

Towards the emergence of new ways of teaching: a study based on ERE

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Abstract: The article presents and discusses the challenges and implications of the experience of technology-mediated education during the ERE at UFRGS. Based on descriptive statistics and content analysis, we found both the power, expressed in the adoption of pedagogical methods and strategies, that created the context for new ways of teaching supported by digital technologies, and the limitations of distance education, accentuated by the emergency context, such as increased study load and reduced student engagement.

Keywords: Distance Education; Emergency Remote Teaching; Technology-mediated Education

**Pela emergência de novos modos de conduzir a docência: um estudo a partir do
ERE**



Resumo: O artigo apresenta e discute desafios e impactos da experiência da educação mediada pelas tecnologias durante o ERE na UFRGS. Com base em estatística descritiva e análise de conteúdo, constatou-se tanto a potência, expressa pela adoção de métodos e estratégias pedagógicas, criando o contexto para novos modos de exercer a docência suportada pelas tecnologias digitais, quanto as limitações da EaD, acentuadas pelo contexto emergencial, tais como o aumento da carga de estudos e a redução do engajamento dos estudantes.

Palavras-chave: Educação a Distância; Ensino Remoto Emergencial; Educação Mediada pelas Tecnologias.

Hacia la emergencia de nuevas formas de enseñanza: un estudio basado en la ERE

Resumen: El artículo presenta y discute los desafíos e impactos de la experiencia de educación mediada por tecnología durante el ERE en la UFRGS. A partir de la estadística descriptiva y del análisis de contenido, encontramos tanto el poder expresado por la adopción de métodos y estrategias pedagógicas, que crean el contexto para nuevas formas de enseñanza apoyadas por las tecnologías digitales, como las limitaciones de la educación a distancia, acentuadas por el contexto de emergencia, como el aumento de la carga de estudio y la reducción del compromiso de los estudiantes.

Palabras clave: Educación a distancia; Enseñanza Remota de Emergencia; Educación Mediada por Tecnología.

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1 INTRODUCTION

The Federal University of Rio Grande do Sul (UFRGS), like other Brazilian public higher education institutions, has faced challenges in organizing alternatives to face-to-face teaching due to the health restrictions imposed by the Covid-19 pandemic. In order to continue academic activities, on July 27, 2020, the Teaching, Research and Extension Council (CEPE) established Emergency Remote Education (ERE) with different rules for the pandemic period. Given this scenario, "remote classes and digital information and communication technologies (DICTs) became apparent as the only way to comply with the distance protocol imposed by the Covid-19 pandemic on educational institutions and schools across the country" (Martins et al., 2022, p. 97, translated by us). Classes began to be held using the technological resources available at the institution, such as the Institutional Virtual Learning Environment (VLE) and web conferencing tools.

The ERE lasted until June 2022 and was marked by several difficulties, as the ERE period was the first experience of technology-mediated educational practices and tools for a significant portion of the academic community. Although this experience posed some challenges, it also contributed to the emergence of new trends and possibilities for higher education.

In this regard, previous studies (Kist et al., 2024b, p. 139) on the process of implementing ERE at UFRGS show that:

Despite the challenges faced by the institution in the implementation and continuation of the academic activities to be carried out remotely, some progress has been made in the area of distance education and the use of ICT: digital educational resources, previously made available in a more limited way for distance education courses, have been widely disseminated among teachers and students, as well as technical tools related to the Virtual Learning Environment (VLE); web conferencing has been improved and expanded by the departments responsible at the university. Similarly, synchronous classes held through web conferencing systems have been widely adopted and have proven to be very effective in different contexts. Video lessons, which have traditionally been used in distance learning courses, have proved to be an important pedagogical tool to help students understand the content. The adoption of flexible teaching methods and practices, alternating activities in different times and places, was also very present in ERE, and technology-mediated teaching was highlighted as a trend that could be incorporated in the context of returning to face-to-face teaching.

