Teacher Stress and Technostress: The Effects of Emergency Remote Teaching with Brazilian University Professors

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ABSTRACT

Introduction: The COVID-19 pandemic has provoked the urge for social isolation, which has led educational institutions to adopt, since March 2020, Emergency Remote Teaching. **Objective:** In this context, the general objective of this article is to present results of a survey on the relationship between discomfort, more specifically the levels of teacher stress and technostress, with the excessive use of Digital Information and Communication Technologies. **Methodology:** The methodology, of a quanti-qualitative, descriptive, and exploratory nature, consisted of the realization of the state of knowledge on the subject and the application of a questionnaire answered by 311 Brazilian university professors. The analyses were performed by means of descriptive statistics and with the three-way analysis of the results of previous research and of the empirical data. **Results:** The results pointed out that 84.9% of the professors who answered the questionnaire present some level of stress, where 24.1% are in the alarm phase, 33.8% in the resistance phase and 27% in the exhaustion phase. Among the respondents, 66.2% attributed the increased stress to the exhaustive use of Digital Information and Communication Technologies during remote teaching. Finally, 72.6% of the teachers who received continuing education considered themselves to be at basic levels of skills and competencies for the use of digital technologies. **Conclusion:** It is concluded from the findings that there is a need for investment in continuing education for professors, as well as further research to track the effects of faculty unease, stress, and technostress on the health and work of university professors.

KEYWORDS

Occupation stress. Internet teaching. Teacher's practice. University professors.

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Estrés y Tecnoestrés Docente: Efectos de la Enseñanza Remota de Emergencia en Profesores Universitarios Brasileños

RESUMEN

Introducción: La COVID-19 provocó la necesidad de aislamiento social, lo que llevó a las instituciones educativas a adoptar, desde marzo de 2020, el Aprendizaje Remoto de Emergencia. **Objetivo:** El objetivo general de este artículo es presentar los resultados de una investigación sobre la relación entre el malestar, más específicamente los niveles de estrés y tecnoestrés docente, con el uso excesivo de Tecnologías Digitales Informacionales y Comunicacionales. **Metodología:** La metodología, de carácter cuantitativo-cualitativo, descriptivo y exploratorio, consistió en la realización del estado de conocimiento sobre el tema y la aplicación de un cuestionario respondido por 311 profesores universitarios brasileños. Los análisis se realizaron mediante estadística descriptiva y con la triangulación de los resultados de investigaciones previas y datos empíricos. **Resultados:** Los resultados mostraron que el 84,9% de los docentes que contestaron el cuestionario presentan algún nivel de estrés, con 24,1% en la fase de alarma, 33,8% en la fase de resistencia y 27% en la fase de agotamiento. Entre los encuestados, el 66,2% atribuyó el aumento del estrés al uso exhaustivo de las tecnologías digitales de la información y la comunicación durante la enseñanza a distancia. Finalmente, el 72,6% de los docentes que recibieron educación continua aún se consideran en niveles básicos de habilidades y competencias para el uso de tecnologías digitales. **Conclusión:** De los resultados se concluye que es necesario invertir en la formación continua de los profesores, así como realizar nuevas investigaciones para monitorear los efectos del malestar, estrés y tecnoestrés docente en la salud y el trabajo de los profesores universitarios.

PALABRAS CLAVE

Estrés profesional. Enseñanza por internet. Práctica de la enseñanza. Profesores universitarios.

Estresse e Tecnoestresse Docente: Os Efeitos do Ensino Remoto Emergencial em Professores Universitários Brasileiros

RESUMO

Introdução: A pandemia da COVID-19 provocou a necessidade de isolamento social, o que levou as instituições educacionais a adotarem, desde março de 2020, o Ensino Remoto Emergencial. **Objetivo:** Nesse contexto, o objetivo geral deste artigo é apresentar resultados de uma pesquisa sobre a relação entre mal-estar, mais especificamente dos níveis de estresse e tecnoestresse docente, com o uso excessivo das Tecnologias Digitais Informacionais e Comunicacionais. **Metodologia:** A metodologia, de natureza quanti-qualitativa, descritiva e exploratória, constituiu-se da realização do estado do conhecimento sobre a temática e da aplicação de um questionário respondido por 311 professores universitários brasileiros. As análises foram realizadas por meio de estatística descritiva e com a triangulação dos resultados de pesquisas anteriores e dos dados empíricos. **Resultados:** Os resultados apontaram que 84,9% dos professores que responderam ao questionário apresentam algum nível de estresse, sendo que 24,1% estão na fase de alarme, 33,8% na fase de resistência e 27% na fase de exaustão. Dentre os respondentes, 66,2% atribuiu o aumento do estresse ao uso exaustivo das Tecnologias Digitais Informacionais e Comunicacionais durante o ensino remoto. Por último, 72,6% dos docentes que receberam formação continuada ainda se considera em níveis básicos de habilidades e competências para o uso das tecnologias digitais. **Conclusão**: Conclui-se, a partir dos resultados, que há a necessidade de investimento na formação continuada para os professores, bem como de realização de novas investigações para acompanhar os efeitos do mal-estar docente, do estresse e do tecnoestresse sobre a saúde e o trabalho dos professores universitários.

