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# Movements in the use of digital technologies in a public school

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## ABSTRACT

When we discuss the evolution of the technique, we face the evolution of the human being and how they are interdependent, because every technological transformation, whether the information and/or communication, affects people, culture, which reflects on the way of doing, being, living, coexisting, creating, producing. Starting from the studies on technological evolution, we conducted research in a public school on the relationship between the evolution of technique and movements in the use of digital technologies in the school. The aim of this study was to analyze aspects of digital technological evolution in the last ten years in a public school, and its relation with the curricula experienced up to the current movements of remote work. The research was guided by the question: whether and how does technological evolution affect the curriculum in schools? The production of data from the research was carried out from a questionnaire and a collective interview with a focus group of four teachers, who had been working in the school for more than ten years. From the analysis, the conclusion is that the process of evolution of digital technology infrastructure in school occurred slowly in relation to their evolution in society, and to start from government policies on the access to computers and the Internet. As for the movements caused in school practices, these were more visible with the use of virtual environments during the first semester of 2020, due to the social isolation caused by the COVID-19 pandemic.

**KEYWORDS**: Digital Technologies. Technical evolution. Digital Culture.

## INTRODUCTION

For this beginning, we are going to discuss the fact that the evolution of technologies or techniques is interconnected with the evolution of the human being. Both evolutions merge and intermingle, simultaneously. In this way, can we ask whether and how these developments affect the curriculum in schools? This question guided a research on the evolution process of digital technologies available in a specific public state school in Mato Grosso do Sul state, and its relationship with the evolution of the curricula experienced in the institution.

The aim of the study was to analyze aspects of digital technological evolution in the last ten years, in a public state school, and its relations with the curricula experienced up to the current moment of remote work. Remote work is about virtual classes, due to the social isolation imposed by the Covid 19[1] Pandemic. The research has a qualitative approach, which, according to André (2012, p. 15), "defends a holistic view of the phenomena, or, considers all the components of a situation in their interactions and reciprocal influences".

For data collection, a public school was chosen. The choice of this location was due to the fact that one of the authors is a teacher at this school and is open to conducting the research with co-workers. It is a public school in the state of Mato Grosso do Sul, located in the city of Aquidauana, founded in 1986, accredited and authorized to offer Elementary and High School education. In 2020, there were there a principal, a principal adjunct, three pedagogical coordinators, 80 teachers and 24 professionals in the administrative area. In a total of 1002 students enrolled, 384 studied during the morning, 377 during the afternoon, and 241 during the evening.

To start the study with the teachers, an invitation was sent to the 80 teachers and school managers, in the first semester of 2020, who worked in Elementary School (1 to 9th grade), High School and AJA (initials for Youth Advancement in Learning, in Portuguese) to participate in the survey answering a questionnaire about the use of technology in the classes. The online questionnaire contained four sections, with multiple choice and some open questions.

The first section was intended for the information about the research. The second section was to obtain information about each professional, with questions about: age, working time, how long they work at the school. The third section was made of more general questions about technologies and school, such as: What was the first digital technology that emerged or was significant for the school education? What is the first digital technology that emerged or was significant for this school? In the last section, questions about remote work and the use of technologies by teachers throughout their profession were proposed. We can mention some of them, such as: What were the technological evolutions or changes experienced in the school during the last 10 years? Among digital technologies, which were the first ones you have used and which ones do you use for remote work?

Of the total number of teachers, 31 responded to the questionnaire, which was sent via a link to an online form. The questionnaire used in the research, as pointed out by Gil (1999, p.128), as an "investigation technique composed of a more or less high number of questions written to people, with the aim of knowing people opinions, beliefs, feelings , interests, expectations, experienced situations,

etc".

Of those 31 teachers who responded to the questionnaire, four of them participated in a press conference, a focus group, conducted and recorded via Google Meet, with questions that trigger dialogue.

> The focus group represents a source that intensifies the access to information about a phenomenon, whether through the possibility of generating new conceptions or through the in-depth analysis and problematization of an idea. It develops from a dialectical perspective, in which the group has common goals and its participants seek to address them by working as a team. In this conception, there is an intention to sensitize the participants to operate in the transformation of reality in a critical and creative way (BACKES *et al*., 2011, p.439).

