demonstrate the complexity of this process that confronts institutional policies with individual and collective forms of use in educational spaces.

Reflecting on education and its direct relationship with technologies also requires an understanding of two aspects: the deterministic view of the relations between technological artifacts and social actors and the instrumental conception that considers technologies as neutral means that can be shaped by human action. In technological

determinism, social organization is determined by technology, that is, technological determinism emphasizes that technological innovation is the action of social change and imposes its logic on social actors and their relationships. In a deterministic perspective, studies related to the theme tend to favor the use of digital ICTs in the educational field in a technical aspect. Peixoto (2015, p. 5) warns that "by emphasizing the micro level, disregarding the macro level, this approach has supported specific approaches that do not address structural issues". In other words, to say that pedagogical relations are becoming broader and more collaborative with the use of the internet, leads us to the idea that education is being democratized by its use, however, it disregards the inequality of access of the population to the computer network.

In opposition to the deterministic current, technology is seen as a neutral instrument, that is, as resources or flexible means for the use of subjects. Included in this line of reasoning is the idea that the computer is only a medium at the teacher's service. Peixoto (2015, p. 4) starts from the understanding that technology, as a facilitator of didactic-pedagogical work, is postulated in an instrumental conception that fragments means and ends and has promoted a certain illusion regarding its improvement of educational practices. "When affirming the neutrality of the technique, this view empties it of an essence or any autonomy".

Technologies are products of a society, of a culture. Lévy (1999, p. 26) clarifies that the distinction between culture and society is that the first reflects the dynamics of representations and the second represents people, their ties, their exchanges, their relations of strength. The reference on technique, on the other hand, has to do with effective artifacts, which are only conceptual. Relationships are not discussed among technology, but among a large number of actors who produce, use and interpret technical forms, "[...] a technique is neither good nor bad, it depends on contexts, uses and points of view, neither neutral since it is conditioning and restrictive, since on the one hand it opens and on the other it closes the spectrum of possibilities" (LÉVY, 1999, p. 26).

Technology is thus transmitted to society, without determining it. However, the conditions of technological development, its stage of evolution and the course of society are directly related. Currently, digital technology presents possibilities for communication and interaction between subjects, between knowledge. It affects different segments of society, influences Education as a whole. Although no technology is neutral once it is developed under culturally determined conditions, its use has different implications for Education. However, emancipation and critical capacity contribute to the access to

technologies with criticality: "This emancipation and this criticism undergo the education of the citizen, who primarily still occurs through schooling" (MILL, 2013, p. 16).

In the educational context, the technological use of digital ICTs has brought challenges to the teaching-learning processes, raising certain questions, for example: How can digital ICTs be integrated into educational processes? In order to understand the current social scenario, which, even though permeated by technologies in all areas, has an inhospitable environment in the educational context, we need to analyze the purpose with which technology was introduced in schools.

As well as the blackboard, other non-digital technologies were inserted in the school as tools for the teacher to teach, that is, to support teaching activities (COSTA, 2013). The mimeograph, overhead projector, multimedia device (projector) were designed to help the teacher to reproduce / transmit information to many students at the same time - the same logic in which blackboards were disseminated - for simultaneous teaching (BASTOS, 2005). With the arrival of the computer and the internet at school, the objective remained the same: a tool to help the teacher to teach. Based on the pedagogy of content transmission, the insertion of technologies would serve to consolidate the teacher's role as the holder of knowledge. How to keep the control of teaching in the hands of the teacher? By putting these computers in a place where students have access only when the teacher is present - the computer lab. Who doesn't remember the class in the lab where we could browse through those strange machines? Because it was not common to have a computer at home in the 1990s.