PALAVRAS-CHAVE

Estresse profissional. Ensino pela internet. Prática docente. Professores universitários.

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1 Introduction

The global education landscape has, in recent years, been undergoing major transformations and severe social impacts. Data from UNESCO (2021) reveal that, on average, two-thirds of an academic year has been lost worldwide due to the closure of educational institutions due to COVID-19. Since the beginning of the pandemic the governments of more than 190 countries have made efforts to minimize the closures of these institutions. Since then, more than 800 million students - or more than half of the world's student population - still face significant disruptions, ranging from school closures to the reduction of the school calendar (UNESCO, 2021).

In the context of Brazilian higher education, the suspension of face-to-face classes occurred by the Ministry of Education (MEC) Ordinance No. 343, of March 17, 2020, which authorized the offering of remote classes for thirty days. However, with the outbreaks of COVID-19 spreading throughout Brazil, this official determination was replaced by MEC Ordinance No. 544 of June 16, 2020, and later by MEC Ordinance No. 1038 of December 7, 2020, which extended the deadline until February 28, 2021, authorizing, on an exceptional basis, the substitution of face-to-face classes by classes in digital media, aiming at the completion of the workload of pedagogical activities while the pandemic situation lasted (BRASIL, 2020).

With the Emergency Remote Education (ERE), the concern about the pedagogical practices of teachers linked to educational institutions has grown, from basic education to higher education. The long period of the pandemic led to the workload of these professionals and the excessive use of Digital Information and Communication Technologies (DICTs), drawing the attention of researchers to issues associated with the unease/well-being that impacted these teachers, as found when we conducted a survey on the state of knowledge (MOROSINI, KOHLS-SANTOS, BITTENCOURT, 2021) on this theme.

This research was conducted between March 2020 and September 2021, in the following repositories: Theses and Dissertations Catalog of the Coordination for the Improvement of Higher-Level Personnel (Capes), Digital Bank of Theses and Dissertations of the Brazilian Institute for Information in Science and Technology (Ibict) and Scientific Electronic Library Online (SciELO), using the descriptors "Remote Teaching and Welfare/Wellbeing".

Twelve published papers were located, which reveal the context of remote teaching, regarding the methodological aspects associated with the exclusive use of digital and informational technologies, due to the remoteness caused by the pandemic (BONA, 2020; SANTOS, 2020; PAIVA, 2020; OLIVEIRA, 2020; GUSSO et al, 2020; SILUS, FONSECA, NETO DE JESUS, 2020a; SILUS, FONSECA, NETO DE JESUS, 2020b), the importance of continuing education for teachers (GOMES, 2020) and the concern with issues related to teachers' health and illness, well-being and teacher malaise (ANDRADE, 2020;

CAVALCANTI, 2020; SOUZA et al, 2021; PENTEADO; COSTA, 2021); FERREIRA; PEZUK, 2021; REBOLO; CONSTANTINO, 2020).

Although in recent years the academic-scientific publications already pointed to issues related to accessibility to the "digital world," digital technologies began to be used in exponential scales in the pandemic period. Some Brazilian Higher Education Institutions (HEI) had already been implementing this digital inclusion process, especially those that offer courses in the Distance Education modality (DE), but most HEI, especially those with exclusively face-to-face courses, were still far from reaching what was experienced during the pandemic, when a digital education was witnessed.

Now, we highlight that the RES has been accentuating the differences among those students who had greater learning difficulties; it has required a new teacher, who needed to (re)invent himself, had to forcibly adapt to new technologies and active methodologies, transforming himself and spending a great deal of effort to adapt and new learning.

When thinking about the gradual return of classroom activities in HEIs, with respect for the sanitary and biosafety rules defined by health organizations and governments, due to the decrease in the rates of infection of COVID-19, the focus needs to be centered on people, on the well-being of teachers and students impacted by the great efforts made, by the loss of friends and relatives, and by the sequels left by the pandemic, which directly affect the socio-emotional and pedagogical aspects of the agents involved in the teaching and learning process.

In this sense, among the various issues associated with the RES and the teacher well-being/uneasiness, we list those that, from the epistemological point of view and applied to the context of Higher Education, directly affect the dynamics of the work, more precisely with regard to the triggering of some emergency motifs: did the HEIs offer technological and informational infrastructure to implement remote teaching? Was there continuous training offered by the HEI to overcome the challenges of the migration from face-to-face teaching to digital teaching? How do faculty members deal with students' socioemotional issues, considering their work overload and high levels of stress? How do teachers simultaneously deal with diverse communicational and informational tools, especially in the various social networks used by students? How can we promote teacher well-being in the face of so many challenges caused by the RES?