Along the same lines, Schwetz et al. (2021) point out that part of the success of this implementation was due to the prior development

of digital technologies for distance education and the existence of an organizational structure for the academic management of distance education, which allowed a qualified institutional response despite the difficulties inherent in the situation. In other contexts, however, the challenges experienced in ERE stand out, such as difficulties in the use of technologies by teachers (Morais, M.; Morais F.; Gonçalves, 2023; Barreto; Rocha, 2020) and deficits in the teaching-learning process associated with the lack of socialization and interaction in the face-to-face environment (Rondini; Pedro; Duarte, 2020).

Faced with the need to understand and systematize the legacies resulting from the ERE experience at the university, the Academic Coordination of the UFRGS Department of Distance Education (SEAD/UFRGS) conducted the research entitled "Distance Education, Emergency Remote Teaching and Hybrid Teaching: challenges and trends" (Kist et al., 2024b), of which this article is an excerpt. The purpose of this study is to present and discuss the main findings of the research: the challenges that are points of attention in Distance Education (DE) and the emerging implications of the experience of technology-mediated education, especially those related to teaching in the digital context. The challenges include issues related to: student engagement; communication and interaction between teachers and students; time/space management in the learning environment. Concerning the impacts resulting from the experience of technology-mediated education, issues are identified that encompass the possibilities offered by the flexibility of the modality and new ways of conducting teaching, especially about methodological and technological aspects.

2 METHODOLOGY

Considering the objective of presenting and discussing the main challenges and impacts resulting from the experience of technology-mediated education during Emergency Remote Teaching at UFRGS, three questionnaires sent by email to teachers, undergraduate and graduate students active at UFRGS in February 2023 were used as data collection instruments. The sample was built based on the voluntary (non-probabilistic) participation of the respondents. Chart 1 shows the sample of those who participated in the survey and the percentage corresponding to the university population.

Chart 1 – Study population and sample

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Profile	Population	Sample	
		n	%
Teachers	2995	557	19%
Undergraduate students	32065	1536	5%
Postgraduate students	9841	440	4%

Source: Adapted by the authors from Kist *et al.* (2024a).

The questionnaires were designed to capture both the "limitations of the teaching model" and the "impact of the experience," using open-ended and multiple-choice questions. The approaches that underpinned the research included quantitative and qualitative perspectives.

The quantitative data were analyzed using descriptive statistics. In other words, based on the data collected in the questionnaires, a survey (frequency distribution) was conducted on the limitations and impacts of ERE as perceived by active teachers and students at UFRGS. The answers to the multiple-choice questions were structured in the form of Likert-type scales, that is, as individual questions about a given sentence, in which the respondent is asked to express his perception by choosing one of five points on a scale of agreement (Antoniali, F.; Antoniali, L.; Antoniali, R., 2017).

For the qualitative systematization of the collected data, the Nvivo software was used, and a thematic content analysis was performed (Bardin, 2011). In other words, the responses to the open-ended questions were grouped into six thematic categories (teacher support, didactic-pedagogical, infrastructure, modality, specificity of the distance learning modality: health), covering a total of 38 subcategories, organized in two dimensions: challenges and impacts, in order to qualify the results presented in the frequency distribution, which will be discussed below.

3 CHALLENGES AND DIFFICULTIES



Decree 9.057/2017, in regulating Art. 80 of Law 9.394/1996 which establishes the guidelines and foundations of national education, conceptualizes distance education as an educational modality "[...] in which didactic-pedagogical mediation in teaching and learning processes takes place with the use of information and communication means and technologies [...] and develops educational activities by students and educational professionals who are in different places and at different times" (Brazil, 2017a, emphasis added, translated by us). Being in different places and times, permeated by educational activities, has been a defining characteristic of distance education.

During the ERE period, this diversity of places and times was accompanied by a situation of pandemic and social isolation, with a series of factors that aggravated teaching practices. Faced with this scenario, teaching challenges and problems overlapped and became intertwined with social problems (Barbosa; Garcia; Frota, 2021). However, when analyzing the limitations related to technology-mediated education during this period, based on the responses to the questionnaires, the following aspects stood out: decreased student engagement and participation in class, increased teacher workload, increased time devoted to studies (students), impaired learning, difficulties in communication and interaction, difficulties in organization, impaired learning assessment. Some of these aspects were mentioned by teachers, undergraduate and postgraduate students, with a consensus on the aspect of increased teaching workload and increased time dedicated to studies - undergraduate and postgraduate students, as shown in Chart 2.