While technologies were used for this purpose in schools, they were well accepted by teachers. For some time this control strategy worked well in schools. The computer served the interest of transmitting content under the watchful eye of the teacher. However, something has changed in the course of history: mobile devices with internet access have become cheaper and in turn more accessible leaving the computer labs right into the hands of students. It happens that technologies that today "invade" schools are in the hands of students - their smartphones and tablets. Nowadays, digital ICTs, previously "domesticated" in computer labs, are free, mobile and connected. This "invasion" does not have the same reception that the blackboard, overhead projectors or projector devices had in schools. Costa (2013, p. 49) explains the reason:

Now, it is precisely there that the essential difference of the information and communication technologies accessible today lies: they are not tools aimed mainly at teachers, but primarily at students; they are not tools to support the transmission of knowledge, but tools that allow and

imply the active participation, by each one, in the construction of their own knowledge (COSTA, 2013, p. 49).

Mobile, digital and connected technologies are also students' tools, as Costa (2013) argues, and do not serve to transmit knowledge, but instead, they enhance the possibilities of students, well guided by the teacher, to access information that can help them build their own knowledge. Therefore, technologies are no longer tools for the teacher to teach, but collective and collaborative devices that facilitate the construction of learning. However, digital technologies do not have the same acceptance within the school by teachers and administrators as the blackboard did. The latter was accepted without restrictions because its use reinforced the bank pedagogy of content transmission centered on the teacher. The digital ICTs, in turn, go against this pedagogy by removing the power of information and knowledge from the teacher and making it available freely on internet networks (ALVES, 2020).

This brief review helps us to understand the core of the "rejection" of digital technologies, especially mobile, in the hands of students in the classroom. Some schools even ban the use of the cell phone in the classroom due to the lack of attention and dispersion of learners caused by the phones. In the context of the pandemic, in the year 2020, when classes were suspended, schools that did not use technologies in classroom activities with students felt greater difficulties in adapting to "remote teaching", a term used for technology-mediated study activities. However, the challenge was not only for the teacher to reinvent himself/herself to produce content, present classes online, and organize assessment of students activities in a situation of social isolation, psychological pressure and family to take care of at home. The student, in the same situation of social isolation, also found difficulties with internet access, quality equipment to access, space for studies, adaptation to online classes, exacerbated amounts of activities to be carried out.

Another contacted fact, was what we have previously published: although we affirm that digital ICTs are in the hands of students, we are not saying that they are "digital natives" (PRENSKY, 2001) and have total mastery of technologies making critical, creative and productive use of them (ALVES, 2017; 2020). In the context of the pandemic, many students have shown that they find it difficult to adapt to remote education because mobile devices, although part of their culture, are commonly used for entertainment, communication and information acquisition. The "exclusive" use of these devices for study caused strangeness. This fact corroborates with Lluna and Pedreira (2017) when they

affirm that the so-called “digital natives” need to be educated, prepared and oriented to take advantage of all the potential that technologies have to emancipate them, making them critical and autonomous citizens, empowering them to produce knowledge and apply it correctly in academic life and later in their professional lives.

What is the teacher's role in the current scenario?

The role of the teacher is highlighted in terms of being the beacon in this ocean of information that his/her students are navigating (LÉVY, 1998). From knowledge holder, the teacher becomes the guide, mentor and advisor. But in order to do so, the teacher needs to know the routes, the procedures and the relevant information that can lead his/her students successfully to firm lands of knowledge. Students just might have maps (cell phones connected to the internet) in their hands, but there are many routes, many shortcuts, a maze of information that is at times unnecessary and unreliable. It is up to the teacher to guide, design search criteria, demand a critical reading from students, question, provoke, make them think and then build their knowledge framework either alone or working collaboratively in groups.