These and other questions still require answers, since, in order for HEIs to guarantee their function of offering quality higher education, it is necessary to consider the overall assessment of faculty, students, administrative staff, families, public and private regulatory organizations in addition to society as a whole, considering that education only happens when there is systemic engagement, which in this case, is being directly affected by this imposed remote model.

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In this context, and seeking answers to the questions posed above, this article presents the first analyses of data from ongoing post-doctoral research in Education entitled "Socio-emotional and pedagogical reflections in the performance of Brazilian Higher Education teachers with Emergency Remote Learning (ERE)". To this end, in this cut, the central objective is to present results on the relationship between uneasiness, more specifically levels of teacher stress, with the excessive use of ICTs during remoteness in Higher Education.

2 Teacher stress and Technostress: the relationship with the excessive use of ICTs during educational remoteness

We live in the information and communication age, in a global, connected, scalable and multifaceted network "[...] of unprecedented increase of interdependence and complexity, which is causing a radical change in our way of communicating, acting, thinking and expressing" (GÓMEZ, 2015, p. 14). That is, with this speed of events, it is natural to think that the global educational system would be affected by the knowledge society, driving different approaches in which technology, even not being the main element of this transformation, is not something unknown, especially to teachers, who live a new work organization, in which it is necessary to specialize knowledge.

In this sense, according to Bona (2020, p. 16), "[...] teachers are increasingly required to guide their students on how to gather, research, abstract and use all the information that the technological world makes available, adding and strengthening the teaching-learning process." For the author, it has been a challenge for higher education to achieve the insertion of teachers and students in the digital culture, a statement that is confirmed in the pandemic context, in which the ERE has replaced the more traditional ways of acting of the teacher.

On this aspect, Koeher and Mishra (2005) have disseminated the Theory of Technological Pedagogical Content Knowledge (TPACK), based on the studies of Shulman (2014), more specifically on the Pedagogical Content Knowledge (PCK) category. The TPACK refers to the synthesized form of knowledge with the purpose of integrating Information and Communication Technologies (ICTs), currently known as DTICs, with classroom teaching and learning, that is, they highlight the existing links between technologies, specific pedagogical approaches, and curriculum content, conceptualizing how this triad integrates to produce teaching based on educational technologies (HARRIS; MISHRA; KOEHLER, 2009).

In practice, what was noticed with the data collected from the research and that will be presented below, is that such knowledge based on this theory is not linked to teacher training in general, nor in teaching practice. For this to occur, it is necessary to understand it as an emerging form of knowledge that goes beyond the three separate components (content, pedagogy, and technology). Its knowledge bases are integrated, grounded in pedagogical practice from the union of these three key elements and used in the teaching of the subjects

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taught, based on specific content, to be meaningful (HARRIS; MISHRA; KOEHLER, 2009).

This (dis)integration of factors may be associated with several personal reasons of the teachers, whether for their own university education, for the continued incentive by the HEIs, the students' counterpart, fatigue/stress in the professional performance or even for the (un)valuation of salaries by the market and/or governments. According to Bona (2020, p. 49) "Every day the demand for pedagogical innovations in teaching is more notorious and growing [...] However, the formation of the teacher who works in this segment is little valued [...]", partly due to the market logic defended in the existing relations of education with the productive system, more focused on technicism, that "those who know how to do know how to teach".

On the contrary, it should be noted that teaching, especially in the university context, is not static and permanent, as it should be based on the connection of "[...] knowledge, subjectivity and culture, requiring a scientific, technological [and/or] or artistic content highly specialized and oriented to the formation of a profession [...]" (LUCARELLI, 2000, p. 36).

Complementing this idea that teachers are generators of knowledge and that these are plural in their constitution and nature, Tardif, Lessard, and Lahaye (2001, p. 213) reinforce

> That the knowledge that serves as a basis for teaching, as seen by teachers, is not limited to well-circumscribed content that would depend on specialized knowledge. They cover a diversity of objects, issues, problems that are related to their work. In this sense professional knowledge is plural, composite, and heterogeneous [...].

Observing these characteristics that are complex and challenging for university teachers, especially in this scenario in which the ICTs have gained momentum with the ER and, even more so, with the social isolation imposed by the pandemic, the concern of teachers has redoubled in encouraging actions that go beyond the theoretical-practical context and that simulate, even precariously, these professional practice environments with the use of technological tools, offered by the HEIs or, in most cases, by the initiative of the teachers themselves. An example of this occurs with the practical disciplines (such as Supervised Internship and Practical Activities) provided for in the curricular contents of higher education courses, which have been replaced by remote activities. For Tardif (2010, p. 53) "[...] the daily practice of the profession does not only favor the development of 'experiential' certainties, but also allows an evaluation of other knowledge, through its retranslation according to the limiting conditions of experience".

