

IMPRESSIONS OF THE REMOTE LEARNING: APPROPRIATION OF THE TECHNOLOGIES

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ABSTRACT

The remote environment and its implications concerning digital technologies have gained importance since 2020, when many teaching-learning contexts migrated from the face-to-face scenario. This article brings the first impressions and experiences of an Edtech in São Paulo, from the perspective of teachers and students after this abrupt movement, outlining the panorama that involves the remote environment and the digital technologies that permeate it. And, just as there are its reverberations as an ecosystem of teaching and learning, to verify which are the difficulties pointed out so that this environment can be enjoyed as one.

KEYWORDS

Skills, Journey, Remote, Technologies, Learning.

1. INTRODUCTION

"Could the move to online learning be the catalyst to create a new, more effective method of educating students?" Li and Lalani (2020). We move from this question to the issues that pervade the appropriation of technologies as intrinsic and cross-sectioned to teaching and learning. As a pedagogical consultant for an Edtech in São Paulo, I conducted a survey with 8 teachers involved in the transition from school setting to remote learning, as a source of qualitative data.

Gil (2010) identifies three major benefits of the survey method: 1) direct knowledge of reality; 2) efficiency and speed; 3) quantification. In the case of this study, direct knowledge of this reality is provided by the interviewed teachers, as well as the researcher's experiences as their instructor. Freitas, Oliveira, Saccol and Moscarola (2000) support the survey model chosen here, advocating its use when: 1) one wishes to answer questions such as "what," "how," and "why," that is, when there is an interest in knowing "what is happening"; 2) the natural environment is the best to understand the focus of interest; and 3) the focus of interest occurs in the present or recent past. Hence, the survey research design is concerned with the description, explanation, and exploration of certain traits and attributes of a population in relation to a specific time.

Regarding the interviews, the presence of a pedagogical consulting link between the interviewer and the interviewees favored the interpersonal relationship. As a result, a semi-structured model was used, which "combines closed and open questions, in which the interviewee has the option of discussing the topic at hand without being bound by the formulated question" (Minayo, 2009, pp. 64-66). Thus, I did ask predetermined questions, although leaving room for conversation, thereby legitimizing the interviewee's speech and experiences, whereas:

The interview in qualitative research, by favoring the speech of social actors, allows one to reach a level of understanding of human reality that becomes accessible through speeches, being appropriate for investigations aiming to identify how people perceive the world. In other words,

the specific form of conversation established in a research interview provides direct or indirect access to the opinions, beliefs, values, and meanings that people attribute to themselves, others, and the world around them. In this way, the interview gives voice to the interlocutor to speak of what is accessible to his or her mind at the moment of interaction with the interviewer and in a process of mutual influence produces a discourse shared by the two actors: researcher and participant. In contrast, when the focus of investigation is human behavior, that is, the way people act in everyday life and not only talk about it, there are other techniques, such as participant observation and systematic observation that allow us to better meet these objectives. (Fraser & Gondim, 2004, p.140)

The guiding questions to verify technology adoption, particularly during migration to the remote environment, were:

What technologies are now a part of your daily routine as a result of remote learning?

What are your thoughts on the remote environment in adult learning?

How has your classroom performance been affected by the transition to remote learning? What were the most significant changes?

2. INTERVIEW WITH THE TEACHERS: PERSPECTIVE OF THE REMOTE ENVIRONMENT AND TECHNOLOGIES

In general, we aimed to understand how teachers have contact with digital technologies, how they used to deal with them in the classroom, and how they started to be inserted in their daily lives after the transition to a remote environment, as well as to investigate how the teachers participating in the research think about digital technologies in their educational practices, and if there is knowledge about the implications in andragogical learning. Such premises are based on unique and personal experiences brought by each teacher, since the individual interview "is a dyad interaction, indicated when the goal of the research is to understand in depth the person's meanings and vision" (Fraser & Gondim, 2004, p.148).

About the first question: a) Verifying which technologies were adopted and why; b) Whether there is awareness on the part of the teacher of how to use them in the best possible way, and not just for application without a clear purpose; c) Whether there are similar mentions of these new technologies in the three courses, knowing that they have different technical characteristics, that is, if even with the internal content being different, the appropriation comes with the same basis and objective.

Regarding the second question: a) The teacher's vision, which involves not only their ideas about the abruptness of confinement, but also what it is like to be in this unfamiliar territory; b) How they form their opinion based on what is being observed from the student's behavior; c) Whether there is intrinsically some kind of comparison made by this teacher, since they previously worked in a classroom and now are in a different context, but with the same premise of a technical course.

