

## **The challenges faced by teachers with remote teaching in pandemic times: a case study in the state public network in the city of Parnaíba-PI/Brazil**

**Os desafios enfrentados pelos professores com o ensino remoto em tempos de pandemia: um estudo de caso na rede pública estadual na cidade de Parnaíba-PI/Brasil**

**Los desafíos que enfrentan los docentes con enseñanza a distancia en tiempos de pandemia: un estudio de caso en la red pública estatal en la ciudad de Parnaíba-PI/Brasil**

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### **Abstract**

The COVID-19 pandemic has generated significant impacts in all areas, such as health, economy, and education, the latter culminating in the suspension of face-to-face classes. Also, it has reduced the time dedicated to classes and generated numerous problems for teachers, as this has hampered both the transfer of content and the development of the entire teaching-learning process. It is noted that the platforms are used to publish fixed activities, texts, and others, aimed at classes that require more time but which, in short, do not have more excellent aggregate knowledge. This research aimed to analyze the challenges faced by high school teachers, from the state public network of the city of Parnaíba-PI, in the teaching-learning process, at a distance. It used the scientific-technological method to seek answers to the following guiding questions: a) how does distance learning happen in-state public schools in that municipality, b) analyze the strategies and tools used by schools for the operationalization of distance learning, c) identify the methods used, and d) the main difficulties faced by teachers in their distance classes. It is a case study, exploratory-descriptive research, with a qualitative approach. The results showed significant obstacles due to the pandemic's changes, constituting barriers to the learning process being carried out successfully. There are several challenges to overcome in this form of teaching, from the capacity of technical resources to the emotional problems triggered. The analysis showed that the most significant difficulties encountered by teachers during teaching during the Covid-19 pandemic were: 1) lack of quality internet access; 2) lack of motivation; 3) lack of adequate access to technological issues; 4) overwork; 5) lack of interaction with students; 6) socio-emotional issues: uncertainties, anxiety, insecurity.

**Keywords:** Challenges for teachers; Distance learning; Pandemic; Teaching-learning.

### **Resumo**

A pandemia do COVID-19 tem gerado grandes impactos em todas as áreas, como: saúde, economia e educação, esta última culminando na suspensão das aulas presenciais. Reduzindo o tempo dedicado às aulas e gerando inúmeros problemas para os professores, pois isso tem dificultado tanto a transferência de conteúdos quanto o desenvolvimento de todo o processo de ensino-aprendizagem. Nota-se que as plataformas são utilizadas para publicar atividades fixas, textos e outros, voltados para aulas que demandam mais tempo, mas que, em suma, não possuem maior conhecimento agregado. O objetivo desta pesquisa foi analisar os desafios enfrentados por professores do ensino médio, da rede pública estadual da cidade de Parnaíba-Pi, no processo de ensino-aprendizagem, a distância. Por meio do método científico-tecnológico, abordou-se também a busca por questões norteadoras: compreender como acontece o ensino a distância nas escolas públicas estaduais daquele município, analisar as estratégias e ferramentas utilizadas pelas escolas para a operacionalização do ensino a distância, bem como identificar os métodos utilizados pelos professores na modalidade a distância e as principais dificuldades enfrentadas pelos professores no processo de suas aulas a distância. Trata-se de um estudo de caso, pesquisa exploratório-descritiva, com abordagem qualitativa. Os resultados

mostraram que existem grandes entraves, devido às mudanças trazidas pela pandemia, constituindo barreiras para que o processo de aprendizagem seja realizado com sucesso. Existem vários desafios a serem superados nessa forma de ensino, desde a capacidade de recursos técnicos até os problemas emocionais que estão sendo desencadeados. A análise mostrou que as maiores dificuldades encontradas pelos professores durante a docência na pandemia de Covid-19 foram: 1) falta de acesso à internet de qualidade; 2) falta de motivação; 3) falta de acesso adequado às questões tecnológicas; 4) excesso de trabalho; 5) falta de interação com os alunos; 6) questões socioemocionais: incertezas, ansiedade, insegurança.

**Palavras-chave:** Desafios docentes; Ensino à distância; Pandemia; Ensino-aprendizagem.

### Resumen

La pandemia del COVID-19 ha generado grandes impactos en todos los ámbitos, como son: la salud, la economía y la educación, culminando esta última con la suspensión de las clases presenciales. Reduciendo el tiempo dedicado a las clases y generando numerosos problemas a los docentes, ya que esto ha dificultado tanto la transferencia de contenidos como el desarrollo de todo el proceso de enseñanza-aprendizaje. Se advierte que las plataformas se utilizan para publicar actividades fijas, textos y otros, dirigidos a clases que requieren más tiempo, pero que, en definitiva, no tienen mayor conocimiento agregado. El objetivo de esta investigación fue analizar los desafíos que enfrentan los profesores de enseñanza media, de la red pública estatal de la ciudad de Parnaíba-Pi, en el proceso de enseñanza-aprendizaje, a distancia. A través del método científico-tecnológico, también se abordó la búsqueda de preguntas orientadoras: comprender cómo ocurre la educación a distancia en las escuelas públicas estatales de ese municipio, analizar las estrategias y herramientas que utilizan las escuelas para la operacionalización de la educación a distancia, así como identificar los métodos utilizados por los docentes en la modalidad a distancia y las principales dificultades que enfrentan los docentes en el proceso de sus clases a distancia. Se trata de un estudio de caso, investigación exploratoria-descriptiva, con abordaje cualitativo. Los resultados mostraron que existen obstáculos importantes, debido a los cambios provocados por la pandemia, constituyendo barreras para que el proceso de aprendizaje se lleve a cabo con éxito. Son varios los retos a superar en esta forma de enseñanza, desde la capacidad de los recursos técnicos hasta los problemas emocionales que se están desencadenando. El análisis mostró que las mayores dificultades que encontraron los docentes durante la enseñanza en la pandemia de Covid-19 fueron: 1) falta de acceso a internet de calidad; 2) falta de motivación; 3) falta de acceso adecuado a temas tecnológicos; 4) exceso de trabajo; 5) falta de interacción con los estudiantes; 6) cuestiones socioemocionales: incertidumbres, ansiedad, inseguridad.

