

Remote teaching in the Mathematics degree course at the Federal University of Acre: perspectives, difficulties and future possibilities

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Abstract: This research aimed to identify potentialities and protect from remote moments between professors and students of the Mathematics Degree Course at the Federal University of Acre during the pandemic moment, as well as actions that can be worked on by the subjects for a “next” post-pandemic. As methodological resources and source of information, teachers and students were consulted through an intuitive command to identify difficulties/concerns and possibilities with respect to development actions in the period called Emergency Remote. This investigation was qualitative in nature, as I understand that I deepened the understanding of the social group in question and its trajectory does not require quantification. The information was processed in the light of the Philosophy of Mathematics Education, Critical Mathematics Education and Digital Technologies in Mathematics Education. The quality of the students' internet and the possibilities for evaluating students by teachers represented the greatest difficulties encountered during the pandemic.

Keywords: Mathematics Education. Digital Technologies. Covid-19. Emergency Remote Teaching.

Enseñanza a distancia en la licenciatura en Matemáticas de la Universidad Federal de Acre: perspectivas, dificultades y posibilidades futuras

Resumen: Esta investigación tuvo como objetivo identificar fortalezas y debilidades de momentos remotos entre profesores y estudiantes de la Carrera de Matemáticas de la Universidad Federal de Acre durante el momento de la pandemia, así como acciones que pueden ser trabajadas por los sujetos para un “próximo” post- pandemia. Como recurso metodológico y fuente de información, se consultó a docentes y estudiantes a través de un cuestionario con el fin de identificar dificultades/inquietudes y posibilidades con respecto a las acciones desarrolladas en el período denominado Emergencia Remota. Esta investigación fue de carácter cualitativo, pues entiendo que profundizar en la comprensión del grupo social en cuestión y su trayectoria no requiere cuantificación. La información producida fue analizada a la luz de la Filosofía de la Educación Matemática, la Educación Matemática Crítica y las Tecnologías Digitales en la Educación Matemática. La calidad del internet de los estudiantes y las posibilidades de evaluación de los estudiantes por parte de los docentes representaron las mayores dificultades encontradas durante la pandemia.

Palabras clave: Educación Matemática. Tecnologías Digitales. Covid-19. Enseñanza Remota de Emergencia.

O ensino remoto no curso de licenciatura em Matemática da Universidade Federal do Acre: perspectivas, dificuldades e possibilidades futuras

Resumo: Esta pesquisa objetivou identificar potencialidades e fragilidades entre professores e estudantes do curso de Licenciatura em Matemática da Universidade Federal do Acre, durante

o período pandêmico, bem como ações que poderão ser trabalhadas pelos sujeitos para um “próximo” pós-pandemia. Como recurso metodológico e fonte de informações, foi aplicado um questionário aos professores e estudantes no intuito de identificar dificuldades/inquietações e possibilidades a respeito das ações desenvolvidas no período nomeado como Remoto Emergencial. Esta investigação teve caráter qualitativo, pois entendemos que, para aprofundar a compreensão do grupo social em questão e sua trajetória não é necessária uma quantificação. As informações produzidas foram analisadas à luz da Filosofia da Educação Matemática, da Educação Matemática Crítica e das Tecnologias Digitais na Educação Matemática. A qualidade da internet dos discentes e as possibilidades de avaliação por parte dos professores representaram as maiores dificuldades presentes no momento pandêmico.

Palavras-chave: Educação Matemática. Tecnologias Digitais. Covid-19. Ensino Remoto Emergencial.