For the research focus group, teachers were chosen from the criteria of having been working at the school for ten years or more. Thus, we chose four teachers from the 31 who answered the initial questionnaire, who met the criteria established for being part of the group and accepted the invitation to participate in the interview.

The focus group had a virtual meeting, via Google Meet, in which the dialogue was guided by some questions, with the aim of obtaining more information about the movements in the use of technologies over the years at school. The triggering questions were: 1. Talk about what you have observed in the last 10 years or more in terms of evolution in this school, related to digital technologies; 2. How do you understand the relation between the evolution of digital technologies in society and in the school? 3. With remote work, do you see any evolution of the school articulated with the evolution of technologies? What strengths and what are the limitations you would mention? 4. What do you consider to be the digital culture? Tell us a little about it and the school you work at.

After the data collection (recording of the questionnaire responses and video of the interview with the focus group) the analysis was performed. This was guided by the research aim and the studies by Couto (2007) on technological evolution and studies on digital culture carried out by Lemos (2007), Santaella (2003) and Heinsfeld; Pischetola (2017).

Hereafter, we begin the presentation of the study, discussing on some theoretical issues that guided it, for then presenting and analyzing the data produced.

## DIALOGUE ABOUT TECHNOLOGICAL EVOLUTION

What is evolution, after all? We know aspects of the evolution of planet Earth, of the Universe, we hear about human and animal evolution. The word is used differently in some situations, as it was evidenced in the online dictionary:

> Theory according to which species changes by the action of mutations and natural selection: evolution of species. Progress; process in which there is constant and progressive modification, altering a state or condition. [By Extension] Development; everything that relates to the improvement or growth in a given area. [Medicine] Succession of manifestations of a disease. Constant movement made by one celestial body around another (EVOLUTION, 2020).

In the carried out study, we considered evolution towards progress and development. Progress, because the evolution of technology is a process in which there is a continuous and progressive modification of the technique, changing the state and condition of the use of technologies by humans. Development, as the evolution of technology is aimed at improvements in certain areas, as is the case of what is expected in relation to changes in school curricula, which occur intertwined with human evolution itself.

And what are technologies and techniques? Couto (2007) considers that there is no distinction between technique and technology. The author emphasizes that our daily activities such as “eating, sleeping, working, loving, reading, talking, traveling and having fun” have evolved over the years in an intertwined way with the evolution of technologies. The author claims that there is a symbiosis between man's social evolution and planned techniques, developed and employed over the millennia. Man would not exist without the presence of technique in his journey. How would he survive in prehistory without tools to hunt, without clothing made from animal skin, without the proper tools? Furthermore, the social evolution of human beings is intertwined with the technologies developed and used in each era. According to Couto (2007, p. 3) “[...] it can be said that technique is not opposed to man, it is the very essence of man.”

In that regard, Kenski (2003, p. 13) states that the “technological era” does not refer only to the current moment, because “[...] since the beginning of civilization, all eras correspond to the predominance of a certain type of technology". In this sense, according to Castells (2005, p. 17), it is the interest of society that modifies technologies, as "society shapes technology according to its needs, values and interests of people who use the technologies."

Kenski (2003) also invites us to understand other technologies that go beyond the equipment. The author speaks of “intelligence technologies” based on studies carried out by Lévy (1993) and discusses the evolution of technologies when talking about oral, written and digital language.

Still about the evolution of technologies, we can talk about the evolution of communication, which went from letters carried by messengers, to the use of the postal service, going through communication via radio and television. With the advent and the internet popularization, new multimedia tools emerged, the Digital Technologies of Information and Communication (TDIC). Therefore, we have been evolving in our relationships and knowledge production over time.

As they evolved, new technologies have emerged, new ways of carrying out our actions, whether to make a purchase, sell a product, negotiate, hold meetings, meet and live with other people, teach and learn, represent and build knowledge. What about the school, how has it evolved in its actions, in its curriculum, in a way it intertwines with these social evolutions of human beings and the evolution of technologies? This is an issue that mobilized us to carry out the present study. We started to analyze the movements in the use of technologies in classes, for a period of time, and its possible relations with the evolution of technologies and human evolution.