This new role of the teacher is similar to that of an art curator who invites artists to an exhibition, and based on their collections, carefully selects the works that will compose a certain display, establishing a logical visual aesthetic line for the exposition. When composing the learning path through which the student will be guided, the teacher plays the role of curator: one who selects what is relevant to know and develops skills such as: research, comparison, understanding, critical analysis and connection. In 2014, Castells already stated that 97% of the world's information was digitalized and 80% was on the internet and the insistence of a pedagogy based on the transmission of content did not make any sense. What the young lack, according to Castells (2014), is not information, but criteria to seek it and combine it with intellectual projects. The digital communication networks are currently the “Library of Alexandria”, which between the 3rd century B.C. and the 4th century A.D. contained almost all the knowledge of Antiquity, in about 700 thousand rolls of papyrus and parchments. For the author, it is not the information that should be taught, but how to search for it and combine it with the personal projects of each student. In this context, the teacher-curator maps, filters, selects, groups and organizes the content found on the web, highlighting certain content that he/she finds relevant for the class. Building co-authored with students is also an activity that helps them to learn how to curate content and have a critical view of information on the web.

What has happened in practice, including now in this moment of pandemic and suspended face-to-face classes, when the teacher was forced to teach online? Teachers still want to use technology as a teaching tool. They insist on the logic of classes with content exposure with assessment activities at the end. What has been discussed in congresses, journals, research groups on how technologies can mediate learning remained on paper. In 30 days of online classes, the so-called remote teaching, we have been sensing the teachers' distress in relation to the unpreparedness to transpose to the online what they did in person.

However, this attempt to transpose the classroom into a virtual classroom mediated by technologies, has suffered harsh criticism from teachers, students and parents who supervise their children in activities. If everyone involved already uses technology in their daily practices, why are there obstacles when educational processes are implicated? One of the reasons is related to the current model of education: the teacher at the source of the contents (one for many). In the 19th century, it was an efficient model for educating many at the same time for the purpose of preparing the individual for factories. In this context, the teacher was the holder of knowledge and the information was in books in libraries. But does this model meet the current context? By preparing an expository class for a 3-hour web conference with little or no participation by the students, the teacher is reinforcing this pedagogy of content transmission that no longer serves the socio-technical and cultural scenario permeated by information on the web in which we live. In the class context, of social isolation, web conferencing became an alternative of meeting for teachers and students, at the same scheduled hours of the face-to-face classes. This resource allows the development of expository classes that are also important, however, if they are extensive they cause fatigue and lack of concentration on the part of students who, in most cases, do not remain attentive to the class. Thereby, we have, on the one hand, the teacher who strives, exhaustively, to teach the class in a cold and silent environment. On the other hand, students who, most of the time, are only making their presence felt in class, with their cameras and microphones turned off. This class format makes both the teacher and the student feel unmotivated with results.

This reinforces the importance of developing interactive classes using the possibilities of digital ICTs. For example, in classes with web conferences, the teacher can post the lecture, and add the use of a forum and a chat to promote a debate with the class concerning the subject addressed. In addition, the teacher can indicate other sources of research such as videos and texts for a better understanding of the study in question, as a way to promote the exchange of knowledge in a collaborative and interactive way.

Teachers need to recognize that knowledge is an open work (ECO, 1962), meaning, it is always under construction. It is not a package ready to be delivered by companies specialized in distance education. Therefore, online classes need to be interactive dialogues in which the teacher enables students' microphones not only for them to express their doubts, but also to guarantee their presentation of arguments and the questioning of statements (SILVA, 2000). In these synchronous classes via web conferencing, the teacher can make use of different media languages (text, sound, video, applications, simulators, Internet sites) and also propose learning trails as open spaces for navigation, collaboration and creation, enabling the apprentice to conduct his/her explorations.

We can assume that teachers who, before the pandemic, already used active methodologies in their face-to-face classes, had less difficulty in proposing collaborative activities that allow creative authorship (BACKES, 2012), project-based learning (BENDER, 2015), problem-based learning (BARROWS, 1986) and other pedagogical proposals that provoke students to situations of creative restlessness and resolution of problems presented, in an autonomous and cooperative way. Technologies allow that even at a distance we can work collaboratively. Activities that challenge students to produce a collective text, e-portfolio, infographic, or video that addresses a particular problem related to the topic of the lesson, are generally more accepted by students than those lists of exercises or questionnaires which purpose is to memorize the content of a study.