1 No one expected this: did the Federal University of Acre stop?

Since the first quarter of 2020, in-person activities in schools and universities — all over the world — have been halted due to the Covid-19 pandemic. At the Federal University of Acre (Ufac), the interruption took place from March 17th of that year, and, in September, trainings were organized for professors to teach classes remotely. In a first stage, a semester in a special academic period began in October 2020, named Emergency Remote Education (ERE). Engelbrecht, Llinares and Borba (2020) highlight that, during this period, transformations occurred in the Mathematics classroom, structured and mediated, to a large extent, by the internet:

Since the 1970s technology has changed mathematics education and it will certainly be a major factor in how education in the future differs from education today. Educators realise that we need to rethink the entire model of education and redesign it so that it is more student-centred (p. 825)

For this implementation, numerous discussions were held at the University Council, considering aspects such as: training and access to virtual environment platforms; provision of equipment and internet for students and teachers; copyright in relation to synchronous classes available on the web; as well as the loss in the quality of teaching when working remotely, and the gain in returning — in some form — to classes with students. At this first moment, the return was established as optional for teachers and students, so that they would be exempt from possible failures in their student records. Furthermore, a Complementary Academic Period took place between February 15th and March 20th, 2021. Regarding necessary adaptations in the educational field, Engelbrecht, Borba, Llinares and Kaiser (2020) highlight:

Educators realize that we need to rethink the entire education model and redesign it to be more student-centered. This means adopting new technologies, but it also means giving up certain attitudes about what constitutes educational success (p. 825)

With the intensification of the pandemic moment (increase in the number of new infections and, mainly, deaths), remote activities became part of the calendar for the 2020 academic semester, which began at the end of March 2021. Engelbrecht et al. (2020) highlight that 2020 should be remembered as a year with numerous changes in the educational scenario around the world:

COVID-19 has brought to the foreground the realities of the inequalities that exist in many countries. Not only has this been made more obvious within institutions, but also between institutions, as different universities and schools have different capacities and levels of preparedness to resume their academic and schooling activities. Students with access to digital devices and internet may not be the majority in many countries. COVID-19 may prove to be a turning point for these countries to confront the inequalities, with a view to putting in place redress mechanisms that will change the state of poverty and inequalities worldwide (p. 823).

With the decrease in the number of cases, other possibilities were established for the second half of 2020 (taught in 2021), such as a hybrid or in-person return following approval by the board of each course and the gradual resumption of educational and administrative activities. Furthermore, in November 2021, almost eight months after the start of vaccination in Brazil, in view of the reduction in hospitalizations and deaths caused by the SARS-CoV-2 virus, some education networks and Public Higher Education Institutions (IPES) planned the gradual return of in-person activities.

According to Resolution No. 52, of October 19, 2021, of the Ufac University Council, which highlights the recommendations of the Covid-19 Prevention and Containment Committee for the gradual and safe return of in-person academic activities of teaching, research and extension, it will be necessary to apply the provisions of CONSU Resolution No. 19, of January 5, 2021, namely:

Art. 2 Authorize the gradual and safe return of in-person academic teaching, research and extension activities within the scope of the Federal University of Acre.

§ 3 For academic research and extension activities, the return to in-person activities must be gradual and safe, in accordance with the normative guidelines issued by the corresponding department.

Art. 3 In-person academic events may be authorized by the corresponding department's office, as long as biosafety protocols and guidelines from the Ufac Coronavirus (Covid-19) Prevention and Containment Committee are observed.

Art. 4 Collegiate meetings must prioritize the remote format, through the use of distance communication tools.

Art. 5 The Rector will maintain permanent monitoring of the public health emergency situation and epidemiological conditions, observing the guidelines and recommendations of the Ministry of Health, the Coronavirus Prevention and Containment Committee (Covid-19) of Ufac and the authorities of the state of Acre. (Ufac, Consu Resolution no. 52, of 10.19.021).

From collegiate meetings at Ufac, such as those of the Mathematics Teaching course); the assemblies of the Center for Exact and Technological Sciences (CCET); and the University Council (CONSU), as well as readings of research carried out, concerns arose in the university community about how to understand and record the actions — especially educational ones — established to date, in the field of educational research in Mathematics.