Regarding the third question: a) What were the impacts, challenges, and new learning experiences; b) Whether there were similar situations within the same course due to its technical characteristics, or if there were generalized problems, regardless of what was being taught; c) Whether there is any evidence of skills that were developed in their teaching performance due to the transition to a remote environment.

2.1. About the interviewed teachers

The selection of those involved considered criteria such as: a) Teaching at Edtech's Digital Marketing, Data, and Programming course, which is a natural environment; b) Working in andragagogical teaching; c) Having previously worked as a teacher for at least 6 months in an on-site environment.

We draw on Fraser's (2004) statement on assertiveness about the choice of interviewees, since randomness in the qualitative approach is not considered the best option. What matters is not how many were interviewed, but whether the interviewees were able to bring meaningful content to the understanding of the topic at hand (Fraser & Gondim, 2004, p.146).

So that the previous contact with the interviewed teachers occurred under the sphere of having known them before the pandemic, in addition to the history of interaction in the workplace from teacher training courses. Thus, we embrace the premise that the selection of those involved did not stop at quantity, since the purpose "is not only to quantify opinions, but to explore and understand the different points of view that are demarcated in a context" (Fraser & Gondim, 2004, p.147).

Profiles:

Teacher A: Digital Marketing.

Teacher B: Programming.

Teacher C: Digital Marketing.

Teacher D: Programming.

Teacher E: Digital Marketing.

Teacher F: Programming.

Teacher G: Data.

Teacher H: Digital Marketing.

2.2. Teachers' Responses and Reflections

To avoid getting repetitive in relation to the questions, since they are the same for all involved, we will make a comparison of experiences from the answers presented. And, to ground the discussion, we will bring in theorists that subsidize the bases about technological appropriation, remote teaching, and andragagogical learning, such as: Trindade and Moreira (2017); Schlemmer, Morgado and Moreira (2020); Lemos (2021), and Santos (2013).

What technologies are part of your routine today, due to remote teaching?

In class, the technologies are pretty much the same that many are using, like Zoom. And, without a doubt, WhatsApp is the most essential tool for everything. (Teacher A)

I believe the main character in this transformation were the video conferencing apps like Google Meet, Zoom, Whereby. However, platforms like Kahoot, Padlet, Notion and so forth are included in the list of technologies that I've started using. (Teacher B)

As we can see from the first answers, Zoom is placed as the central platform of this migration, since the live classes happen through it. Communication is also underscored through mentions of applications such as WhatsApp and Google Meet. At this point, it is worth bringing up our first reflection on digital coexistence: Are these environments developed to the point where there is dynamism, and "where learning activities and knowledge and ideas can be born, grow and

evolve?" (Trindade & Moreira, 2017). The context of this migration has favored the growth of adherence to gamified platforms such as Kahoot and collaborative construction platforms such as Padlet and Notion. In fact, digital technologies can help teachers to create constructivist and collaborative learning scenarios that are more malleable and adaptable to the needs of each student, and also allow for the combination of resources that foster the interaction between the development of specific skills, key skills, and character qualities. (Trindade & Moreira, 2017, p.106)

However, it is not clear from the content of the answers that there is a concern to deepen and establish an ecosystem of skills, except those linked technically. It cannot be taken for granted that collaboration and construction will occur naturally on WhatsApp and Google Meet, even if they are environments of conversation and exchange. The word "use" is also repeated by both teachers, which brings us again to the point that "the focus is not on the use of digital technology, but on the construction of competencies and their constant assessment and adjustment". (Trindade & Moreira, 2017, p.106)

Regarding the issue of reflection and understanding of technologies, both Teacher D and H, consider that there has been a change in looking at these technologies, since before they were seen as superficial. For Teacher D, "With the change, there weren't many tools introduced from the ones we already used in the pre-pandemic classes. What undoubtedly happened was an increase in the use of these tools and a deeper understanding of their functioning and solutions, in order to facilitate daily life and teaching. Among the main ones are online scheduling services (for tutoring sessions), video conferencing services, gamification (like Kahoot) and live interaction and feedback services (like mentimeter, quiz)."

And, building on this deeper understanding, Teacher H reiterates, saying that, "What changed most was that before we simply used the basic part of these tools, the simplest features they offer. Now, as people have gotten used to them, we can use them with more sophistication."

Regarding the previous statement concerning "getting used to" and "sophisticating", one begins to understand the network as a result of connections, what one can make when in the Zoom context, and what we can create and do together. Therefore, it is worth thinking on what it means to be "networked" and "connected." What kind of network do the students create with one another, and what kind of connection does the teacher form with their students?

What is your view on the remote environment in adult learning? What are the positive and negative points?