For teachers who have not yet tried to use any technology or active methodology in their class, there is a wide challenge for adapting and understanding that the pedagogy of transmission does not work in this context of cyberculture that we are experiencing in which the pole of information emission and content has been released (LEMOS, 2007). From this understanding, teachers will realize that technologies are their allies and can enhance educational processes. Nevertheless, the teacher's social presence in virtual learning environments is necessary. The feeling of community and sharing, belonging and cooperation are fundamental for learning. For Paloff and Pratt (2004), the notion of belonging and social presence is relevant in the way students project themselves in interactions in courses mediated by technologies. Thus, the extent of presence of participants from such communities can be a determining factor for effective learning (GUNAWARDENA, 1995). Therefore, for an effective online education, the teacher needs to carry out an active mediation aimed at promoting collaboration. In asynchronous classroom situations, the teacher can provide a forum for continuous debate in which

he/she should act as a mediator. Other forms of mediation and interactivity are to carry on discussions in an educational social network such as Edmodo (ALVES, 2020).

The dynamics of online teaching becomes more arduous and complex in relation to face-to-face classes, because it transforms teaching into a task of multiple activities. It is up to the teacher to produce the syllabus, didactically plan the material, convert the material into media language. In addition, coordinate the entire tutoring system that involves everything from monitoring the virtual classroom to motivating students not to drop out of the course - due to various issues, including the difficulty of concentrating on their studies, as they are very distressed by the pandemic. In this context, the teacher will need very diverse knowledge, not always related to traditional teacher training.

In this context, teachers are learning to be teachers, by being teachers. They act by attempt / error / reflection / success. Mill (2012) addresses professional practice with reflection, working as a process of meta-formation:

Practical and reflective work in distance education, in the course of meta-formation, question the notion of teaching autonomy, the mastery of a base of teaching knowledge, a view of the entire production process in education and the collectivity at work (MILL, 2012, p. 47).

The insertion of digital ICTs in the teaching-learning processes of distance education redefines the roles of the student and, above all, of the teacher, demanding knowledge directed to situations for which he/she does not feel and was not prepared to face. Therefore, teachers training to work in online teaching becomes a challenge and has increasingly demanded that they receive special training to enable them to respond to the social and educational demands placed today.

Studies by Faria (2017) show that educational practices present possibilities of looking upon training for online teaching in an integrated manner with the involvement of professionals who work in the team. The activities require teachers training, working jointly with other professionals in a multi-teaching team, involving technicians, content developers (teachers who prepare the teaching material used by the teacher and the tutor), screenwriters, instructional designers, web designers and programmers. In this perspective, teachers should seek mastering digital ICTs, planning, time management, the ability to work in teams and their interaction with students as a way to overcome the challenges of the teaching and learning processes.

Post-pandemic education: lessons to be learned

A phenomenon observed during the Covid 19 pandemic in 2020 was the realization of several broadcasts of live lectures with experts from different fields. In the educational field, several "lives" of teachers from different institutions widely discussed the atypical situation of the suspension of face-to-face classes and the challenges faced by teachers in adapting to a situation of "remote teaching". A common observed point in these discussions is that what teachers have been doing is not online education or distance education. In a web conference, Professor Lucia Giraffa (2020) stated that the model of virtual classes carried out by teachers during the pandemic can be called "emergency remote synchronous education". In this sense, the author states that teachers are reinventing themselves, adapting online education resources. At the same time, this situation brings forth discoveries and opens up opportunities that were not previously anticipated.