As highlighted by Borba (2021), Covid-19 changed educational programming, in particular, the methodology of Mathematics teaching and learning processes. The author also highlights that digital technologies, the Philosophy of Mathematics Education and Critical Mathematics Education play an important role as already established trends in Mathematics Education, being strongly present as theoretical references for analyzing educational — and also administrative — actions. — which have occurred since remote teaching was established. Borba (2021) also highlights that

We moved online because Covid -19 is caused by an invisible virus; there is no cure; and, without a clear pattern, it can cause death in one person within days and cause almost no symptoms in another. Additionally, a person can be infected and transmitting but asymptomatic for several days and then suddenly become very sick. Although not all “leaders” followed their advice, most experts and the World Health Organization (WHO) recommend social isolation as the main tool to control, slow down and, hopefully, stop the pandemic. All of a sudden, teachers and educational managers at all levels were put under pressure to develop online (mathematics) education, as the virus can be transmitted physically, through contact between humans and between humans and non-living things. (p. 2).

The author points out that humans are connected to the virus, and it becomes important to “study how online Mathematics Education happens for children when the home environment and inequalities in access to digital technologies take on such significant roles as classes move to be online” (Borba, 2021, p. 1). Given this statement, we expanded the discussions to the social environment, asking: how social inequalities emerged from the use of technologies as interaction resources for teaching, and how Mathematics Education happens for children when the home environment is unsuitable for online studies? And addressing the environment of this research: how did students and teachers of the Mathematics Teaching course at the Federal University of Acre establish the production of mathematical knowledge during Emergency Remote Teaching?

Other questions are established in Borba (2021), such as: what is the relationship between Covid-19, Mathematics Education and Digital Education? How digital technologies — which have changed the way we travel, eat, buy, produce etc. — can modify the classroom? If the health crisis lasts a long period, could digital technologies generate alternative possibilities for implementing Mathematics Education? Even without sufficient research on the use of online resources for children, is it possible to implement Mathematics Education for students of this age? If the health crisis lasts for a short period, will we be able to prepare ourselves technologically for the next time of health calamity? These are necessary questions when considering what was experienced during the pandemic.

In addition to the notes made by Borba (2021) in the previous paragraphs, which in a certain way raise concerns, it is understood that it is possible to investigate new (in the sense of different) technological innovations that emerged during these almost two years in which teachers and students interacted remotely (Bicudo & Garnica, 2011); which mathematical — and non-mathematical — discussions were debated at a time when fear and the loss of family and friends became something so discussed and widespread in media such as newspapers and, mainly, social networks (Bicudo & Garnica, 2011; Skovsmose, 1994). Bicudo and Garnica (2011) still punctuate:

Assuming Mathematics Education as a “movement” implies accepting that, from the first moment it was decided to teach someone something called “Mathematics”, an action of Mathematics Education began to manifest itself. As the institution “university” is immersed in the world, this “movement” is also subsequently included in the practice of formal academic research. Conceptual formalizations (p. 2).

Rethink the classroom; possible models in order to avoid traditional and expository classes; and new words being disseminated in “webinars” such as: hybrid teaching, *new normal*, *synchronous*, *asynchronous*, *streaming* etc., have become part of a new daily life for teachers and students. The complexity of the flipped classroom, the models already implemented in other countries, such as hybrid teaching — rotation, flex, *à la carte*, enriched

virtual, etc. (Bacich, Tanzi Neto & Trevisani, 2015) — were brought closer to the pedagogical practices of teachers during the pandemic period. The possible resources for Virtual Learning Environments (VLEs) (video calls, *chats*, *podcasts*, *Canva*, games, online questionnaires, quizzes, etc.) were disseminated in training courses, shared among teachers (co-workers) and rethought in the classroom between teachers and students.

Faced with such concerns, this research was developed during the year 2022, investigating not only the pedagogical actions carried out during the remote teaching period, but also analyzing the possible transition from remote to hybrid and/or in-person, as well as the impact these moments for teaching.