Adult learning, in my opinion, must be polished from culture. The culture of always expressing what you feel in surveys. The culture of always raising your hand when you ask a question. The culture of what is deliverable, since in the digital environment, asking about assignments loses that eye contact and, in a way, becomes lighter. The most positive point is diversity, since there is no distance barrier. I also point out as a positive point the challenge of developing different cultures. As a negative point, the lack of eye contact and proximity that was more accessible in the classroom and facilitated immediate understanding without digital interferences. (Teacher C)

The main positive point is we can take learning to more places, to give more people access to this course. The negative point is that despite taking this learning to more people, not all of them have the basic computer knowledge to be able to interact and actively participate in class. (Teacher F) Let us start with the question of eye contact, which, on the positive side, prevents "exposure," while at the same time we cannot know what is behind turned off cameras and microphones. And

here, we again bring up the matter of interactions and connections. How is it possible to know what is going on with a student who does not speak up during class?

When interactions that could have been developed are not, we think that dialogue has not been perceived as a pedagogical possibility, has not been understood as something to set in motion, to unfold what emerges from it. (Santos, 2013, p.166)

Similarly, when the student does not question anything and does not participate in discussions, how can the teacher know what the student knows? The student's learning journey is not clear to them in part because the teacher does not externalize it. In fact, if the student does not understand what is being presented, how will they be able to ask questions? On the other hand, the teacher must also be interested to know whether this student, who is silent in different ways, is "engaged" with what is being presented, whether they are curious or willing to learn about it.

The matter of implication, as commitment, may deserve attention. Implication here is different from wanting to get the student to recognize that the content and discussion of a subject is important to them, and it is also different from the task of keeping the student's attention on what is being said. The implication we refer to is in relation to not knowing and wanting to know. The implication here is a kind of commitment to your own ignorance and yet the courage to acknowledge that you do not know something, and go out searching for it. (Santos, 2013, p.167) What would this "digital interference," highlighted by Teacher C, be? Understanding this as difficulties to approach students, we can start from the idea that "dialogue is in consideration towards the other" (Santos, 2013, p.158), and this "consideration" comes along with caring, seeing the other as a fellow traveler, since learning is a two-way street.

Now, if the teacher sees the "condition of the digital environment" as something where turned off cameras and microphones are normalized, there will be no space to stimulate the development of relationships, nor to go out looking for what one does not know, that is, to stimulate "the communication and exchange of ideas, experiences and information. We believe this is the best way to enable everyone to learn from everyone else" (Santos, 2013, p. 85).

From the moment the student's journey is tied to how they relate to the actors involved in the digital ecosystem, we also shift our gaze and concern to those who do not interact and, as mentioned by Teacher F, to those who lack basic computer knowledge. In fact, the context of the remote environment has exposed Brazil's social inequalities in both structure and digital literacy. First, there are the country's housing infrastructure problems. (...) There are problems with accessing the Internet and 3G and 4G data networks, both due to the lack of a good-quality signal in several regions of the country, and to the impossibility of purchasing data packages and/or equipment such as computers, tablets, and cellphones. (...) Regarding education, a 2018 CETIC-BR survey indicates that 58% of schools do not have a single teacher who has received training on the use of computers and Internet in schools. (...) And this is not exclusive to public schools. (Lemos, 2021, pp. 95-96)

We will not go into the merits of the school environment and its implications related to the updating to the so-called Education 4.0 because there are too many realities, and we would go beyond the scope established here. However, it cannot be denied that the students' cultural baggage is put to the test when they propose to be part of an unknown context such as the remote learning environment. That is why it is also necessary to know the profile of the students who are enrolling in this courses and observe what their gaps are, sometimes marked by inequality, sometimes by lack of resources.

Understanding that among a class of 50 students, all will almost certainly not have the same resources and conditions to follow a technical course, and lending space and importance to this matter, can be the first step in mitigating this inequality and the lack of dialogue caused by students muting their microphones and not showing themselves to the camera.

Everything will depend on the Digital Maturity of each student, but I don't see any positive points. To this day I have student who still can't navigate or use Zoom, like entering breakout rooms, raising their hands, or using any of the other features, and often even updating their software/app to the latest version. (Teacher A)

The relationship among students was also made weaker, with students missing group commitments, each one working at their own pace, in their own corner, and not interacting with each other, an essential process in the exchange of experiences. (Teacher E)

How did the migration to remote learning affect your performance in the classroom? What were the main changes?