## A BRIEF DIALOGUE ON DIGITAL CULTURE …

When we think about the evolution of technologies and their relation with human evolution, we must consider culture. "Culture is everything that is created by men in any society, at any historical moment." (HEINSFELD; PISCHETOLA, 2017, p. 1351). Lemos (2007, p. 35) also states that “every culture is, above all, hybrid; formation of habits, customs and socio-technical-semiotic processes that always occur from the acceptance of differences and in dealing with other cultures.”

In this movement of culture, human evolution and the technique, the digital culture emerges. Santaella (2003) states that these cultural processes are resignified, or, they are not linear, where one overlaps the other, on the contrary, the process is one of readjustments and refunctionalizations. As if human and technical evolution itself could give a direction to the progress of culture, but not only.

> It is also true that, in each historical period, culture falls under the domain of the most recent technique or technology of communication. However, this domain is not enough to asphyxiate the semiotic principles that define preexisting cultural formations. After all, culture always behaves like a living thing and, above all, an intelligent organism, with unpredictable and surprising adaptive powers (SANTAELLA, 2003, p. 25-26).

Currently, with information communication technologies, which bring speed and diversity of digital movements, many people live in a digital culture, where "any individual can produce and publish information in real time, in different formats and modulations, add and collaborate in a network with others." (LEMOS, 2007, p. 36).

Therefore, digital culture tells us about the new modes of interaction and communication that so many people experience and produce through digital media. Santaella (2003) states that there is a new culture between mass (general) culture and digital culture, the “culture of midia”, in which language is embodied.

In this cultural context, we ask ourselves how schools are integrated into this digital culture? How is the evolution of technique, humanity, cultural, present, throughout history, in the school space, in the curricula experienced? We will discuss these issues below, as we present and analyze the data colleceted in the survey applied in the school.

## DIALOGUE ABOUT THE EVOLUTION OF TECHNOLOGIES AND CURRICULA IN A PUBLIC SCHOOL

In this section, we will present and discuss the data produced from the survey. We will start by presenting some data obtained from the responses to the questionnaire. Then, we will analyze the data produced with the focus group. The central questions proposed in the questionnaire and for the focus group addressed themes about the evolution of digital technologies and humanity, digital culture and movements at school in the use of technologies.

**About teachers and technologies at school: some initial data**

Through observations of the school space and documents, such as photos, we had access to some movements related to the technological infrastructure of the school, to better situate some information produced by applying the questionnaire and conducting the press conference. From this reading, we conclude that an important movement in the evolution of technologies in schools began in 1993, with the Decennial Education Plan, when teachers, managers and administrative employees set goals that should be achieved within 10 years. That year, teachers and administrators put as one of the goals, the acquisition of computers and the technology room to serve the students.

In 2000, the school received its first desktop computer, which was sent to the secretariat, to be used by employees in the administrative sector, who at the time had experience in typing. It was only in October 2008 that the school opened its first technology room (computer laboratory) with 10 computers and internet access via a telephone line. The technology room was then managed by two effective teachers, who attended the school's three working shifts.

Over the next 12 years, the school evolved from projector to the datashow, and mimeograph to the computer and printer. The school acquired televisions, stereos, digital boards, interactive computers, notebooks, tablets and semi-professional digital cameras, in addition to having a school radio space, with audio and sound equipment. Today, the school has speakers in all classrooms, to manage collective communication and, in the pavilions, security cameras.

In 2020, there were two technology rooms, one with 38 computers and the other 16. However, due to the lack of hardware and software maintenance, there were around 16 computers not functioning. The internet connection has improved over the years. During the research period, the school had two internet connections via cable and a fiber optic line, which was distributed to the technology rooms and for use by teachers, via wifi. Students still did not have access to the internet on their mobile phones.

In order to discuss the use of this infrastructure of technologies historically provided by the school, in classes, we will initially analyze the information obtained from the 33 responses to the survey questionnaire.