The discussion about the integration of technologies in education is not recent and many experts had already foreseeing the importance of structural changes in the current educational model (NÓVOA, 2014; CASTEELS, 2014; LÉVY, 2015). Although several sectors of society have already started a digital transformation, at school this happened belatedly. The situation of suspension of classes and remote teaching done in improvisation by teachers revealed several obstacles that were enhanced in an atypical emergency situation. Among some we mention:

- The Brazilian educational system was not prepared to support schools and universities with regard to specific guidelines for online teaching;
- Lack of virtual learning platforms in institutions and unpreparedness for a contingency plan;
- Teachers lacking adequate equipment and good quality internet to take classes from their homes;
- Teachers with no training or experience in integrating technologies in didactic practices, which leads to the transposition of face-to-face classes into a virtual classroom in addition to unawareness of the basic principles of online education;
- Students with no access to computers and quality internet causing inequality of access;

- Students struggling to adapt to home study using technologies: lack of physical space, low levels of digital literacy, feeling of loneliness (missing classmates), parents financial problems, and other factors;
- Web conferencing methodologies with excessive content and evaluation activities;
- Overwhelmed parents at home when monitoring students' online activities.

We observe, therefore, a set of situations happening in a context of social isolation and uncertainties about the future, which makes the educational scenario chaotic. The positive side was the return of the debate on the integration of technologies in education as an important item on the political agenda. Teachers who already worked with technology in their teaching practices are participating in online debates and sharing their experiences with their peers. Universities are opening the discussion for curricular redesign and the opening of pedagogical proposals using active methodologies and hybrid teaching. Some of the lessons learned are related to teacher training. Antonio Nóvoa (2014) reinforced the important role of teachers in the scenario of transformation of the contemporary world:

There must be three responses that are three priorities: first, the teachers; second, the teachers; third, the teachers. It is necessary to reinforce the autonomy and centrality of teachers, valuing the teaching profession. It is useless to look for other solutions. Teachers are the centerpiece of any change, but we cannot demand everything from them and give them almost nothing (NÓVOA, 2014, p. 1).

The author emphasizes the need to put into practice a “real revolution” in teacher training. Nóvoa concludes: we cannot continue to reproduce and justify school and pedagogical models that are part of a time that is no longer ours, aimed at young people who no longer think, act, or learn as we do (idem, p. 2). Thus, investing in teacher training for practices mediated by technologies is a fundamental step towards changing training processes.

The reflection around the aspects, highlighted by Nóvoa (2014), can offer subsidies for the elaboration of teacher training programs; these are proposals that, if contextualized, can inspire renewal of training programs and practices in a comprehensive perspective that involves knowledge in the pedagogical dimensions, adequacy of the course proposal to the specificities of technological and organizational means, the management of the networked educational process.

We emphasize, however, that this training must be different from what has been done for 30 years. A brief historical review based on studies of initiatives and programs aimed at integrating the media in the daily practice of teachers highlights that sometimes these programs focused on training for the instrumental use of technologies (technical part), to the detriment of training for the pedagogical axis of digital ICTs and face problems related to internet infrastructure and lack of technicians to support programs in schools (GONÇALVES, 2014). Other weaknesses found in these programs were the mitigation of training with the incorporation of the teacher's practice in the course load; the low possibility of communication between the 'student teacher' and the teacher, which generated limitations in the apprehension and deepening of theoretical concepts, among others (ANDRADE, 2009).

The chaotic situation experienced in the pandemic showed that this model of training provided to teachers over the years was not effective for the integration of technologies in their pedagogical practices. So, what teacher training model would best suit the context of expanding mobile digital technologies like cell phones and tablets in the classroom? There is certainly no model, or recipe ready and applicable to all cases. However, we can score benchmarks, critical points that must be taken into account when formulating a teacher training focused on digital literacy. We return to professor Nóvoa (2014) who points out three important aspects for teacher education:

First, a more open and diversified organization of school spaces and times. Second, a syllabus centered on students and their learning, not on endless lists of knowledge or skills. Third, a pedagogy with a highly collaborative dimension, which uses the relationship (networks) as a communication and learning device (NÓVOA, 2014, p.16).