**Palabras clave:** Retos para los profesores; Enseñanza a distancia; Pandemia; Enseñanza-aprendizaje.

## 1. Introduction

The Covid-19 pandemic generated significant impacts in all areas, such as health, economy, and education, the latter of which culminated in the suspension of face-to-face classes, through Ordinance n° 343, of March 17, 2020, giving space for distance learning, which was the alternative found to carry out teaching in this period. There were positive aspects, such as reducing the damage caused to students by the impossibility of face-to-face classes. However, many obstacles have hampered this educational modality's teaching and learning process. Rodrigues (2020) highlighted that internet access had been the biggest problem.

However, despite the difficulties in this type of teaching, it is known that it was the only one possible in this challenging moment. It has contributed to the continuity of the teaching-learning process in the current scenario. In this reality, teaching has been a great challenge, given the difficulties already faced in face-to-face teachings, such as the emphasis given by many teachers to traditional methods, which prioritize memorizing concepts and formulas. In this sense, the teaching-learning process has been even more challenging, as the reduced time allocated to classes has been a problem faced by teachers, making it difficult to transfer content. It is noted that the platforms are used to publish fixed activities, texts, and others, aimed at classes that require more time. Students need to adapt to enjoy it, as the content is not always easy to understand. Because of this, the following problematic question was raised: What are the difficulties experienced by teachers in the face of remote teaching?

Not all schools have science laboratories that provide objective support for traditional experimental classes regarding material resources. Therefore, it is possible to go to a virtual learning laboratory, where students will have the opportunity to enter an environment with multiple possibilities and multiple resources available at the school. There may be resistance to the

use of Information and Communication Technologies (ICT) and the adoption of remote education. Converting face-to-face teaching to remote teaching assumes that teachers need to use technology to promote interaction and act as an intermediary in knowledge objects. Furthermore, the educator must integrate the main characteristics of the previous analysis into the educational practice, highlighting the dialogic discourse, personal communication, and students' integration in the collective construction of knowledge. Teachers who are used to instructive teaching practice may find it challenging to adopt dialogue and a dialectical stance, regardless of the remote classroom. Understandably, planning the use of ICT in education can lead teachers to reflect on their educational practices and seek a new definition of pedagogy and epistemology.

The research had as its objective to analyze the challenges high school teachers face, from the state public network of Parnaíba-Pi, in the teaching-learning process, at a distance. The work was developed from the theoretical foundation, where the theorist's approach to teaching and distance education, the methods used by teachers, and the challenges of transposing methodologies. The methodological procedures used in the second stage of the research are discussed as derived from them. At the end of the theoretical foundation, we talk about the dialogues of remote practices and pedagogies. Finally, the Final Considerations and the References used at work.

## **2. Methodology**

### **2.1 Type of research**

It is a case study, exploratory-descriptive research, with a qualitative approach. According to Marconi and Lakatos (2010), the case study establishes a direct relationship with the understood development of the researcher. It is necessary to analyze the practical action of the studied reality of the community, the researcher, and the field scientists who must identify the places through their five senses, which need documents, materials, and a list of demands of principles that are presented in the development of the group. As for the combined exploratory-descriptive nature, these studies aim to describe phenomena as they occur, based on empirical and theoretical analyses. In this type of research, quantitative and/or qualitative descriptions can be found by accumulating information and reports obtained by participant observation. Priority is given to the systematic representative character, and, finally, the sampling procedures are flexible (Lakatos & Marconi, 1992). As for the qualitative approach, Minayo (2001) portrays that it is more associated with the relationship of information about the incentives of a set, in the understanding and understanding of people's practices, behaviors, thoughts, and perspectives, being able to investigate data and knowledge of practices for only then quantify them.

### **2.2 Research subjects**

The population of this research was ten teachers who work in the state public high school network in the city of Parnaíba-Pi. The choice of the public was because the selected teachers are experiencing remote teaching. Therefore, they are the actors in this practice that, unexpectedly, are essential the contribution of these professionals to the construction of scientific knowledge on the subject. We protect the identity of the interviewees, assuring them of the absolute secrecy of their identity. It was necessary to refer to them as P (1); (2) (3) (4), (5), (6) (7) (8) (9), and (10).

### **2.3 Procedure for data collection**

Data collection was carried out in July and August 2021 through a questionnaire (Google Meets). For Gil (2008), the questionnaire contributes to the research because it is more viable for data collection. It is a tool used for this purpose, based on remote teaching by a set of questions, which need to be answered with the researcher's participation. Participants were informed about the purpose, objectives, risks, and benefits of participating in the research. Soon after being invited to participate in the investigation, they were given to the participants by guaranteeing total security and confidentiality regarding

their identity and the information provided, stating that these were used only for scientific research purposes.