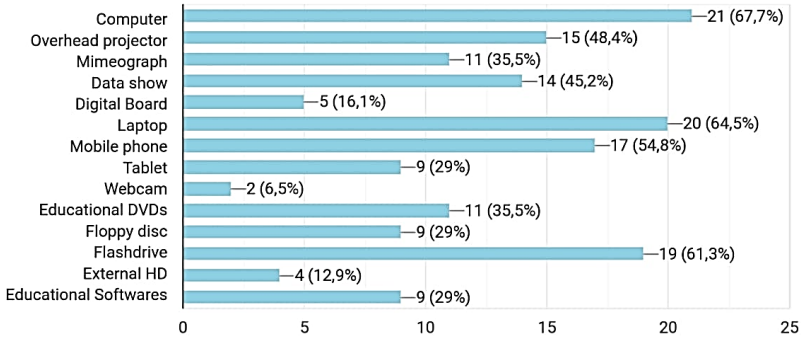
The 33 teachers who answered the questionnaire were born in the 1970s (approximately 42%), followed by those born in the 1980s (approximately 23%), in the 1960s (almost 19%) and in the 1960s. 1990 (approximately 13%). Those born in the 1950s represent just over 3% of those who responded to the questionnaire. As for teacher education, approximately 68% are graduates and are specialists in the area they work on or related to, 22% have only an undergraduate degree and 10% are Masters.

As for length of service in education, approximately 42% of the teachers who responded to the questionnaire are between 11 and 20 years old, 29% less than ten years, approximately 26% between 21 and 30 years of service in education and just over 3% work more than thirty years in the field of education. Regarding length of service at school, approximately 65% of those who responded to the questionnaire have less than ten years of school, followed by 29% who are at school between 11 and 20 years old and more than 6% work at school between 21 and 30 years old. In other words, 35% of the teachers who answered the

questionnaire have been in school for more than 10 years. Therefore, we consider a representative group to comment on the evolution of Digital Technologies (DT) at this school.

Thus, we start by bringing the information, in Figure 1, on the first technology they used in class.

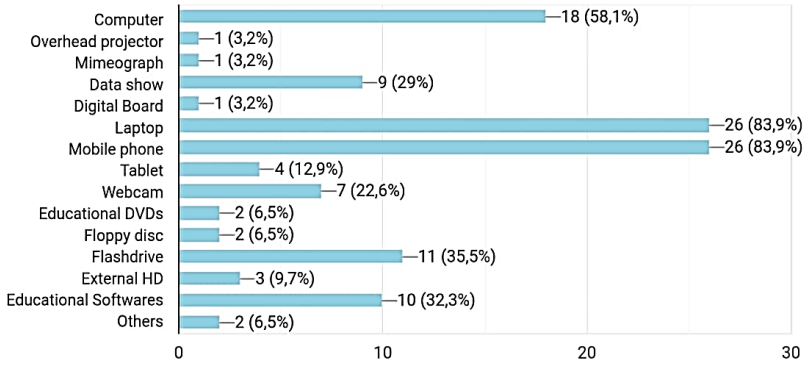
Figure 1 – First technology used by school teachers




Source: Authors (2020).

What was observed is that non-digital technologies were also mentioned such as projectors and mimeographs. When mentioning the technologies they used at the time of the research, we obtained the answers in Figure 2.

Figure 2 – Technology used at the research time by school teachers




Source: Authors (2020).

In this case, it is strange that one teacher still claims to use mimeograph and projector, and two mentioned using floppy disks. On the other hand, consistent with the current situation of remote work, with distance classes for all students, the notebook and cell phone are the technologies most used to carry out classes, as well as the computer.

When asked about the use or not of technologies at school, approximately 58% of teachers mentioned that they were already using them before the pandemic, approximately 35% of respondents mentioned that they sometimes used them and 7% did not use them. During the pandemic, most teachers (74%) said they use the technologies five days a week, 20% use it between three to four days a week, and 6% use it twice.

Thus, comparing the use of digital technologies before and during the pandemic, another response consistent with the current situation of remote work at school was observed: all started to use them and most (90%) use them for four to five days at school week.

Regarding the technological evolutions or changes observed in the school during the last 10 years, the interviewed teachers mentioned: greater use of digital technologies by teachers (87.1%); greater use of digital technologies by students (77.4%); greater interaction of disciplines with TDIC (54.8%). The main evolution/change observed by respondents was the fact that teachers started to use digital technologies more, which may have been driven by the infrastructure provided by the school and access to technologies in different spaces of the community.

In order to detail the changes in the use of digital technologies in this school, especially in the last ten years, we present and discuss below the data produced with four teachers who experienced the curriculum at the school during this period.

**On the evolution of technologies and curricula in a school: an analysis from four voices**

For this text, we chose to discuss based on the sequence of dialogue triggering questions launched to the research focus group. Four teachers formed this group, one of them being the school principal during the research period. To preserve the teachers' identity, we call them P1, P2, P3 and P4.