2 Objectives and methods

With the aim of identifying potentialities and weaknesses of moments of remote interaction between professors and students of the Mathematics Teaching course at the Federal University of Acre during the pandemic moment, as well as considering actions that could be organized for a “near” post-pandemic, a bibliographic study was carried out on publications with research developed in the Mathematics Education scenario and related to the pandemic moment. During the period of offering courses remotely at Ufac, many doubts, fears, insecurities, concerns, etc., represented the feelings of people in the world, in particular, those who were inserted in the academic field. Thus, this research made a questionnaire available to teachers and students, who carried out teaching and learning actions during the period designated as Emergency Remote at Ufac.

Goldenberg (2004) highlights that, among the advantages of the questionnaire, there are: the fact that it is low cost; does not require so much skill in application; can be sent by post (today by email); can be applied to a large number of people simultaneously; the standardization of phrases ensures uniformity in measurement; individuals feel freer when expressing opinions, as there may be a fear of disapproval of their arguments or simply putting them in difficulties, and less pressure of an instant response, as they can be calm in their response. Goldenberg (2004) also highlights some points that can harm the research when using the questionnaire, such as: the low response rate; the inflexible structure in which it is not possible for the researcher to observe the feelings of those being researched; as well as the elaboration ability and availability of individuals to respond.

In the same questionnaire, specifically, we sought to: examine, based on the speech of professors who taught subjects in the Mathematics Teaching course, the difficulties, obstacles, resistance, adversities, etc. found during the teaching and learning processes during remote teaching; to analyze, based on the speech of students who developed studies in the Mathematics Teaching course, before and during the pandemic, the difficulties, obstacles, resistance, adversities, etc., encountered during the teaching and learning processes during remote teaching; to describe the difficulties, obstacles, resistance, adversities, etc. encountered during the teaching and learning processes during in-person or hybrid teaching.

In order to speed up the return of questionnaires (sent via email) by professor and students, subjects of the research, a report of the objectives was created, as well as the importance of the participation of those surveyed. Goldenberg (2004) makes some notes about sending questionnaires:

If the researcher decides to send a questionnaire by mail, they must not forget to write a strong appeal for the person being researched to answer it as soon as possible. For this to happen, a presentation letter explaining what you are doing, why you are doing

it and for whom is essential. The letter should be brief but leave nothing unexplained. The individual being researched needs to be convinced of the importance of their answer for the success of the research. It is important to guarantee anonymity: you should not ask for names or ask questions that facilitate identification. A good technique to facilitate the return of the questionnaire is to send a printed self-addressed and stamped envelope (p. 87).

Another specific objective of this research goes beyond the intention of interpreting the information recorded in the Mathematics Teaching course coordination database, in relation to the number of students who completed subjects taught remotely in comparison to those who completed the same subjects a year before the pandemic. This research does not aim to disclose specific information about professors and students, such as average or list of approved candidates, even if the Free and Informed Consent Form (TCLE) authorizes it.

As a mechanism to give credibility and validity to this research, we used data triangulation and the return to some subjects for such validation. Other investigations parallel to this, which may arise from Scientific Initiation (IC) advisees, students in Teaching Practice or Postgraduate courses, make up other elements of this research. Regarding data triangulation, Goldenberg (2004) points out:

The combination of different methodologies in the study of the same phenomenon, known as triangulation, aims to cover the maximum breadth in the description, explanation and understanding of the object of study. It starts from principles that sustain that it is impossible to conceive the isolated existence of a social phenomenon (p. 63).

Among students and professors, 10 people responded to the questionnaire (6 professors and 4 students), whose reports will be discussed in this text. The coordinator of this research understands that, as a professor of subjects offered in the Mathematics Teaching course during the pandemic period, he is also the subject of this investigation, since, in his teaching activities, he permeated meanings and experiences related to the production of student knowledge.

3 Results and Discussion

Borba (2021) emphasizes the production of mathematical knowledge during the Covid-19 pandemic, analyzing episodes that occurred during this period, in light of digital technologies, the Philosophy of Mathematics Education and Critical Mathematics Education. Thus, the notion of human-beings-with-media is revisited, from the perspective that the production of knowledge is collective and involves human and non-human actors, at this moment, SARS-CoV-2 and computers — smart cell phones (smartphones), graphics tablets, virtual environment management platforms, GeoGebra, CamScanner, Google Meet, social networks etc. — which represented some of the technological resources used by teachers and students during Emergency Remote Teaching. However, such technologies were not achieved naturally, as both teachers and students did not have certain skills in managing their resources. In this way, Kenski, 2012, p. 21 highlights that “man moves culturally mediated by the technologies that are contemporary to him. They transform your ways of thinking, feeling, acting. Their ways of communicating and acquiring knowledge also change.”