## **2.4 Ethical aspects**

The answers to the questions were transcribed in full, as they were answered to know their essence. The researcher was responsible for reading, interpreting, and analyzing the data according to content analysis techniques according to Bardin (2006). Data analysis consists of verifying the set of procedures related to communication. Its purpose is associated with both qualitative and quantitative indicators.

## **2.5 Scientific-Technological Method**

The general structure of the research was developed through the basic steps of the Scientific-Technological Method (Nascimento-e-Silva, 2019). The steps were: structuring the guiding question, investigation and data collection, data organization, and response structure. Thus, the method articulated the entire context of the work.

# **3. Results and Discussion**

## **3.1 The teaching-learning process and its challenges**

Society and its citizens interact with knowledge through different means. It uses the educational process through the knowledge acquired in the classroom and put into practice. Through them, the human being tries to understand the universe around him, the phenomena, and the events. The teaching-learning process participates in scientific and technological development with significant specific contributions, whose consequences have an economic, social, and political scope. Cultural tradition spreads knowledge based on a scientific point of view or based on remote teachings in popular beliefs (Nascimento, 2010). However, education remains content-centered, with no connection with students' daily lives, and is based mainly on lectures. Teachers tend to transmit content, and students, in turn, have a passive behavior in the process and perform mathematical calculations instead of interpreting phenomena (Scorsatto et al., 2015).

For Rodrigues and Freire (2011), the teaching-learning process aims to study nature, society, and relationships with the world, with experimentation as a strong ally, as humanity has often sought to understand nature and its phenomena through the foundation of innumerable knowledge. With this, the educational process must build a vision focused on forming a contemporary, active and solidary citizen with instruments to understand, intervene and participate. Therefore, in this matter, it is necessary to instigate a set of specific skills that the student needs to realize so that he can deal with natural and technological phenomena. These phenomena are present both in their immediate daily life and in the understanding of the distant universe. It is necessary to understand its principles, laws, and models built by reality (Lima, 2011).

## **3.2 Education and technology in the pandemic**

As can be seen, the relationship between technology and education is not easy, as it needs to break down the barriers between tradition and modernity. It is necessary to connect what is seen in schools with what the digital world presents through ICT (Information and Communication Technologies). ICTs are increasingly integrated into teaching and learning processes, allowing people to acquire knowledge (Santos, Alves & Porto, 2018). Integrating digital culture as an educational tool with traditional teaching requires a reorganization of teaching practice, as several demands remain for this adaptation (Habowski et al., 2020). In Brazil, the use of technological products in primary education has intensified with the Covid-19 pandemic, a force that can have complex implications for the multiple intertwining of Brazilian education. The first reflection is on "social isolation" mediated by digital network technologies.

Life, audio, image, and sound are all mixed up. Preparing the entire school community to adopt technology doesn't

happen very quickly. Remote teaching has been traumatic and reactive to any technology-mediated education, a dynamic that significantly undermines responsible innovation in online cultural education (Santos & Santinello, 2020). Teachers, students, and guardians create record-time strategies to respond to large-scale and unidirectional teaching demands. Investing in teacher training is an excellent option to start an effective transformation, valuing these critical actors.

Governments need to invest in training so that teachers can keep up with changes and the pace of technological advances. Teachers must have experience with existing technologies and the know-how to use them in practice. Schools must have adequate physical structures to allow these technologies in the classroom. School curricula need to integrate the use of new technologies in blocks of content across disciplines (Brasil, 2018).

Mobile, digital and connected technologies are also tools for students. Costa (2013) stated that they are not used to transmit knowledge but to enhance students' possibilities; with the excellent guidance of teachers, technology is now more than a tool for teachers to teach; it is a collective and collaborative device that facilitates the construction of learning. "Contemporaneity is marked by technological evolution. This sheds light on how digital technologies drive the productive and everyday world, which tends to be more prominent in the future" (Brasil, 2018, p. 473).

In the context of socially isolated classrooms, web conferencing has become an alternative way for teachers to meet with students. This resource allows the development of lectures of equal importance. However, if they are extensive, they can cause fatigue and inattention to students who, in most cases, will not focus on the class. With this, on the one hand, we have the teacher who strives to teach in a minimally meaningful environment. On the other hand, students arrive at virtual classes with their cameras and microphones turned off. This classroom format leaves teachers and students unmotivated by the results.

For Backes (2012), we do not talk about distance education when we talk about education because, in the face of various types of education, distance education has a broader reach and has been considered an important watershed. But it needs significant adjustments. Educational terms in Brazil assume that teachers who used a positive approach in their face-to-face classes before the pandemic had fewer difficulties developing collaborative activities that enable creative authors.

### **3.3 Distance learning and its challenges and possibilities**

The Covid-19 pandemic forced social isolation. Teachers needed to change their habits and remodel themselves not to harm teaching. In Brazil, all schools were closed in March 2020 (Rodrigues, 2020). Teachers had difficulty transferring methodologies and pedagogical practices from physical to remote space. This new reality forced students and teachers to adopt other digital tools. Digital Information and Communication Technologies (TDIC) needed to go beyond the applications and programs available by the Education Department of Brazilian municipalities and states (Silva, Andrade & Brinatti, 2020). In this sense, according to the guidelines of the Ministry of Education, public and private schools use digital resources to achieve the skills and abilities proposed in the national base (BNCC) during the pandemic. In Brazil, a country characterized by the autonomy of federated entities marked by cultural diversity and profound social inequalities, teaching systems, and networks must build curricula. Schools need to develop teaching systems and networks that must create curricula. Schools need to develop pedagogical practices that consider students' needs, possibilities and interests, and linguistic, ethnic and cultural identities" (Brasil, 2017, p. 15).