P1 is a high school teacher and has been working at the school for twenty-six years, having assumed the roles of teacher, principal and pedagogical coordinator. Teacher P2 has ten years of experience and was a student at the school. P3 is an elementary school teacher and has been teaching at this school for thirty years. P4 was the school principal at the time of the interview and served as a teacher at the school for thirty-three years.

To begin the analysis of the transcribed speeches from the recorded interview with the four teachers, we started with the topic of digital culture. What did the teachers say about digital culture? At the beginning of the conversation, we asked them to talk about digital culture and school movements. Below we can see some teachers' speeches.

> *P1: "Digital culture would be, or is it everything that involves **the practice of using the media**, […] It is the way in which we receive, forward and use all this technological process that society is living, but mainly what is coming into the school"*
> *P2: "So I think this **digital culture is all that is media, digital and that influences our lives today**. From basic things like making a call to a loved one who is far away and talking to them, to do essential things, like making in-app purchases"*
> *P3: "It is all **this technological issue** that has been happening over time and that we **observe that children are acquiring**. This culture of noticing the difference, of watching something, of having this access, on their daily life, to this learning, to using these instruments in all the activities they are going to develop."*
> *P4: "It is **a set of everything**, from life, from researching, from studying through that, from everything in their lives. Of course, there are some things on this technology that we have to filter. It is not everything you see on the internet that is right."*

It can be observed in these speeches that teachers speak of digital culture as something that occurs in a process of evolution, in constant movement. Something belonging to life itself which, as in other cultures, bring influences. We realize that they relate digital culture to digital media. They also mention that all practices, information, communication and actions developed with the use of technological media constitute this Digital Culture, which is increasingly intense in the students' lives' and, consequently, in the school. In other words, these statements seem to refer to what Heinsfeld and Pischetola claim:

> When conceptualizing digital culture, it is considered the change of cultural relations regarding the rapport between subjects and information and communication media, arising from the rupture in the way information was previously conceived, (re)produced and disseminated. This metamorphosis, as noted, moved towards mobility and ubiquity. [...] Digital culture is characterized, therefore, by the restructuring of society, made possible by connectivity, emerging transversality, decentralization and interactivity (HEINSFELD; PISCHETOLA, 2017, p. 1352).

However, these digital culture movements were a little related, by the teachers, with the school movements. Thus, we asked them to talk about the evolution that occurred at the school in the last ten years, related to the use of digital technologies. In the sequence, we present part of their speeches.

> *P1: "Yes, we can see **a certain evolution because it is only leaving the scope of the technology room and others are emerging**, even the issue of cell phone use".*
> *P2: "Many things happened in this ten-year period, which changed and **completely revolutionized... The evolution was very big**."*
> *P3: "And, I remember well, that we were meeting … proposing measures for this Ten Year Plan. And people said: No, we have **to think about the future, we have to think big, think far ahead**. We thought about a technology room, for the students to use, we thought about the computer in the teachers' lounge, we thought about printed tests. This was something that was very far away, and we started to dream about it."*
> *P4: "**The technology has evolved, yes, not only at school**, but in the state, in the city... it has evolved indeed, [...]. The Tool has evolved a lot, there is nothing to discuss, the evolution was visible… […] **but none of this replaces the professional.** Technology is one more tool that the teacher will use, that the school will use to ultimately improve student learning".*

We observed that for teachers there was an evolution in relation to the technological infrastructure at the school, which provided opportunities for changes, according to P2, that were revolutionary. They also highlight the fact that a technology room at the school became reality, as the use of cell phones by students, more recently. However, in this evolution, P4 mentions that technology does not walk alone and that the teacher is fundamental for the student's learning process in using technology.