The need for working from home and management of such technologies, in order to guarantee the teaching and learning processes in Mathematics classes during Emergency Remote Teaching at Ufac, could be thought of as an opportunity to expand the reach of such resources by professors and students. However, the low quality of the internet; the lack of

equipment; having the whole family at home during classes that took place synchronously; the difficulty of producing online classes; the lack of tutorials for students and the lack of qualifications of teachers to evaluate students online represent difficulties and concerns highlighted by the subjects of this research. Managing the study routine to teach or learn Mathematics involves a minimum of routine, which was not perceived in this study, due to inequalities in Brazil, from an educational point of view (Borba, 2021), as well as biological, cultural, intentional or conditionals factors (Kaptelinin & Nardi, 2006).

The notion that humans and nonhumans have agency is part of an effort to model artifacts — in particular, pieces of software, hardware, and the Internet of Things (i.e., things that are connected to the Internet) — as historical, social and cultural factors in the collective that produces knowledge. It emphasizes a view that knowledge is produced (from both a philosophical and psychological perspective) by humans-with-artifacts. With a perspective in which things have agency, artifacts are labeled as media, as they are thought to communicate (Borba, 2021, p. 3).

The inequalities highlighted in the previous paragraph go in the direction of Critical Mathematics Education (Skovsmose, 1994; Borba & Skovsmose, 1996; Skovsmose & Borba, 2004), a trend that highlights the non-neutrality of education and the search for equality in educational relations. This research shows that students had to stop enrolling in courses offered online, as the internet package was not sufficient for synchronous moments. According to one of the students who responded to the questionnaire, the data package was not always sufficient for synchronous classes, and some apps required quality and unlimited internet, as consumption exceeded the credits available on the smartphone.

It was insufficient, because the internet is not always working and sometimes, with the change in weather, it dropped a lot (Student A)¹.

Of weaknesses, quality internet for use by students (Professor A).

My internet at that time was not yet fiber (Student B).

It is not the objective of this research to record or analyze evasion during the pandemic period. In any case, the lack of students in synchronous meetings was highlighted by professors, subjects of this investigation. The fact that undergraduates had their cameras turned off during synchronous meetings led professors to think that they were talking to themselves in a virtual environment, which mischaracterizes the teaching procedures established by them.

Maintenance of students in the virtual classroom; Carry out assessments; Use of technologies (Professor B).

The entire teaching process, and, I believe, the learning process, was harmed; During classes, students had many difficulties accessing classes via the internet, the exposure of content and interaction with the student were hampered in many ways, and it was not possible to evaluate the activities in a coherent way (Professor C).

In this scenario, two projects were combined with the objective of “investigating and discussing videos of mathematical content available in a virtual environment, enabling the learning of students enrolled in Exact Sciences courses at Ufac and students in the Basic Education network” (Melo et al., 2021, p. 237) with scholarship holders from the Tutorial

¹ One way of not identifying students was to use a capital letter to designate the research subject.

Education Program (PET) and the Institutional Scientific Initiation Scholarship Program (PIBIC). During the pandemic, these students developed the PETIC project (PET and PIBIC), with the production of videos with mathematical content (Silva, 2018), contributing to the training of students in exact sciences courses at Ufac, as well as contributing to topics related to the National High School Examination (Enem) for Basic Education students, through meaningful learning (Moreira, 2006).