Technology and knowledge of pedagogical content (CTPC) are related to the need for more significant interaction between students and teachers in the face of remote teaching and the search for powerful technical tools for work. The CTPC is extremely important for the teacher in the use of technology. It is chosen by the student and the teacher according to their view (Oliveira et al., 2020). It requires knowledge to use it and teaching techniques to express concepts constructively, but technical solutions may vary according to the characteristics of the discipline and the type of course. With the simple adoption of the site, these limited applications do not allow the content of books, notebooks, and lectures to be transferred to computers and

cell phones.

According to Rodrigues (2020), the most used resource by teachers is WhatsApp, as it is easy to use. In addition, many students already have cell phones that they can use in the classroom or use the device of their parents or family members. However, Google Classroom, which is Google's platform for managing school activities, is also used by teachers as a methodological resource to assist in classes during the pandemic. According to Oliveira et al. (2020), it is necessary to have an email account in Gmail to access digital tools. In the virtual classroom (Google Classroom), the teacher can add students according to grade and class. He can use tools to deliver events, videos, PDF materials, and text editing in the virtual room. Teachers manage all materials and learning resources and can guide and supervise student activities.

### **3.4 Remote Teaching: challenges faced by teachers**

Hodges et al. (2020) explained that distance education as an emergency refers to temporary changes in content to be streamed from alternative offers due to the current recurring Covid-19 crisis. Moving from face-to-face teaching, where physical interaction is possible, to remote education has challenged both parties. "There is, therefore, a need to adapt face-to-face teaching to emergency distance learning, which is often confused with distance learning (Remote Teaching), but there are some critical factors that differentiate the remote education model from distance learning.

In distance education, teaching is shared with other specialists, while in remote teaching, teachers are responsible for producing the lessons from content to video. In response to a health emergency that shook the education system, distance learning emerged. Therefore, this approach allows students to maintain educational activities to close learning gaps. According to Arruda (2020, p. 266), "distance education is an important form of teaching to maintain connections between students, teachers, and other professionals." However, remote teaching is only a temporary solution and will soon be replaced by face-to-face teaching. The objective of remote teaching is "to provide temporary access to educational content to minimize the impacts caused by social isolation in this process" (Joye, Moreira & Rocha, 2020, p. 13). It remains a challenge for educators to prepare, present, and speak about different topics using different resources and languages. To face these challenges, Feitosa et al. (2020) pointed out that distance learning requires teachers to invest more time, forcing them to work overtime on weekends.

Still addressing the challenges faced by teachers, planning stands out. The elaboration of lesson plans for teaching, whether for any discipline in distance education, requires special care, as some students are afraid of incomprehensible subjects. This difficulty often leaves students powerless for not understand what is being taught, resulting in learning difficulties.

Resources benefit each student's intellectual and social development (Dorneles, 2012). The discussion on processing techniques for teacher training is essential for implementing them in the school environment. It is necessary to prepare teachers for training sessions. Thus, institutions must incorporate technology into their undergraduate curricula, as universities have a responsibility to develop professionals who can respond to the changes brought about by technological advances and explore the potential of such technologies. According to Leal (2020), given the new reality brought about by the pandemic, the limitations in the teaching process become more visible as this moment shows how social inequalities can negatively impact the learning process of students who are in a situation of economic fragility. Discourses on remote education reveal that students from disadvantaged social classes struggle to continue the school year in this context of social isolation. They do not have computers, smartphones, tablets, or internet access.

Remote learning is different from face-to-face teaching. It is a temporary, emergency form of instruction designed to continue lessons, reduce student learning loss, and provide education through an instructional platform. Given the circumstances experienced due to the pandemic, educational institutions and teachers need to adapt and improvise, so this type



of teaching was inserted. According to Silveira et al. (2020, p. 38), "distance education is being applied as an emergency way to solve a hitherto unexpected situation. The Pedagogical Projects of Teaching Institutions were not built to deal with the distance modality".

They were keeping education running. During a pandemic, complete social isolation requires emotional balance and good practices to maintain healthy physical, mental and financial health. Therefore, technology is essential in distance learning models, and teachers are often discouraged and disappointed with the lack of knowledge and complete mastery of the tool. More attention is needed because of all this. After students and teachers migrated to virtual environments, after the suspension of face-to-face activities due to the Covid-19 pandemic that affects the world, virtual tools previously used only to support the learning process became a reality overnight. For Moreira and Monteiro (2012), the difficulty of teacher training in the field, even in the pre-pandemic period, was due to the "lack of almost permanent training in digital technologies, in which innovations are changes in teaching practice" (Moreira, Henriques & Barros, 2020, p. 355).

However, it should be noted that emergency distance learning is different from distance learning (remote learning) and online education. Although the latter two are widely used synonymously, distance education includes digital tools, online systems, other delivery systems, and even printed materials (Arruda, 2020). In emergency distance learning, distance learning tools deliver courses usually taught in person but require remote applications for unusual reasons. In this case, the main objective is not to recreate a new educational model but to provide temporary access to educational content and support to minimize the impact of social isolation in the process (Mohammed et al., 2020).