Chart 2 - Increased work/study load

Profile	Question	Agree	NAND ¹	Disagree
Teachers	I've had an increase in my workload.	80,07%	7,54%	11,31%
Undergraduation Students	I was able to spend more time studying and doing subject activities.	60,09%	9,57%	29,23%

¹ Neither agree nor disagree



Postgraduate Students		55,23%	11,82%	27,05%
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Source: Adapted by the authors from Kist *et al.* (2024b).

The increase in teaching workload is related to the adaptations needed for virtual classes, the preparation of materials needed for teaching practices, as well as the need to learn how to use technological resources. In their responses to the open-ended questions, the teachers pointed out: "I have taken countless courses to learn how to use virtual teaching systems, I have spent hours selecting copyright-free materials that are of good quality and reliable [...]" (Teacher ID 49, translated by us)²; "As a teacher, I have had to do a lot of research to make my classes viable on the online platform and not just turn theoretical classes into lectures" (Teacher ID 148, translated by us).

It appears that the increase in time spent studying was also due to an overload of academic activities: "I noticed a significant increase in assignments as a way to compensate for the lack of class dynamics or content fixation" (Undergraduate Student ID 1167, translated by us); "Many teachers increased the amount of work even though it reduced the class and the effectiveness of learning" (Undergraduate Student ID 38, translated by us);

Postgraduate students noted "[...] a significant increase in demands [...] I had to devote much more time to studying to complete the assignments of the subjects than in the face-to-face period" (Postgraduate ID 455, translated by us) and "fatigue caused by the enormous exposure to screens, as many activities such as classes and meetings exceeded the agreed time. This happened in person, of course, but it can't compare to the tiredness of the screens and the feeling of being alone, isolated" (Postgraduate ID 428, translated by us).

Organization and time management were also mentioned by undergraduate (57.5%) and postgraduate (47.5%) students. In their answers to the open-ended questions, they discussed the difficulty of organization due to the excess of academic activities and the difficulty of managing time and space: "[...] the worst thing of all is certainly to be organized [...] At home everything is mixed up: college is also time to wash dishes, it's also time to make food, wash the floor" (Postgraduate

² Since the questionnaires preserved the anonymity of the respondents, they were identified only by their institutional role and ID number.



student ID 150, translated by us).

According to Chart 3, there was a consensus among faculty (82.4%) and students (54.7%) about the decline in engagement. Faculty indicated that the ERE policies, such as the "[...] combination of unlimited exclusion from enrollment and freezing of enrollment, created a sense of 'zero consequence' for a large number of students, encouraging them to take on commitments far beyond what would be appropriate" (Faculty ID 99, translated by us). The undergraduate students confirmed the perception of the lecturers and pointed out some factors that contributed to the lack of commitment: difficulty in establishing communication with the lecturer, lack of a suitable environment for studying, difficulty in managing time; methodologies adopted by the lecturers that express "[...] a lack of preparation on the part of the lecturers to carry out a class proposal in this reality, without realizing that this novelty is different, in the didactic aspect, from a class taught in person" (Undergraduate Student ID 1947, translated by us).

Chart 3 – Engagement

Profile	Question	Agree	NAND	Disagree
Teachers	I felt that there was less engagement and participation from the students in class, compared to face-to-face classes	82,41%	4,13%	12,21%
Undergraduation Students	I had less engagement and participation in class compared to face-to-face classes.	54,69%	9,18%	39,90%
Postgraduate Students		46,59%	7,73%	40,68%

Source: Adapted by the authors from Kist *et al.* (2024a).