It was very difficult. I had to change my entire teaching model, like trying to relay a message by looking only at a screen instead of talking directly to people and being able to read their body language, gestures, manner of speech, etc. But the hardest part was managing expectations. In the online model there are several things that are out of your control (power, internet, children) and affect the quality of the product/service we deliver. Managing the expectations of a large online audience that doesn't care if your power runs out is very complicated. The main change in this transition was having to adjust the discourse and materials to be consumable on a large scale and still ensure the desired product. (Teacher G)

It affected the environment, which was no longer under our control. The main changes were that before, even with some attention deviations, you could resume what you were saying, and now you can't. In a virtual class you are on a screen that is often a phone screen and the student is in parallel universes, driving, working, in a meeting, watching TV. We no longer have the focus and the proper attention that we had before. (Teacher A)

Both statements present the family environment as an issue that affects focus, on one side for the teacher who is in this environment and needs power to deliver their lesson plan, and on the other side the student who needs to avoid the dispersion caused by external interferences. Both try to put into action their "roles" as teacher and student, conditioned to the moment of being quiet in front of the computer for a period of "x" hours. In this case, we must consider whether or not spending so much time in front of a computer is actually productive.

At first, we can think about how the class is presented to the student. If we add up reasons such as digital maturity, difficulty of connection and the "lack of dialogue", we will have a class with a massifying and Fordist character (Schlemmer, Morgado & Moreira, 2020). As mentioned before by Teacher F, there is indeed a positive aspect in taking learning to several places; however, if the premise is to multiply the number of students without taking into account that the teacher will not be able to establish connections and dialogue, we will have a ready-made recipe for evasion and raising dropout rates.

If we propose to recognize that being online changes our ways of being and of being in the world and that this generates another type of interaction that affects the learning journey, there can be no room for massification tied to the particular gaps that students may bring with them: "Digitizing the learning journey has been a learning experience, but more than technical knowledge, what we need to develop the most is self-knowledge and empathy". (Teacher G)

2.3. Skills Developed During the Learning Journeys

We use "journey" in the plural since we understand that just as the student learns different technical contents throughout the technical course, the teacher also needs to (re)learn ways to teach their classes and guide their knowledge. From the interviews, we verified that there have been significant changes, justified by mentions such as "having to change my entire teaching model," such as the challenge of "before, even with some attention deviations, teachers were able to regain the student's focus, now we can't."

With this in mind, we will analyze which skills should be developed by teachers, which are emergent for students in the 21st century, and how both should meet in order for remote teaching to become a dynamic learning ecosystem. Indeed, today, to succeed in an innovation-based economy, people need a different set of skills, such as collaboration, creativity, and problem-solving skills, in addition to character qualities such as persistence, curiosity, and initiative. (Trindade & Moreira, 2017, p.101)

Based on this, we listed some ideas on how teachers could act regarding the 4Cs:

Communication: the teacher stimulates communication among classmates, as well as has thought-provoking dialogues with students through questioning or posing problems for them to reflect on.
Collaboration: the teacher encourages teamwork and stresses how important it is in the job market. Collaboration involves more than just students working side by side. It involves interaction, support, mutual participation. And, as much as digital media intensifies it, collaboration is inherent to the way work is done in our society. [...] It must be understood that in the perspective of breaking technicist paradigms, nowadays knowledge is built in communities, which can be online/digital, in which all parties involved truly respect other people's opinions. (Wunsch et al., 2017, p. 13144).

Social values are thus underscored, since the group works as a team, avoiding personal conflicts. It is important that the teacher notices the "closed groups" formed in projects or practical group activities, trying to mix the members as much as possible. This interaction will create stronger relationships, avoiding disagreements among classmates.

Creativity: the teacher stimulates creative and innovative projects, as well as encourages ideas presented by the students, even if they are considered at first as unattainable, observing their potentialities. In such an intensely global world, creative thinking is becoming a key requirement for personal and professional success. When we talk about creativity, we do not want to create something for a closed audience, but for a global audience. For this, it is important to know methodologies that stimulate creativity [sic], in which an initial idea created is continuously amplified by others of the same group. (Wunsch et al., 2017, p. 13145)

Creativity is one of the keys to the process of producing a project or a response to a problem posed by the teacher. By respecting each person's ideas, the final product will be enriched by different opinions. In addition to this, when the teacher sets out to create a safe space, this broadens creative options from a single topic. As a mentor, the teacher leaves the student free to explore and, by stimulating their unique creativity, strengthens their self-confidence.