Technology is relevant to the teaching and learning process, but it is necessary to highlight the difficulties and challenges those involved. Charnei (2019) points out that technology can be used in school activities, but teachers must be open to new teaching and learning possibilities. Moving away from face-to-face teaching driven by physical interactions between the audience and the physical infrastructure available to adopt remote education is challenging for students and teachers. Melo and Maia (2019) emphasize that teachers should be aware of digital technologies' possibilities in this context. Therefore, it is understandable that ICT can add motivating value to any teaching style.

Knowing that ICTs provide teaching and learning mechanisms, Pimentel and Nicolau (2018) emphasize that if the public does not have minimal access to these technologies, teaching must be carried out to prepare them for the future, in addition to basic subjects, but also for the construction of computational thinking. Due to the surprise of remote teaching, teachers unfamiliar with digital methods may struggle and reject new teaching methods. Understanding the difficulties and opportunities involved in the process is relevant to reflecting and intervening in the search for improvements in pedagogical or structural areas. Thus, this study aimed to collect comments from students and teachers experiencing distance learning to understand their difficulties, anxiety, and perceived opportunities.

Many challenges, especially in public schools, include various physical and emotional issues, physical space for learning, etc. Above all, there is a lack of affinity and insecurity for technology for teachers. When distance learning is offered, these students without access to the necessary technology are excluded, becoming another aggravating factor in the face of the pandemic and the conditions imposed and demanded by many of them (Stinghen, 2016).

The importance of home and school interaction during the challenging times of the current Covid-19 pandemic has led to some reflections on the insertion of distance learning. This connection between families and students is necessary because both families and schools know their realities and limitations. The objective is to think of ways to promote integration and harmony. "It is understandable that the family has an important role in supervising children's education. Family members face the challenges of managing the child's school follow-up time and professional and work activities" (Vigotsky, 2003, p. 9).

Activities in schools and daycare centers across Brazil are driven by the need to reduce crowds to reduce the spread of a virus that has created severe health complications and claimed hundreds of thousands of lives in Brazil and worldwide

(Mohammed et al., 2020). Among the difficulties families experience, the lack of time to help children with activities and the inability to use the computer stand out. Some families can perform recreational activities and/or interact with their children despite difficulties supervising school activities. As for changes in students' daily life behavior during the current period of social distancing, there were moderate to high levels of agitation, anxiety, depression, irritability, insomnia, crying, loss of appetite or compulsive hunger, and general disinterest in activities. Because of this, it can be concluded that the articulation between education and care is critical in the teaching process, allowing the re-signification of teaching practice in the distance modality.

Despite the interruption of face-to-face classes, the continuity of the school year in a year marked by a global pandemic brought unexpected challenges and weaknesses to the education system. It revealed successful and unsuccessful creative initiatives, all an emergency nature. However, the reality of a continental country shows that teachers and students lack technological equipment and internet access is non-existent or unstable. In these cases, the training process and teaching practice must be provided through the availability of materials. From north to south and east to west, teachers and students in Brazil need to reinvent themselves.

The context of distance learning made us understand that the involvement of parents and family members is significant in helping their children to learn properly. We know that the transition from face-to-face to virtual teaching involves several issues that technology is not and does not do. The teacher's dedication has become practically indispensable. In the midst of all this, barriers related to the failure of training in using technology for instructional use persist and the lack of adequate structures to work in virtual environments. Notably, with the pandemic, structural instability in education, already underway in the country, accelerated (Magalhães, Affonso & Nepomuceno, 2018). Teaching activities began in their homes, separating work from home care, household chores, and health care. During emergencies, teachers need to adapt and improve their skills in using emerging technologies in teaching, even as the pandemic highlights training restrictions.

It's not easy for most students. Worried about-facing new obstacles at such a delicate time, with uncertainties and insecurities, parents need to support their children and make them feel safe. When thinking about the post-pandemic future, especially the future of education, what will happen to the use of technology in the classroom? How will these artifacts be appropriately used in teaching, and what will students learn? (Magalhães et al., 2018). Observations on blended learning revealed the importance of this teaching process, as it provides more significant interaction between teachers and students. Therefore, the teacher has a fundamental role, as technology is increasingly present in educational environments, and he is one of the protagonists of this process.

### **3.5 Challenges of transposing pedagogical methodologies and practices from the classroom to the remote environment**

The challenge of replacing face-to-face teaching with teaching in another modality is based on distance learning in socio-historical and cultural theories. It clearly shows that the relationships among the social and cultural factors affect the interior of psychological relationships that can be internalized in knowledge (people among people). The acquisition process occurs in the interaction between the subject and the object. Thus, it produces internal (individual) cognitive psychological relationships (José, Soares & Carmo, 2020; Rosa & Nascimento-e-Silva, 2022a). Therefore, students acquire pseudoscientific knowledge in everyday experience and acquire scientific knowledge at school, internalizing concepts in the teacher-student relationship.

Interaction is a crucial factor in the educational process, both in face-to-face and online teaching. The teacher who privileges only lectures may be doomed to an unsustainable situation due to the lack of interaction with students. Therefore, it is essential to break some current education paradigms in which the teacher is the center of actions, and the student is a mere receiver of information. "It is necessary for the student to be involved in this process of acquiring knowledge so that it is



possible to shape their pseudoscientific knowledge to make it known as scientific knowledge" (Oliveira et al., 2020, p. 7).