Part of the teachers (50.9%) agreed that it was difficult to establish communication with the students. Looking at the responses to the open-ended questions, it can be seen that some factors may have contributed to this, such as: students not opening their cameras, not participating in synchronous

sessions, and many of them "[...] did not feel comfortable sharing their doubts" (Teacher ID 97, translated by us). In addition, "[...] the waiver of attendance and the possibility of dropping out at the end of the semester was a paternalism that undermined the dynamics of the class and increased the lack of commitment to the class" (Teacher ID 177, translated by us).

Students (42.8%) indicated that they had difficulty communicating with the teacher and 41.4% disagreed. Among the possible causes, based on the responses to the open-ended questions, are: teachers' resistance to working with technology-mediated instruction, which made it difficult for students to communicate with teachers, given that "the ERE period was a waste of time, many teachers didn't even teach, a few dedicated themselves to helping students [...] difficulty in communicating, answering questions, and asking questions even in real-time calls [...]" (Undergraduate ID 130, translated by us).

Another dimension related to communication and interaction refers to the bonds established between students, with 68.1% of undergraduate and 69.1% of postgraduate students stating that communication and interaction with colleagues had decreased, generating a feeling of isolation, highlighting that "[...] the coexistence and interaction with the community and academic spaces was very much missed" (Undergraduate ID 211, translated by us) and "[...] the lack of face-to-face interaction with colleagues and teachers hinders the feeling of belonging to the course [...]" (Postgraduate ID 360, translated by us).

As pointed out by Rondini, Pedro and Duarte (2020), a significant number of teachers (72.7%) indicated that there was a loss in student learning as a result of technology-mediated teaching practice because "[...] the subjects offered with the teaching model adopted in the ERE left serious gaps in learning" (Teacher ID 430, translated by us). This problem may be related to the need for face-to-face teaching due to practical subjects, as well as the fact that students did not develop important skills for technology-mediated teaching, such as organization and time management, because "it became much more difficult to define when to study and when to have free time since both took place in the same physical place [...] there was a feeling of having to study all the time" (Undergraduate Student ID 419, translated by us).

Undergraduate students (54.8%) noted that technology-enhanced instruction did not satisfactorily address their learning experiences in face-to-face classes, pointing out that "[...] there were some subjects where I felt my learning was hindered by

ERE. I corrected them in my compulsory practicum, with practical experience" (Undergraduate ID 1412, translated by us).

It can be seen that for postgraduate students, the question related to the perception of reduced performance as a result of technology-mediated teaching showed a small percentage difference between students who agreed (44.5%) and those who disagreed (43.18%). Among the elements that indicated students' agreement on this issue were "[...] Difficulty in making connections between the work in progress and all the other activities, such as classes. There are a lot of extra activities (lectures, workshops, etc.), but little use is made of them [...]" (Postgraduate student ID 1499, translated by us).

For teachers (69.1%), assessment was also a limitation of the technology-mediated teaching model. Teachers reported that "[...] students in ERE did not have to learn and were not assessed. The process was a disaster from a teaching and learning perspective. ERE was a complete failure and proof that you cannot teach without assessment tools" (Teacher ID 301, translated by us); "[...] the way students were assessed was very inefficient and did not reveal real learning" (Teacher ID 372, translated by us), so that "[...] students ended up copying each other's assessments [...]" (Teacher ID 390, translated by us).

In contrast to teachers, undergraduate (47.9%) and postgraduate (60.9%) students disagreed that assessment activities were less effective than face-to-face assessments. Undergraduate students pointed out that "the online assessment parameters have remained the same as the face-to-face ones, although in completely different contexts" (Undergraduate Student ID 38, translated by us) and "the assessments have started to 'evaluate' the student's effort in answering the questions and requirements of the activity [...] unlike before, where the assessment checked the memorized content" (Undergraduate Student ID 622, translated by us). Postgraduate students also point out:

It was during the ERE that I had the highest grades of my entire college career. I lived in another city and had to walk 20 minutes to the train and then pay for a bus to get to the university [...] the routine of going to college to take classes was extremely stressful and this actively hindered my performance (Undergraduate Student ID 55, translated by us).