Critical thinking: the teacher stimulates the students' critical sense, that is, encourages them to question the reason for things and, while developing a project, to question the quality of the final product. The goal in a knowledge-based society is certainly to stimulate critical thinking, allowing the overcoming of the singular discourse, respecting their context of living and their previous experiences to stimulate reflection for guidance in search of the development of

solutions to concrete dilemmas through exercises of argumentation and critical reflection. (Wunsch et al., 2017, p. 13145)

Critical thinking is stimulated even before the pre-production of a project. By looking at the problem posed, the students expose their opinion and debate about what they want to build to solve it. From the conversation, new opinions and (pre)concepts can be reformulated, exercising self-criticism. While developing a project, with the choices made by the group, there are reflections about what they want to convey with the final product.

Even unpacking each element of the 4Cs, it is important to visualize that they are not separated and that the activity with/by/from the problem posed by the teacher is one of the possibilities to correlate them.

Teachers, just like students, develop their learning, focusing on their context and pedagogical planning. As each experience will be unique, they will also face constant challenges. There is an action to be taken for each pillar, but given continuity, the actions will change. With this attitude, there a change happens in the teacher-student relationship, where the student, as the center of their learning, sees the teacher as a guide and mentor and, above all, someone who allows knowledge to be realized as an exchange of learning, and not as a one-way street.

Today's (working) world requires that one be able to work in teams, critically assess information and produce knowledge, as much as the development of qualities such as persistence or adaptability that ensure greater resilience and ability to overcome obstacles; or even skills such as curiosity and initiative that serve as starting points for discovering new concepts and new ideas. (WEF, 2015, para. 7)

2.4. Possible Scenarios and Applications

Thinking about this skill-based perspective in parallel with some known methodologies that can be applied in the remote environment, we understand that the authors can experiment with some actions, for example:

Project-based learning: a) The teacher emphasizes project-based activities, linking them to real-life problems; b) The teacher encourages the class to reflect on possible problems of social impact and how the product could contribute to solving them; c) The teacher makes the process of "learning by doing" transparent, pointing out relevant matters such as learning from mistakes, questioning during the process, observing the problem and the audience involved.

Problem-based learning: a) The teacher poses problems to the class, generating discussions that are not limited to "right" and "wrong" answers; b) The answers presented generate new discussions among classmates, who exemplify by means of real problems; c) Since the teacher makes it clear that there is no right answer, students are encouraged to think of creative solutions.

Flipped classroom: a) The teacher asks questions about the topic under study at home and gives practical examples based on what was studied; b) The student feels that they can bring up their doubts and questions about what they did not understand; c) The teacher works on what was studied at home in a practical way and, from their position as a mentor-student, uses the time to build group activities.

Thus, from this scope, in addition to digital technologies, we consider the possibilities of promoting more productive learning skills from a remote environment that becomes more productive through the development of strategies. Once the teacher claims this space and sees it as a power, the skills are developed in each student – because each one is unique – hence

adapting not only to their individual needs, but also allowing the space for those that are notorious to come to light.

3. CONCLUSIONS

We form networks that are social, collective, in this case, made up of humans and non-humans, but there is no use in proposing to build communities if there is no regard for who will be part of these territories we call the digital ecosystem – Zoom. Who is the student behind the screen? What are their fears, anxieties and plans? What do they fail to say when there is a lack of dialogue? What is behind the teacher with the tired voice? Are we reaching people or just numbers?

In fact, digital coexistence needs to reach a different level than the one we have been presented with, which must be matured. One can start with the values related to the massified classes, considering that dispersion is more difficult to mitigate when you have several cameras to watch. Indeed, if the student is not seen as a human being, we will not come close to what we call teaching/learning either.

There is no ready-made recipe that will work in the three courses researched. We compiled statements from two worlds, and what we accomplished was the "implementation" of ideas to mitigate the gaps we perceived, training courses that reinforce the need to understand the other side of the screen and, throughout it all, envisage how teaching and learning occurs.

Education is not "mediated" by technologies, it is inserted in it – here contextualized by platform environments and applications –, at the same time that there is a certain distance, condemned as the "guilty part" for teachers not being able to tell what students are thinking when they do not speak up in class. The fact is that face-to-face teaching has made us used to looking at the student in a direct manner, and now there is a need to rethink how we can retain that look, even when we cannot see them.

So that, from the moment that I, as an educator, become aware that there are different goals, skills and abilities in each learner, I must reflect on how to reach them, how to listen to them. We must not blame a turned off camera or microphone for the void, nor see the process of moving from traditional to remote learning as something that does not provide new perspectives and learning scenarios – and the exchange of knowledge and learning between the actors involved, since learning is always a two-way street. We also must not condition our humanity and empathy just because the machine is part of our remote context. After all, "what do we really know about the skills needed on a daily basis by an unemployed person, an immigrant, a disabled person, a single mother, a dissident, a young person from the slums?" (Perrenoud, 2000)

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