Considering the possibility of acquiring knowledge and information through digital media and taking advantage of innovative pedagogical practices by teachers to integrate students into the teaching process, the insertion of information and communication technologies is a powerful tool that allows this interaction and approach (Soares, 2021). It is possible to transform face-to-face teaching into distance learning, as long as there is sufficient technical training to allow teachers to apply the teaching action methods in situations not real in education.

For Rodrigues (2020), distance learning results from meticulous long-term planning and system design, but distance education brings urgent situations that can be resolved immediately. Due to minimal resources and the shortest planning time, it is not a long-term education option. According to Soares (2021), it is essential to consider that the use of ICT in educational practice without changing the teachers' teaching attitude will not constitute a necessary change in the educational process. What needs to be emphasized is that these ICTs needs to be accompanied by a difference in the teacher's mindset, leading them to adopt the concept of constructivist practice in the classroom. Through the social relationships provided by the training courses, participation in virtual learning communities, events, and congresses in the educational area, the teacher establishes the so-called interpsychological relationships. In reflection and apprehension of scientific concepts linked to new educational practices, internalization occurs through the so-called intrapsychological relationships (Carneiro, 2008).

Educators need to constantly seek their professional development through various methods provided by the digital culture itself, such as virtual or face-to-face academic activities, virtual learning communities, educational forums and chats, educational blogs, etc. (Santos, 2011). Communicating ideas with peers in education in these environments ultimately offers teachers the opportunity to internalize the scientific concepts needed to understand who a remote teacher is, the changes in distance learning students, and the interpersonal relationships necessary. Occasionally, they overcome the difficulty of transforming their educational practice from face-to-face to remote teaching.

#### **4. Discussion**

The pandemic caused by Covid-19, with the necessary consequences of social distancing measures, first forced schools to suspend classroom activities. In this sense, public and private education networks face many challenges regarding the feasibility of the remote teaching process. One of the main challenges is acquiring equipment (computers, smartphones, tablets, etc.) and high-quality access to the internet. It reveals the nation's trauma: the terrible social inequality. According to Soares (2021), Brazil is considered one of the democratic countries and one of the most unjust, few people own most of the wealth, and most live in extreme poverty. Because of this, the research subjects were asked: what are the main challenges you face in the transposition of pedagogical practices from the classroom to the remote environment?

*In the beginning, it was extremely difficult because as I needed to do math and equations, I had to acquire materials to help the classes and a platform that would satisfy this objective, not to mention the absence of most students who were very resistant to such a change (P.1).*

*Lack of resources available at school and lack of internet access for most students (P.2).*

*First was the resources used, managing to keep the student's attention in class (P.3).*

*Lack of specific equipment to transmit classes (P.4).*

*The board, I got used to using a lot as a means of interaction (P.5)*

It is important to note that teachers can use revolutionary tools to monitor students more personally, and students begin to become more prominent in the learning process. However, like any significant change, the digital transformation of

education has also brought several new challenges for schools. Although teachers, administrators, and parents must be familiar with new technologies, students need more autonomy to learn.

Cordeiro and Garcia (2019) and Andrade et al. (2020) point out the difficulties and challenges faced by these professionals, whether due to the complexity of their methods of using technology, or due to the lack of adequate initial and continuing training, or when there are not enough classrooms in practice. Teachers reinvent themselves every day despite the obstacles, bringing content to students interactively and interestingly. At the same time, new educational technologies are emerging to help teachers support students remotely. In the same question above, the teachers reinforced that:

*Low interaction with the student, lack of focus, and transmission difficulty due to access to the internet for some students. (P.6).*

*Absence of the internet signal and equipment for the reception of the data by the students. (P.7).*

*Practically, the absence of practical classes. There was an attempt to simulate practices with video but with reduced pedagogical success. Even the theoretical demonstration became more accessible because there was no feedback from the students. (P.8).*

*Students' access to the internet. Domain and interest on their part to learn and use new technologies to facilitate teaching. (P.9).*

*Achieve student engagement and lack of necessary resources for students. (P.10)*

One of the difficulties encountered with remote teaching was the lack of interaction with students. New methods and strategies were applied in emergency remote classrooms to increase student interaction and participation. The inequalities and difficulties of students in accessing the internet and modern digital devices and resources were also cited as obstacles to remote teaching. Teachers could feel the lack of technological inclusion due to the absence of students in virtual classes. Most teachers from Public Institutions did not have training courses or meetings, being left without institutional support and support during the emergence of remote classes. However, teachers from Private Institutions found help and support in their institutions to transpose this unprecedented pedagogical moment, from face-to-face to remote, with the availability of courses and training meetings for the use and adaptation of digital platforms (GARCIA, 2019, p. 09)

With the development of remote teaching, it has become necessary to adopt learning strategies to help teachers and students. Education managers must generally understand that this teaching is entirely different from face-to-face education. Therefore, it depends on other practices. A more dynamic and interactive curriculum is implemented, eliminating the "bubble" of unilateral teaching. Only teachers have information about the subjects and transmit these concepts in descriptive models. In this way, they were asked what strategies and tools were used by their school for remote teaching.