Considering the limitations associated with technology-mediated education identified in the research and highlighted above, it can be seen that many of these aspects are not just challenges for distance education, as they permeate any type of teaching. With this in mind, we would like to discuss

the challenges of technology-mediated education in a broader sense, which includes, above all, how teaching can be carried out through the use of technological resources, taking into account pedagogical flexibility.

For Mill (2015, p. 413, translated by us), "flexibility in the context of distance education [...] allows for more dynamic and malleable forms of pedagogical organization than traditional education". The author suggests that the main difference between face-to-face and distance education "revolves around the greater or lesser flexibility of places, times and forms of study" (Mill, 2015, p. 413, translated by us). Based on this premise, the researcher presents the three perspectives that constitute flexibility: space, time, and curricular organization, introduces the concept of pedagogical flexibility, and discusses how this flexibility is a key element of distance education

[...] directly related to the potential of this modality to serve, in diverse and multiple ways, students located in places far from the main centers of academic training and unable to attend classes at the times defined by the academy, that is, pedagogical flexibility represents a major challenge for educators to think of teaching-learning proposals with times and places more suitable for students who will have greater freedom to carry out activities in terms of when, how and where to study (Mill, 2015, p. 416, translated by us).

If, on the one hand, there is a challenge for teachers - to teach with pedagogical flexibility in mind - on the other hand, there are also impasses for students, such as how to achieve something that seems so simple - exercising "freedom to carry out activities in terms of when, how and where to study" (Mill, 2015, p. 416, translated by us). Carneiro's (2013, p. 55, translated by us) research discusses time flexibility, highlighting that it is often misunderstood as "I participate when I can" or "I study when I have time".

The survey showed that many teachers found it difficult to teach with pedagogical flexibility in mind, as the answers to the open-ended questions repeatedly included aspects related to this flexibility, as can be seen in the following excerpts.

[...] I still haven't managed to get used to reducing my classes to the short time that fits into a virtual world (Teacher ID 49, translated by us).

The schedule and duration of classes were very irregular: some teachers gave synchronous classes only once or twice a month, which was detrimental to our learning, while others gave 4-hour classes every week, which was impossible to keep our attention. (Undergraduate ID 716, translated by us).



Excessive load of after-class activities compared to face-to-face classes, making it difficult to maintain good performance in the activities and to balance them with other student activities such as work. (Postgraduate student ID 479, translated by us).

The excerpts show that the undergraduate and postgraduate students indicated that the teachers had increased the number of activities to be developed by the students and, as a result, there were recurrent manifestations of difficulties in managing the time to develop these activities. Among other arguments for this difficulty, they identify ways of conducting classes that are disconnected from pedagogical flexibility. From this aspect, it is possible to deduce that the way teaching is conducted is a factor that can contribute to increasing the difficulty of organizing time management on the part of students.

It is understood that the challenges identified through this research are generally related to any teaching modality and that, particularly in the context of distance education, what appears as an impasse when we refer to the limitation of technology-mediated teaching is related to the way in which teaching has been conducted. It is necessary to discuss the matrix of time, space, and curriculum "in terms of pedagogical flexibility and respect for the pace at which students learn" (Mill, 2014, p. 123, translated by us).

4 IMPACTS OF THE EXPERIENCE

In order to reflect on the potential of technology-mediated education, the impact of the Emergency Remote Teaching experience on changes in teaching practices is analyzed. Based on this experience, teachers indicated that the following aspects had a significant impact on their performance: developing different teaching strategies to teach the subjects remotely (84.9%); adopting new teaching methods, strategies, and/or pedagogical practices (80.6%); using diversified materials and in other formats (72.3%); using synchronous classes via web conferencing (65.7%); producing video classes and/or other educational resources (63.7%).

As a result of the new ways of teaching provided by technology, data analysis using descriptive statistics showed that there was an improvement in teachers' perception of their digital competence (79.1%). This can also be seen in the answers to the questions posed by the teachers:



After the ERE I increased my use of Moodle. The materials produced during the ERE were a good addition to the classroom. I had access to digital materials that I hadn't sought out before (Teacher ID 171, translated by us).