[...] the PET scholarship holders, in partnership with other groups, especially with scholarship holders from the Institutional Scientific Initiation Scholarship Program (PIBIC), developed a teaching and research project whose objective was to investigate and discuss videos with mathematical content, available in a Virtual Learning Environment, enabling learning for students enrolled in Exact Sciences courses at Ufac and students in the Basic Education network. Together, they developed the PETIC project (PET and PIBIC) believing that the use of digital platforms contributed to the dissemination of mathematical knowledge, promoting meaningful learning, from the perspective of Moreira (2006), through which the student had the opportunity to expand and update relevant concepts necessary for their intellectual development, both in the courses of their choice at the university and when taking exams for the area of Mathematics and Its Technologies present in the High School Examination (ENEM) (Melo et al., 2021, p. 237).

One of the coordinating professors of the PETIC project, also the subject of this research, highlights that, during the period that was named Emergency Remote, he used software and apps to produce videos. However, he highlighted the difficulty faced by students in accessing classes due to the low quality of the internet, and difficulty in evaluating students. This professor ends by stating that he does not understand that it is possible to adequately train Mathematics teachers through distance learning or any other model other than in-person approaches. Neves, Fontes and Silva (2022, p. 292) highlight that, based on “collaborative actions, activities involving videos in the classroom can promote a dialogical environment in which students take an active stance with regard to mathematical learning”. These authors highlight that videos represent resources with significant potential for mathematical learning, as well as representing fundamental elements for lesson planning during their production (Silva, 2018). Therefore, we understand that the coordinating professor of the PETIC project, highlighted here in this paragraph, using the experience of the project, would have a different view regarding the initial and continuing training of Mathematics teachers.

I believe it is not yet possible to adequately train mathematics teachers through Distance Learning or any other nickname that replaces this idea; The ways of teaching and learning involve countless factors and relationships that can only be possible in the in-person classroom (Professor C).

Still calling attention to the production of videos, one of the students highlights as a legacy of the emergency remote period the classes recorded by professors, which were made available on YouTube. The way in which these classes were managed in synchronous meetings is enhanced by this student, who stated that he watched such recordings and, in meetings with the teacher and other students, discussions were held about what these videos covered, comparing activities already forwarded by the teacher in the Virtual Learning Environment.

Remote teaching proved to be efficient. One good thing, a professor recorded several classes and left them on YouTube, and held his meetings. This way, we could watch class videos several times and ask questions with him (Student C).

Production and sharing of videos due to internet access (Jewitt, Bezemer & O'halloran, 2016) can also be enhanced towards student participation in video festivals (Domingues, 2020), as well as promoting the production of videos by students the with the aim of expressing mathematical content (Souza, 2021) boosting dialogic learning and the production of mathematical knowledge (Neves, 2020).

Videos can be used for historical contextualization of problems, or presenting real data (such as newspaper excerpts) for mathematical analysis, or even showing practical applications of methods studied theoretically in the classroom. In all these cases, due to the ability to combine multiple semiotic resources in videos, the possibilities for producing meanings are enhanced, which favors mathematical learning (Neves, Fontes & Silva, 2022, p. 295).

Professors and students highlighted positive points — which remain as a legacy — and negative points — concerns — of the pandemic moment, which are highlighted in the table below:

Table 1: positive and negative points experienced during the pandemic moment

Legacy/positive points	Concerns/struggles
Delivery of activities on a platform	Synchronous class time — 1 to 2 hours of class without a break
Increased autonomy	Problems with internet signal
Overcoming an atypical moment	Student withdrawal
Supporting students via Google Meet (post-pandemic)	Difficulties in content that require laboratories and/or manual practices
Provision of teaching material in digital media	Child at home to care for/sharing with studies
Video production	Lack of Student Assistance

Source: Research data

The information described in Table 1 configures, among others that were discussed above, relevant points that impacted, and still impact, the Mathematics classroom in the Mathematics Teaching course, at the Federal University of Acre.

4 Conclusions

The Emergency Remote Teaching was demanded at the Federal University of Acre as the only current resource for classes, as highlighted by professors and students:

Isolation was intensively recommended by the responsible health authorities (Professor A).