In this sense, the discussion about the integration of technologies in the curriculum and the preparation of teachers to assume a new role that is required of them, must start in the initial teacher training courses. Costa and associates (2015, p. 130) justify: "it is not enough to assign teachers the responsibility of expanding the boundaries of their professional knowledge, it is important to deepen the way in which digital ICTs have been considered in the qualification process of the teaching staff". Regarding this, the author states that the institutions responsible for initial training are the "nerve center of decision" on strategies for integrating digital technologies into the curriculum (Costa, 2013, p. 54). Therefore, universities, which have autonomy in the construction of their curricula, are the ideal venue for the beginning of structural changes in education, including the proposition of new models of teacher training.

Another question that was raised in the pandemic: should cell phones remain banned from classes? Before the pandemic, many schools and universities banned the use of cell phones during classes on the grounds that the device is distracting among students. But during the suspension of classes, for some students, the cell phone was the only device with internet access to carry out their studies. In the post-pandemic world, should cell phones remain banned from classes? Moura (2009) believes that the ban on the use of cell phones in the classroom is not a viable solution. The author states that instead of banning mobile devices, schools should integrate them with pedagogical activities. Moura questions:

[...] if we deliver a kit to a teacher with a photo camera, a video camera, a sound recorder, an audio player and a device that enables internet browsing for each student and we assure the teacher that he/she will not have to teach students how to handle it, is it reality or fiction? (MOURA, 2009, p. 74).

The cell phone or tablet has all the features of this kit, and most students already have one of these devices. So, the author brings to a conclusion that, teachers cannot turn their backs on the possibilities that mobile devices provide, they should take advantage of the features of this resource and the motivation of students to use it. In order to do so, teachers need to learn and apprehend technologies to then work them with students, leading the latter to understand mobile devices as enhancers of communication and knowledge construction, and that there are appropriate times and occasions for their use.

Another question raised would be: does the classroom always have to be presential? Or could the hybrid model, or combined with technology-mediated situations, be successfully applied? The return of classes after a pandemic, while there is no cure or vaccine for Covid 19, requires the continuation of social distancing. In this sense, the combination of face-to-face classes with online classes mediated by technologies will inevitably be necessary. Blendend learning or Hybrid Teaching (term most used in Brazil), was defined by Staker and Horn (2012) as a formal education program that mixes or combines moments when the student studies the contents and instructions using resources via the web, and others where teaching takes place in a classroom, being able to interact with other students and the teacher. The central idea of hybrid teaching is that teachers and students teach and learn at different times and places. Therefore, there is a convergence of principles of distance education with face-to-face teaching so that it is possible that in the same subject both situations can happen without prejudice to the student's learning.

Thus, the trend towards post-Covid is that universities and schools adopt blended learning or hybrid teaching that combines classroom activities with distance education. Moran (2011, p. 48) concludes: “the path is one of convergence in all fields and areas: buildings (distance education also within classroom units - centers); integration of digital platforms; digital production of integrated content (the same materials for the same subjects in the same curriculum)”. So, in the same pedagogical project of a course, face-to-face and semi-distance subjects can be contemplated with the support of digital ICTs. And even in a face-to-face subject, active methodologies such as research-based learning, the use of games, Problem-Based Learning (PBL), or Problem and Project-Based Learning (PBL) can be used.

Provisional considerations

We can say that these are provisional considerations, in view of the scenario of uncertainty that we are experiencing. At the time of this writing, the pandemic is still a reality, and classes are suspended in most public schools in Brazil. Some universities have chosen to follow the academic calendar supported by technologies in virtual classes and others have suspended classes. On the last day of May 2020, a vaccine has not yet been created and Brazil is still climbing the curve of cases. According to UNESCO¹, 68% of students worldwide are currently not having classes (just over one billion). In Brazil, this number reaches 52 million students with suspended classes. Would remote education be the solution to this reality?