The great legacy is the ability to use technology in the classroom. Videoconferencing platforms provide dynamism in teaching activities as well as saving resources for the public purse, for example in work assessment boards (Teacher ID 644, translated by us).

Based on the analysis of the frequency distribution, undergraduate students highlighted the following aspects as impacts of the ERE experience on their learning process: making class times more flexible, which allows them to reconcile their studies with other activities (77.8%); adoption of diversified materials and in different formats by teachers (77.1%); the adoption of new teaching methods, strategies and/or pedagogical practices by teachers (71.8%); the need to develop other study strategies to keep up with subjects taught remotely (70%); the demand for activities that require the creation of digital content (video, audio, websites, posts, infographics, presentations, among others) (67.3%); more personalized assessments, adopting new strategies and tools (53.3%). As a result of this new context, 56.2% of students claimed to have improved their level of digital competence.

The aspects mentioned by the students in the previous paragraph were also mentioned in the answers to the open questions. Regarding the use of diverse materials in other formats, one student pointed out that:

The teachers who used the resources offered by digital teaching were significantly more successful than the others who simply switched from face-to-face to online classes. In other words, the use of specific planning for distance learning has shown that the use and/or reference to videos, animations, and others contributes greatly to the learning process" (Undergraduate ID 646, translated by us).

With regard to flexible class schedules, students emphasized that flexible schedules allowed them to organize their routines, manage their time, and engage in other activities without compromising their learning, as seen in this response:

For me, the great advantage of ERE was flexibility. I was able to organize my routine and incorporate other activities (internships, physical exercise, interaction with family members) without compromising my learning, because I didn't have to travel more than an hour (by bus) to get to the Campus and I could watch the video lessons at my own pace (change the speed of the video, pause, review important parts). The legacy it left was nostalgia because now I find it difficult to readapt to 100% face-to-face modality and I'm very grateful when the

teachers suggest some distance learning activity because I can focus better and reorganize the tasks of my day. (Undergraduate Student ID 1560, translated by us).

Considering the frequency distribution of the responses, postgraduate students highlighted flexibility as the main impact of the ERE experience on their learning process, with 74.3% of students agreeing with the statement "I feel that having more flexible class times allows me to balance my studies with other activities". In relation to this question, Chart 4 shows the convergence of responses from undergraduate and postgraduate students, while teachers were less likely to agree with this statement. Among the responses to the open-ended questions on this topic, the following stand out:

I make better use of my time and organize my studies more efficiently. I'm able to do the activities at a more convenient time and, if video lessons are available, I can review them when and as often as I need to" (Postgraduate student ID 165, translated by us);

This system has proven that there is a good method of learning, even if it is remote, that allows students to combine different activities (Postgraduate student ID 1717, translated by us).

Chart 4 - Flexibility

Profile	Question	Agree	NAND	Disagree
Teachers	I felt that the more flexible timetables made it easier for students to take part in teaching activities.	29,6%	13,4%	53,1%
Undergraduation Students	I felt that by making class times more flexible during Emergency Remote Learning, I was able to combine my studies with other activities.	77,9%	5,2%	14,9%
Postgraduate Students		74,3%	7%	12,3%

Source: Adapted by the authors from Kist *et al.* (2024).

By establishing a relationship between the impacts highlighted by teachers in terms of teaching practices and by undergraduate and postgraduate students in terms of the learning process, both aspects related to the ERE period, it was possible to observe points of greater and lesser convergence between these respondent profiles using descriptive statistics.

Among the aspects that show the greatest convergence, the following stand out: Just as instructors indicated that they had to develop different teaching strategies to teach the subjects taught remotely, undergraduate and postgraduate students indicated that they had to develop different study strategies to keep up with the subjects taught at a distance, as shown in Chart 5. Similarly, instructors (72.36%) indicated that they had begun to use diversified materials in other formats, while undergraduate (77.08%) and postgraduate (58.63%) students expressed their perceptions of instructors' use of diversified materials in other formats. Another point of convergence relates to the use of new methodologies, where teachers (80.61%) indicated that they had started to use new methodologies, strategies and/or pedagogical practices, while both undergraduate (71.81%) and postgraduate students (59.31%) expressed their perception that teachers had started to use new methodologies, strategies and/or pedagogical practices.