*Digital table, Microsoft teams, meet, and internet cabling in the rooms. (P.1).*

*Classes via Meet, Google Classroom, Whatsaap, and Youtube channel to post classes. (P.2).*

*We try to get as close as possible to face-to-face reality, following class schedules and using Whatsapp, Youtube, and Google Meet tools. (P.3).*

*Live classes broadcast on Microsoft Teams (P. 4).*

*In fact, it was very much up to us teachers. We basically use cell phones. (P. 5)*

It is worth noting that, currently, it is essential that teachers use differentiated and meaningful didactic tools that favor the teaching and learning process. It is necessary to have resources that provide more than content to students. To have a

system that can correctly monitor the student's progress and identify any problems or difficulties. Given the current situation of our planet in the expansion of the distance learning system in the context of the covid-19 pandemic, it is essential to reflect on the pedagogical practices being developed in the primary education classroom. According to Motin et al. (2020, p. 248), remote teaching has the potential to be a form of teaching through the transmission of classes in real-time. The proposal is that teachers and students of a course have interactions at the same moments in which the classes of the discipline took place in the face-to-face model. With this dynamic, it is possible to maintain the routine of classes in a virtual environment accessed by each one in different places. For remote classes, it is necessary to use digital platforms for this meeting by "screens."

It is essential to highlight that in transforming face-to-face classes into remote classes, new methods, new processes, and new concepts and paradigms can expose the gaps and weaknesses of the teacher and teaching and help transition to new possibilities. In the same question above, the teachers reinforced that:

*Whatsapp, Youtube, and Google Meet were used. In all cases, the class was previously prepared using a slide and then transmitted through one of the options above. (P.6).*

*The school did not have and still does not have any operational condition to provide remote teaching. (P.7).*

*Classes by Zoom or Meet, using a graphics tablet, slides, and virtual board. Use of possible active methodologies (P.8).*

*WhatsApp and printed material (P.9).*

*Due to the lack of internet for most students to watch video classes, classes had to be via WhatsApp. (P.10).*

Thus, in the pandemic scenario, where schools were closed and students did all their activities at home, digital tools for distance learning are essential to enable the continuity of learning and ensure that it evolves. Digital tools help students develop practical digital skills that can be applied to everyday tasks inside and outside the classroom and allow them to explore the world through communication and information.

Teachers and students face significant challenges: lack of student interest, equipment, and support from parents and educational institutions. The teacher is led to develop a creative personality and use different strategies to develop their activities. For students, the main difficulty is the lack of technical equipment such as internet devices, notebooks, and computers. In this sense, the question was: what are the main challenges you have faced in the planning and operation of your remote classes?

*The main immediate difficulty is the direct dependence on the internet available (P. 1).*

*Students without access to the internet (P. 2).*

*The feedback from the students, many ended up relaxing during this period, delivering activities late or not at all, which significantly affects teaching planning (P. 3).*

*Low student participation in classes makes it difficult to perceive the evolution of learning (P. 4).*

*It's a totally different environment for the practice; the real challenge was to operate the means of communication. (P.5)*

"Not all Brazilian educators had adequate training to deal with these new digital tools. They need to reinvent themselves and relearn new ways of teaching and learning" (Cordeiro, 2020, p. 10). It is important to highlight that teachers pointed out that students' difficulties with the proposed activities include lack of commitment, lack of motivation, delay in returning to activities, lack of parental supervision and organization of learning plans, and difficulty accessing the internet. The

only accessible technical resource is the cell phone most of the time. In addition to distraction, difficulty in understanding and absorbing the content, and lack of a learning environment, other adversities that affect student performance and the lack of motivation and family supervision contribute to aggravating learning difficulties in the remote classroom.

The education sector is taking many actions to deal with the coronavirus. With schools closed, it is essential to allow and encourage society to continue to be educated during this time, as this remains an uncertain time, particularly for in-person events in many places. "The moment is one of possibilities and uncertainties, but at the same time, the achievements and improvements obtained can bring good practices and influences in the face-to-face return. The constant adaptation in remote teaching is present among students, teachers, pedagogical staff, and the entire school community (CORDEIRO; 2020, p.09).

The presentation and elaboration of different assessment systems are necessary to reflect on more effective and meaningful teaching models and assessments, reduce the traditional concepts of verification and benefit the training of students, aiming at their global development and not just a classification. Finally, in addition to emphasizing the attempts to make the evaluation system fairer and more balanced during the pandemic, the exposition of the results found opens space for reflection on qualifications and the improvement process. In the same question above, the teachers reinforced that:

*The evaluations were made through the participation of the students—the resolution of works sent by Whatsapp or questionnaires prepared in Google forms. (P. 6).*

*The only way was to send works with questions answered and returned by the students. (P. 7).*

*There was also no interest in the students, as they knew they would be promoted. (P. 8).*

*Participation in online discussion circles, activities diagnosed by Google Forms, and homework delivered on time. (P. 9).*

*Participation in classes and questionnaires (P. 10)*

Students' participation in experiments enriches the learning process, but they need a supportive environment, the learning laboratory. Dorneles (2004) conceptualized these environments as spaces intended to express themselves and communicate between subjects who have different learning rhythms and can learn differently from the classroom. It can be seen that this concept is in agreement with the meaning of blended learning. In this sense, it was asked how practical activities are carried out with experiments in remote teaching.