Some scenarios need to be designed with Brazil in mind. Data from the Household ICT Survey² (2019) on internet use in Brazil reveals that about 47 million (20%) of people in the country do not have access to the network. The survey also points out that 58% of Brazilians access the network exclusively by mobile phone, a proportion that reaches 85% in class D and E. Therefore, there is a relevant digital divide that needs to be considered before implementing public policies that ensure the right to universal access to education. The Brazilian Civil Rights Framework for the Internet assures in its Article 4th that the use of Internet in Brazil has, as one of its objectives, the promotion of the right of access to the Internet to all. Hence, in addition to allowing schools and universities to do remote education, the government must make the Internet available on equal terms of access to all Brazilians.

¹ Available at: <<https://pt.unesco.org/covid19/educationresponse>>. Accessed on: 28 May 2020.

² Available at: <<https://cetic.br/pt/pesquisa/domicilios/analises/>>. Accessed on: 28 May 2020.

Regarding the provision of virtual platforms and the training of teachers for the use of technologies, it is also up to the State to finance and encourage initiatives that enable changes in the current educational models. Teachers and researchers at universities can be the vector for the dissemination of technologies in teaching practices. There is a need to rethink the current educational models aimed at the transmission of content and create new models that are consistent with the reality of the world connected in networks.

We are all learning from this moment, and without a doubt in the last 30 days we have had much more experiences in this area than in the last 30 years of technology in schools. We learned from this pandemic that technologies will only be able to meet educational demands if they are recognized as devices that facilitate interaction and collaborative work within a didactic design that encourages research, autonomy and student engagement, in addition to the transposition of content on a virtual platform. May these learnings, even without assay and by improvisation, make us reflect that in any modality, face-to-face or distance, the role of the teacher is indispensable and fundamental.

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RESUMO:

Em 2020, o mundo foi assolado por uma pandemia que exigiu o isolamento social das pessoas de todo o planeta para evitar o rápido contágio e a superlotação dos hospitais. No campo educacional, as aulas presenciais foram suspensas em mais de 150 países. Algumas instituições passaram a usar recursos tecnológicos para ofertar o ensino remoto. A pandemia evidenciou questões como o despreparo dos sistemas de educação e dos professores, desigualdades de acesso a internet e computador dos alunos, dentre outras. Considerando que as tecnologias já fazem parte do cotidiano das escolas há mais de 30 anos, nesse momento atípico há um estranhamento dos professores no seu uso improvisado com seus alunos. Este artigo tem como objetivo refletir o que esta situação de pandemia nos ensinou sobre a educação online no Brasil e as perspectivas que podemos vislumbrar neste campo no cenário pós-pandemia.

PALAVRAS-CHAVE: educação online; pandemia; tecnologias digitais; formação de professores.

RESUMEN:

En 2020, el mundo estuvo plagado de una pandemia que exigió el aislamiento social de personas de todo el planeta para evitar la rápida propagación y el hacinamiento de los hospitales. En el campo educativo, las clases presenciales se han suspendido en más de 150 países. Algunas instituciones comenzaron a utilizar recursos tecnológicos para ofrecer educación remota. La pandemia destacó cuestiones como la falta de preparación de los sistemas educativos y los docentes, las desigualdades en el acceso a Internet y las computadoras de los estudiantes, entre otros. Teniendo en cuenta que las tecnologías han sido parte de la vida diaria de las escuelas durante más de 30 años, en este momento atípico existe una extrañeza entre los maestros en su uso improvisado con sus alumnos. Este artículo tiene como objetivo reflejar lo que esta situación de pandemia nos ha enseñado sobre la educación en línea en Brasil y las perspectivas que podemos ver en este campo en el escenario posterior a la pandemia.

PALABRAS-CLAVES: Educación en línea; pandemia; tecnologías digitales; formación de profesores.