Chart 5 - Teaching/study strategies

Profile	Question	Agree	NAND	Disagree
Teachers	I had to develop other teaching strategies to teach the subjects remotely.	84,9%	5,4%	6,10%
Undergraduate Students	I had to develop other study strategies to keep up with the subjects taught remotely.	77%	6,2%	13,5%
Postgraduate Students		64,4%	12,9%	14,4%

Source: Adapted by the authors from Kist *et al.* (2024a).

Considering the effects mentioned by the respondents, it is understood that technology-mediated teaching during the ERE represented a significant change in education, giving rise to new ways of teaching and learning on the part of students.

If, on the one hand, there were lighter teaching practices given the emergency context, which according to Veloso and Mill (2022) is also a possible configuration of distance education, on the

other hand, there was a movement of teachers in search of professional improvement, which was evidenced by participating in training, creating and using educational resources, as well as experimenting with new methodologies and assessment strategies.

The fact that 38% of the teachers who responded indicated that they had participated in training on active methodologies, distance learning, and digital technologies during this period and that 29% expressed an interest in doing so, indicates a desire to improve the quality of teaching. For its part, the university has significantly expanded the range of training courses it offers to teachers. As Kist et al. (2021, p. 8, translated by us) note, "The significant demand for training revealed, on the one hand, that teachers were not prepared to use digital technologies in their practice [...]. On the other hand, it showed that they were actively seeking to qualify their online teaching". According to the authors, "in 2020, 23 training actions were offered, 14 more than in 2019, for a total of 1,163 places for the UFRGS community" (Kist et al., 2021, p. 6, translated by us).

Following the debate presented by Veloso and Mill (2022) on the division between distance education and emergency remote education, regardless of the pandemic historical-social situation, it is understood that Emergency Remote Education was both the setting for content-based practices that reflect some ways of organizing both face-to-face and distance education, and it allowed for innovative practices centered on learning and collaboration that occur in both face-to-face and distance education. In the authors' words, "practices can be oppressive or emancipatory, archaic or innovative, regardless of the space in which they take place" (Veloso; Mill, 2022, p. 7, translated by us). Martins et al. (2022, p. 105) present discussions that bring SRT and DE closer together, as they argue:

ERE is configured as an adaptation of didactic-pedagogical techniques and tools that make use of distance learning methodologies, instructions for guided and autonomous study, and non-face-to-face teaching-learning activities mediated by DICTs, in addition to synchronous and asynchronous interactions to resolve doubts or offer curricular content through digital social media and the prior availability of didactic and academic materials (in printed or digital format) [...] that didactic-pedagogical practices related to ERE will be prototypes for a paradigm shift in education, beyond the Covid-19 pandemic (translated by us).

In this sense, it's important to note that about 50% of the teachers, who had no previous experience with distance learning, found in ERE an opportunity to experiment and adapt to a new educational modality. This adaptation not only broadened the digital and pedagogical skills of the

teachers but also redefined the expectations and possibilities of teaching and learning in a digital context.

This circumstance reflects the dynamics proposed by the Theory of Possibilities, the result of the thesis "Interactive Spaces for the Construction of Possibilities: A New Form of Teacher Training" (Aragón, 2001), which describes a dialectical process between three fields: the field of Acquired (AC), where teachers' knowledge and certainties reside; the field of Tension (TC), which arises when certainties are challenged by new information or situations, as was the case with the impossibility of teaching face-to-face due to the pandemic; and the field of Possibilities (CP), where new conceptions and pedagogical practices are constructed. According to the author, the dialectic between these fields promotes the transition from existing knowledge and practices to transformations and perhaps significant innovations. This process of constructing possibilities (new possibilities) is driven by the need to overcome the conflicts identified in TC. The new possibilities visualized by the teachers permeate different dimensions and are constituted as impacts of ERE on distance education and education in general, as can be seen in the following excerpts:

[...] I have improved my FACE-TO-FACE classes, so as not to repeat what has been recorded. I do a lot of inverted lessons where we try to solve problems, and then I refer students who have doubts to the videos used in ERE (Teacher ID 163, translated by us).