When we asked them to talk about the relation between the digital technological evolutions that took place during this period at the school and the changes in the curriculum, the teachers commented:

> *P1: "**Going back a little before these ten years, we leave the mimeograph, the projector**, I remember that when I was the school principal in the first term, the teachers' dream was to have an overhead projector. That we could buy those slides from the most varied areas, which the teacher took to the classroom as if it were today, the multimedia"*

> *P2: **"I remember a lot about the diary, I still got the end of the diary on paper,** today we work in the classroom having a multimedia projector, a digital whiteboard, audio and visual media resource. These things were unthinkable"*
> *P3: "I remember that in that first moment, for us this technology, in addition to what we already used, the blackboard, the chalk, the daily material, for us, the television and the DVD. Wow! When the DVD appeared, we could use the DVD and there was no risk to damage the tape anymore. **Then we were able to use the computer... the projection screen, then the technology room..."***
> *P4: "In 2000 the school received the first computer. In the secretariat… In October 2008, the school had its first Technology room there in the Decennial Plan. [...] For example, nowadays we have a bigger tech room, more computers. Our internet is improving. **We have multimedia, we still have data shows, computers in the teachers' lounge, exams and printed works"***

Although everyone has worked at this school for over a decade, it is observed that each one spoke of different movements. Through the expressions in the video, there is also a certain nostalgia when remembering the moments when these resources were essential and how much has evolved in terms of technological infrastructure in the school. However, they did not comment on evolutions/changes in the school curriculum.

What evolutions in terms of curriculum and teaching practice have been observed with the arrival of computers at school? After all, technological or technical evolution is closely intertwined with the cultural evolution of the human being, whose dissociability is unacceptable, and the human being's role is that of a permanent organizer of this society. Therefore, when talking about technological evolution at school, we must also say how the aforementioned digital technologies become naturalized in school, as they produce other curricula.

> The technical evolution of an object does not only concern the functioning of the object itself, but the different ways in which it is inserted and naturalized in culture. Consequently, technical evolution is not just about the improvement of objects, but the way we humanly relate and change from it (COUTO, 2007, p. 7).

In this sense, we asked the interviewed teachers to highlight implications of this evolution of technologies in school practices. We can see their comments below.

> *P1: "... as time was passing by, new technologies **that enable the teacher to advance in their practice** emerged, in the sense of preparing the activities, both ordinary classroom activities and assessments."*
> *P2: "**But I think it made our work a lot easier**. You can even see the issue of calculating the averages, which we used to spend time there before, calculating one by one. And today you feed the system there, it is already calculating, giving everything ready to you, not mentioning the planning issue as well."*

It is possible to observe that P1 and P2 speak of changes related to the teaching work that involves records of averages, grades, not commenting on evolutions in the curriculum, on teaching and learning processes in the classroom. However, following the speech, P3 commented a little about changes in their practice due to the evolution of technologies at school.

> *P3: "The technology has a great value. And for us, we cannot forget that for the teacher it is fundamental. You have technology on your favor...so, I believe this process is very big, understand? Sometimes we don't appreciate it, but it*

> *makes a huge difference, when you have technology in your favor. [...] Videos contribute a lot to children… you need to be using it, because the child needs to see it, especially younger children. They need to watch, have access to it.* ***It can't just be blah blah blah. And they too, come out of that one, just by listening to what you say, they have access to other information****. [...]. How many online tests children did. Which helped a lot because it ends up being something different from those on paper. For us to be able to work at this moment with them... we are doing it, working the technology, helping in the development of learning".*

P3 commented that the videos provide opportunities to explore new strategies to use technology in favor of the younger children learning, as a teacher of elementary school classes. And she was also enthusiastic about the return of her students' activities. At the time of the interview, she remembered the application of online tests and highlighted how much they contributed to her classes. This teacher even created a simulation for Mathematics classes, using Hyperlink in Power Point for her students.

The P4 also reported using different technologies so that his explanation of the content could be understood by the students. He was already using the virtual learning environment before this period of remote work, and he commented that this made it easier for him to work on the virtual platform he was using.

But, in general, the four teachers considered that this technological evolution, although happening at a high speed in society, is not accompanied by the school at the same pace. They mentioned difficulties related to infrastructure, more precisely the internet connection.

> *P4: "To have digital culture, you have to first have access to it. And I think that thi access is what many of us, both teachers and students, don't have."*

P1 mentioned other difficulties related to the teacher's resistance to the new, to the unknown, to digital technology.

> *P1: "Although this opportunity comes for the teacher to develop their practice much more easily, they resist a lot, especially those who have more time in the service, like me, for example. Because, they can't master this technology.* ***... at the same time it fascinated me, it scared me, because we didn't know how to use it****."*

An alternative to alleviate resistance to the use of technology in classes is investing in continuing teacher education processes, and in an institutional program or project for each school. And this movement cannot happen with no technological infrastructure.