*Totally virtual with simulation (P.1).*

*The students reproduced a specific experiment supervised by me. After the conclusion, we have a meeting time via Meet, where he presents his work to the class (P. 2).*

*When we manage to do experimental practice, we always work on each student's material at home (P.3).*

*I mainly did not carry out experimental activities. (P.4).*

*Most of the time, the experimental practices were done in a remote environment using online simulation platforms. (P.5)*

It is important to note that remote experiments represent real devices interconnected by actuator circuits, and their interaction takes place through the internet. In other words, dealing with remote experiments is a real experience because they have physical elements that interact through virtual commands. The connection with the experiment is direct, and the answers obtained are immediately online. Remote labs use physical means but remotely facilitate access to experiments. According to Pierri and Lima (2016) and Rosa and Nascimento-e-Silva (2022b), students' contact with practice in the teaching/learning

process is essential. However, it is not always possible to provide physical space for the training or even obtain resources to purchase equipment for the construction of a laboratory. Although the institution has an on-site laboratory, the resource can only be used by the institution where it is located or in its surroundings. In the same question above, the teachers reinforced that:

*There was also an episode where I recorded an experimental practice on atmospheric pressure and broadcast it to students through Googles Meet. (P.6).*

*I provided links to simulators for carrying out virtual experiences. They were not carried out. I believe that the students did not make use of them. (P.7).*

*They practically didn't exist, and when they did, it was with ready-made YouTube videos. (P.8).*

*By simulators with Phet and instructing students to build experiments with subjects (P.9).*

*It was not possible to perform this type of activity (P.10)*

The changes brought about by the pandemic in the learning process reinforced the importance of teachers as intermediaries in the teaching process, as students are not self-taught, so during the pandemic, teachers had to cherish this mediating role for the progress of remote classes. It is necessary to reinforce that there are several challenges to be overcome in this form of teaching, from the capacity of technical resources to the emotional problems that they are triggering. In this sense, it was questioned how remote teaching made the teaching-learning process difficult for its students.

*Yes, because many of them, being alone, increased their laziness and almost total disregard for their studies (P. 1).*

*Yes, the difficulty of accessing the internet linked to the students' bad habit of not having time set aside for individual studies has contributed significantly to the challenges we have faced regarding the effectiveness of the teaching-learning process (P. 2).*

*Indeed, most of them relaxed the learning process, became very loose, and did not have a home study routine (P. 3).*

*They do not attend classes and only care about the tests. Indeed, many only copy the answers from the internet in the evaluations. (P. 4).*

*I believe so; however, I have no grounds to support such a point of view (P. 5).*

It is worth mentioning that, at this moment, teachers need to break barriers, get out of their comfort zone and seek new information and knowledge to meet the needs of this new era of education in which we live. Charnei (2019) mentioned from the perspective of using technical resources as a working tool that it is possible to develop remote classrooms using technology. Still, teachers must be open to appropriate new knowledge. It is noted that the technical resources enable the development of distance courses. But this can be a factor that promotes social exclusion, as Brazilian society experiences excellent social inequality. In the same question above, the teachers reinforced that:

*For sure! As answered in the previous question, the lack of interaction caused demotivation and disinterest. It is straightforward to lose focus and seek other tasks in an online class. In most classes, many students marked a false presence, and all this caused, in general, stunting during the pandemic period (P. 6).*

*Children of all ages return to classrooms with difficulties reading, interpreting, and performing basic math operations. Therefore, the educator must identify these possible gaps to understand the student in the best possible way (P. 7).*

*Yes, due to lack of equipment. According to the state education department, chips, tablets and chomebooks were distributed to teachers and students due to government advertising, but I have not heard of it. (P. 8).*

*Too much. The practice became unfeasible, and the lack of visual feedback, combined with less efficient assessments, greatly hindered learning. (P. 9).*

*Yes, in all subjects. The student would need to have at least a study routine and be disciplined to face remote teaching. It does not happen in practice with many students due to age, lack of adequate space, guidance, and encouragement from the family throughout the adolescent's academic life (P. 10).*

Students face challenges when dealing with remote teaching during the pandemic. After all, maintaining teaching requires a lot of discipline, responsibility, and commitment to deal with ineffective learning villains. The internet offers a wide variety of content that can distract students of all age groups and educational levels. Given this, the challenge for educators is to deliver compelling content that connects with the reality of students. Not all students can access remote courses because they cannot access resources. Therefore, it is essential to highlight that the internet is one of the resources that virtual platforms can use. However, most institutional audiences do not have high-quality internet to carry out activities in remote classrooms, as, most of the time, they can only access mobile data.

## 5. Conclusion

The analysis showed that the most significant difficulties encountered by teachers during remote teaching in the Covid-19 pandemic were: 1) lack of quality internet access for both teachers and students; 2) lack of motivation; 3) lack of adequate access to technological issues; 4) overwork; 5) lack of interaction with students; 6) socio-emotional issues: uncertainties, anxiety, insecurity. In short, teachers had to learn to use cell phones and computers as teaching tools. What used to be used as a means of entertainment has now been used as a means of work. It is noteworthy that many teachers reported not having had support from the municipal secretariats regarding training to start online classes.

Teacher exhaustion was also a factor listed in the research. Producing differentiated material for remote classes and even pedagogical material, such as planning and evaluations, made the teacher's routine even more tiring. The physical and psychological fatigue shows how the teacher was overloaded during remote teaching. "Working from home" is no less exhausting than working on school grounds. Just as it is not for most teachers, all the difficulties raised during the research are in view. We consider that the Covid-19 pandemic, in addition to bringing numerous challenges, only emphasized how social inequality is present. Digital citizenship is not a reality for this already discriminated public. We also consider that government support is of great importance, both now and in the future.

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