I've suggested more collaborative activities using digital technologies (Teacher ID 198, translated by us).

The strategies I used in the assessment processes allowed me to monitor the content more closely (Teacher ID 569, translated by us).

Yes, the ERE had an important impact on my teaching in the sense that it caused a concrete break with routine teaching practice. I want ERE to be a pedagogical option, not just an emergency (Teacher ID 137, translated by us).

In terms of student experience, flexibility was the aspect that emerged as one of the most significant impacts of ERE, requiring adaptations to routines and redefining the learning process. This feature of remote learning has brought benefits perceived by students, reflecting a change in the way time and space are conceived and used. This perception is reflected in the data, as it shows that a significant majority of UFRGS students, both undergraduate (73.31%) and postgraduate (78.87%), recognized that forms of teaching that incorporate some degree of distance learning or hybrid practices are better suited to meet their needs, which points to the "[...] convergence of two learning models: the face-to-face model, in which the process takes place in the

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classroom, as has been the case for some time, and the online model, which uses digital technologies to facilitate teaching" (Bacich; Tanzi Neto; Trevisani, 2015, p. 52, translated by us).

This convergence of learning models is in line with the trend indicated by the 2022 Census of Higher Education (Brazil, 2023), which points to a significant increase in distance education enrollments.

In short, the legacy of the ERE for education, and distance education in particular, goes beyond the immediate responses to the crisis. The experience of this period reaffirms the capacity of education to reinvent itself and overcome limitations, driving a transformation that, as Veloso and Mill (2022) point out, has the potential to resignify practices, worldviews, and values. ERE thus emerges not just as a chapter in response to a crisis, but as a catalyst for changes in the culture of education.

5 FINAL CONSIDERATIONS

Based on the analysis of participants' responses, it was possible to see that technology-mediated teaching, while posing a challenge due to its limitations, has proven to be powerful and is emerging as a trend, both to support distance learning practices and in education in general.

Concerning the challenges experienced during the period, it was found that a significant number of them are related to other teaching modalities besides distance education and therefore should not be limited to this scope. Specifically, about technology-mediated education, the issue of pedagogical flexibility stands out as a central aspect for understanding the difficulties listed, especially when they are linked to teaching methods that do not take this concept into account, as well as the lack of awareness of the impact that certain pedagogical practices can have on students' academic development.

In terms of impact, the emergence of flexibility as a necessity in the current context, the increased use of diversified educational strategies and resources, the development of digital skills, and the adoption of new teaching methodologies are just some of the legacies that deserve to be highlighted, given the potential and transformations they can bring. New teaching strategies and practices have emerged to adapt to the virtual environment. Teachers have also sought professional development, especially in the area of technology-mediated teaching, which has led to new ways of teaching.

However, Kist et al. (2021) and Schlemmer, Oliveira and Menezes (2021) problematize the teaching models adopted and the discourses that exalt the centrality of digital technologies as a promoter of educational innovation, "as if an obsolete class would be renewed by replacing it with a video or an expository class with web conferencing", when in fact "[...] technology is used only as a means and not in its potential for developing learning, for human formation, and for creating networked pedagogies" (Kist et al, 2021, p. 9), 2021, p. 9, translated by us).

In terms of student experience, flexibility was the aspect that emerged as one of the most significant impacts of ERE, requiring adaptations to routines and redefining the learning process. This feature of remote learning was highlighted by the students as a possibility of organization in terms of the management of time and space, so they identified significant changes in the way time and space are conceived and used in educational processes.

As a result, changes in the way teaching is carried out and in the way students relate to time and space have been identified. However, to understand the deeper changes in educational practices introduced by the adoption of technology-mediated teaching during ERE and the challenges involved, it is essential to carry out further studies with this target group, considering that the results of the research have been used to support SEAD's strategic planning and to stimulate debate with the academic community on the institutionalization of DE and Hybrid Education at UFRGS.

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