Despite the inconsistencies promoted by a form of teaching that we had never practiced, this was the possible way that presented itself at that moment (Professor C).

I believe it was the best choice for us to continue our studies, given the situation we were in (Student B).

Many professors and students were unfamiliar with terms such as synchronous and asynchronous, and online conversation apps were, until the beginning of 2020, used very discreetly at the University. Experiences with Distance Education were reserved for a course in this modality, linked to the Open University of Brazil and to a few teachers and students. The

initial difficulties were diverse — Meet, Classroom, Moodle, forums, chats, quiz etc. — but they became a more intense part of the academic lives of professors and students.

We understand that professors and students, who sustained the remote moment, now have more skills for educational management in non-presential environments, even though they do not have the training to work in virtual environments, producing video classes, evaluating students in a non-presential way, discussing activities through platforms, understood as classrooms. However, perhaps due to the pandemic moment and all the fears faced due to health issues, teachers and students took turns discussing possible positive legacies regarding the period investigated:

I believe it has not left any positive legacy, from a didactic-pedagogical point of view, however, the possibility of delivering materials for reading via e-mail and/or other social networks has been intensified, as well as the possibility of planning teaching through software and/or or applications (Professor C).

The routine of using another communication channel with students and teachers (Teacher A).

I think the ease of delivering activities on platforms (Student D).

In my opinion, no teaching modality replaces in-person teaching, but the distance learning modality can be used to support students at alternative times (Professor B).

Apps and platforms (Student A).

This research also found bottlenecks in specific subjects of the Mathematics course, with the aim of verifying whether specific mathematical content or specific subjects represent greater adversity for students.

Whenever we needed to debate one or another deeper problem. In general, we draw, create diagrams and grids. This was a bit limited in my discussions (Professor A).

Even in a limited way, it is always possible to carry out teaching using the computer and available resources; The problems are related to the receivers (the students) who did not always have a compatible structure to receive the information. There were many problems with the internet, from the place they were present (Professor C).

The evaluation process adopted in remote teaching did not have a direction, how to better evaluate our students (Professor D).

It was not possible to carry out a survey in the course coordination or in the university's administrative records in order to carry out a comparison of approval/fail/withdrawal in the subjects offered before the pandemic moment in comparison to the same subjects during the moment of health emergency due to Covid -19. In any case, we understand that some technological difficulties may be perceived due to the emergency in applying the education format used during the pandemic. The majority of professors and students in this research emphasize that it was not necessary to stop teaching, or enroll, in the case of students, in a certain discipline because mediation is online. However, a teacher and a student highlighted concerns and difficulties:

I ended up enrolling and not taking any, as the internet data was never enough. I enrolled in Basic Mathematics, Basic Algebra, Calculus I, among others (Student E).

It is complicated to teach a subject, such as Teaching Practice, for example, or a subject with scientific Mathematics content, such as Calculus, Algebra, etc. (Professor C).

In the arguments, highlighting positive and negative points of the emergency use of teaching during the health crisis caused by the coronavirus pandemic, professors and students used some terms to identify online moments, such as *distance learning*, *distance education*, *remote teaching*, *mediated education*, etc. it is worth highlighting that

Distance Education (EaD) is a practice that has gained strength in recent decades. It was presented as a way of democratizing educational opportunities and as one of the ways to solve the problem of concentration of certain potentialities in some centers (Borba, Gracias & Chiari, 2015, p. 844).

Distance Education represents an established modality in Brazil and in several countries, with its own organization and structure for its development, which can integrate different media and meet the development of different methodologies to meet students' needs. Emergency Remote Teaching represented an action to meet a demand created by a health emergency. It is observed that in Distance Education there is a whole legislation, qualification of professionals, provision of tutors, proper environment in-person centers, work on the autonomy (Moore, 1993) of students, as well as information about the modality before the student starts activities. In other words, the student is informed of the modality before the course begins. As a proposal for new research work, we can carry out new tests with the aim of investigating the legacies, potential and possibilities, such as hybrid teaching, that will be (or not) in the post-pandemic.

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