It was unanimous among teachers that mobile phones are essential for teaching, even more in the current situation of social isolation. They also highlighted that teachers and students do not know how to use mobile phones on teaching and learning processes, and that the fact of prohibiting their use at school ends up hindering the technological evolution embedded in the curriculum.

> *P2: "I think that* ***the law causes a lot more conflicts****. I see so many colleagues getting sick, due to these confrontations with students".*



The law mentioned by P2 is Law No. 2,807, of February 18, 2004, revoked in 2020, which said:

> It is prohibited the use of mobile phones, walkmans, diskmans, Ipods, MP3, MP4 players, game boy, portable TV devices, electronic diaries and any other portable devices capable of producing sounds and noises in bank branches and similar institutions, in gas stations, cinemas, theaters, classrooms, libraries, concert halls, audiences, conferences, and other arrangements (MATO GROSSO DO SUL, 2004).

Regarding the misuse of mobile phones in the classroom, teachers highlighted that the school has always supported the use of this technology by teachers and students, as long as it was provided in the monthly planning and for pedagogical purposes. However, many teachers, even using mobile phones in other social spaces, are still unable to use it for pedagogical purposes, favoring student learning. One of P2's lines shows this distance between school and society

> *P2: "one of the reasons for dropping out, students losing interest for classes is the fact that it is often very far from the reality that society is experiencing. The world is connected, then you see, developed countries where education rates are very high, you see students... using mobile phones or tablets is a very important tool for them. To study, to research, to develop activities."*

We conclude that teachers recognize that there is an evolution of technologies in society, whose pace is different from the evolution of the use that happens at school. So that the rhythms are close, they mentioned issues of infrastructure, access, connection, and policies in/for the school, which encourage the naturalization of these digital technologies in the curriculum, together with policies for the continuing education of teachers.

However, they recognize that in the school there are teachers who, even before this period of remote work, sought out for information, new perspectives, new approaches using these digital technologies. Teachers recognize that this moment of social isolation, which no one was expecting, has brought an opportunity to reflect on education at school. Teachers also commented on how much this school was not prepared for this moment. And when we say school, we understand that it is not restricted to teachers and students. There are more people that make up this school, they are members of the direction, pedagogical coordination, teachers, students, parents and guardians of the students, the local community.

Teachers mentioned that, during the first semester of 2020, there were more difficulties than facilities, difficulties related to lack of internet access, lack of technological resources on the part of students, lack of information from parents and guardians. These were more present at school, in particular, to look for printed activities for children who did not have internet connection. The difficulty of accessing school, via internet connection from a device, was more evident for parents and guardians of children and adolescents who often depended on a single mobile phone in the house, when they had one, so that three children could access the platform available for classes.

We could ask: what is the use of providing a platform and not providing conditions for students to have access to it? What is observed is that there is a lack of policies to democratize internet access for students! P4 mentioned this lack of access and other difficulties faced by students in times of remote work.



> *P4: "We had a totally different idea. We thought that our students were technology experts, they had access to technology, they had access to the*

> *internet. This pandemic came to show us that it is not like that. Our students do not have access to the internet, many use their father's or mother's mobile phones, others have limited internet, they cannot download a type of file. The minority can download the files, can do an activity on their own in the app".*

Teachers also mentioned cases in which students had a personal mobile phone, but with little memory capacity, which did not support the download of new apps, or which had prepaid data, which when opening a single video, it ended up with the data package purchased for the month. This is one among many other issues and difficulties mentioned in this process.

In P4's speech, it is observed that this moment of social isolation showed them another side that they were not aware of, as they believed that students were connected, that they knew how to use digital technologies, that they mastered any technological knowledge, especially the cell phone. However, with so many experiences of helping students at school, from simple access to an email account to the action of opening a file in doc or pdf format on their mobile phone, it was seen how much they also do not know how to use technological resources to learn and carry out activities proposed by the teachers.

Regarding the internet connection by the students, or the lack of it, it seemed to us that we are far from reaching the level of "being connected", mentioned by Heinsfeld and Pischetola (2017), since most students at this school, as in many others, do not it even reached the level of "being connected".

Teachers also recalled that tools such as WhatsApp, which used to be only for entertainment and leisure, in times of social isolation, have become potential for communication with students in the development of classes. We see this in P3's speech.

> *P3: "**WhatsApp came to be an extreme change: before it and after** it. You can talk to the child in real time, give them feedback."*

Despite all these difficulties faced by the school in times of remote work, according to the teachers, the institution has made an effort to assist its students. It offers printed material support when necessary, organizes schedules for the use of the school's technology room, taking all precautions for biosafety due to the pandemic, for the student to watch the videos or send the activities to the teachers, when there is a lack of access to the internet at home.

Há o fator de mudança de postura de alguns professores, pois se viram usando as tecnologias digitais para ministrar suas aulas, o que antes, no presencial, era esporádico. Houve mudanças também na gestão da escola, em enviar recados, divulgar produções feitas pelos estudantes neste período, sistema de arquivamento das Atividades Pedagógicas Complementares (APC) da coordenação com professores. Essas são evoluções, em ritmo acelerado, deflagrado a partir do isolamento social, causado pela pandemia do Covid-19.

There is a factor of change in the attitude of some teachers, as they found themselves using digital technologies to teach their classes, which before, in person, it was sporadic. There were also changes in school management, in sending messages, disseminating the works made by students during this period, filing the Complementary Pedagogical Activities (APC), system. These are fast-paced evolutions, triggered by the social isolation caused by the Covid-19 pandemic.

## FINAL CONSIDERATIONS

From the analysis of the research data presented in this article, the study concluded that the process of technological infrastructure evolution at the school occurred slowly in relation to their evolution in society. As for the movements caused in school practices, these were more visible with the use of virtual environments and cell phones, in particular, the WhatsApp, in the first semester of 2020, due to the social isolation caused by the COVID-19 pandemic.

What is observed is the need for continuing education of teachers to discuss processes of integration of digital technologies into the curriculum, in which students are the protagonists in their learning processes, a movement little mentioned by teachers in the research. The question is how to integrate DTs into the curriculum of this school in order to make these students authors of their productions? How to integrate this school into the digital culture? These are issues we need to keep investigating in partnership with teachers and school administrators, students and community.

However, in order for technological evolution in society to be intertwined with technological evolution and school curricula, we have to think about investments in technological infrastructure, especially internet, wherever the school is (students and teachers) during the educational action. In addition, there is a need for investment in public policies for teacher training to integrate digital technologies into the school curriculum.

# MOVIMENTOS DE USO DE TECNOLOGIAS DIGITAIS EM UMA ESCOLA PÚBLICA

**RESUMO**

Ao discutirmos a evolução da técnica nos deparamos com a evolução do ser humano e em como elas são interdependentes, pois toda transformação tecnológica, seja de informação e/ou comunicação, afeta pessoas, cultura, que reflete na maneira de fazer, ser, viver, conviver, criar, produzir. Partindo de estudos sobre evolução tecnológica, realizamos uma pesquisa em uma escola pública sobre relações entre a evolução da técnica e movimentos de uso de tecnologias digitais na escola. O objetivo do estudo foi analisar aspectos da evolução tecnológica digital, nos últimos dez anos, em uma escola da rede estadual de ensino, e relações com currículos vivenciados até os movimentos atuais de trabalho remoto. A pesquisa foi orientada pela questão: se e como a evolução tecnológica afeta o currículo nas escolas? A produção de dados da pesquisa foi realizada a partir de um questionário e uma entrevista coletiva, grupo focal, com quatro professores que atuavam na escola investigada há mais de dez anos. A partir da análise se concluiu que o processo de evolução de infraestrutura de tecnologias digitais na escola ocorreu de maneira lenta em relação à evolução das mesmas na sociedade, e a partir de políticas governamentais de acesso a computadores e à internet. Quanto aos movimentos provocados nas práticas na escola, esses foram mais visíveis com o uso de ambientes virtuais no primeiro semestre de 2020, em função do isolamento social causado pela pandemia do COVID-19.

**PALAVRAS-CHAVE:** Tecnologias Digitais. Evolução técnica. Cultura Digital.

## NOTES

1 According to the Ministry of Health (2020), COVID-19 is a disease caused by the SARS-CoV-2 coronavirus, which presents a clinical picture that varies from asymptomatic infections to severe respiratory conditions.

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