In this sense, the teacher has in fact been retranslating his or her competencies and skills when trying to conduct, in a significant way, in his or her didactic planning, the possible contents to be applied synchronously or asynchronously, the use of digital tools available and offered by the HEIs, the competence to deal with students' socioemotional issues, the demands indicated by the labor market that requires professional qualification, the limitation of financial resources of students and teachers to invest in technological and internet equipment to promote the necessary accessibility, among other factors that leverage the

uneasiness of the actors involved in the teaching and learning process.

The presence of stress (and technostress) in university professors affects not only the level of satisfaction of the professional, but also the quality of teaching and interpersonal relationships inside and outside the work environment, causing feelings of frustration, mood changes, physical and psychological pathologies, and may also generate stress in students. In this sense, identifying the level of stress among teachers and the possible triggering factors in each school context contributes to the creation of strategies to improve the work environment and to face the adverse situations experienced, leading to a possible minimization of stress and teachers' uneasiness.

Selye (1956), the first researcher to use the term stress, defined it as General Adaptation Syndrome, consisting of three phases: alarm phase, resistance phase, and exhaustion phase. In the alarm phase, the body mobilizes resources to deal with the stressful situation, with a discharge of adrenalin, noradrenalin, and cortisol, accelerating some body processes and decelerating others. Also in this phase, some symptoms occur, such as headache, fatigue, muscle pain, shortness of breath, diarrhea, stomach pain, loss of appetite, and lack of energy. The resistance phase occurs with the prolonged presence of the stress agent, requiring a greater effort of adaptation on the part of the organism. At this moment, there is usually a rarefaction of the blood and blood glucose returns to normal. Although homeostasis is reestablished, the resistance to other stressors is reduced, and it is a phase in which the first psychosomatic signs appear. Finally, the exhaustion phase, when the stress hormones and the body's resources for adaptation are exhausted, causing the onset of psychosomatic illnesses and even a total collapse of the organism.

Marilda Lipp (2003) also highlights that the energy resulting from these discharges manifests itself in the individual through increased motivation and enthusiasm, and may increase the individual's mood, but, at the same time, there is a breach of homeostasis, because the expenditure of energy does not occur for the balance, but in order to face and adapt to a challenging situation.

Challenging situations for teachers have intensified with RPE and the intense use of new technologies, but it is still not very clear which features of ICTs create stress. Ayyagari, Grover, and Purvis (2011) built and evaluated a model that allowed them to identify some characteristics of ICTs that may contribute to the development of stress. According to the authors the "person-environment fit model" can be used as a theoretical lens and,

> [...] proposes that certain characteristics of technology-such as usability (usefulness, complexity, and reliability), intrusiveness (presenteeism, anonymity), and dynamism (pace of change)-are related to Stressors (work overload, role ambiguity, invasion of privacy, work-home conflict, and job insecurity) (AYYAGARI; GROVER; PURVIS, 2011, p. 831).

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Brod (1984) coined the term technostress, defining it as the stress related to the negative psychosocial effects caused by the use of digital technologies. For him, technostress is "[...] an adaptive illness caused by the lack of ability to deal with new computer technologies in a healthy way" (CARLOTO, 2010, p. 311), which can generate attitudes of disbelief, fatigue, anxiety, and feelings of ineffectiveness in workers, damaging both individual and organizational health. Salanova, Llorens, Cifre and Nogareda (2007) from the definition of Brod (1984), proposed a model for analysis of technostress consisting of three dimensions: 1) affective (anxiety versus fatigue); 2) attitudinal (attitude of disbelief towards technologies); and 3) cognitive (beliefs of ineffectiveness in the use of technologies).

These models that contribute to understanding the causes and consequences of technostress in teachers will be discussed below, along with the results of the research.

3 Method, Sample, and Research Instruments

The applied methodology, of a quanti-qualitative nature, is concatenated with the proposed objectives, establishing the necessary connections to obtain the theoretical-empirical corpus of analysis and qualified textual production from the results obtained in the time and space of the research in question. Thus, the construction of this text was carried out from a triangulation process, interweaving three sources of information: 1) results from previous research obtained from the State of the Knowledge (DoK); 2) empirical data obtained through a questionnaire answered by the research subjects and analyzed using descriptive statistics; 3) analysis, from the theoretical reference of authors who study the central theme, seeking to confer originality and relevance to the discussion.

With the quanti-qualitative approach proposed, we resorted to Gramsci (1995, p. 50) who defends that "[...] working on the quantity, that one wants to develop the 'corporeal' aspect of the real, does not mean that one wants to forget the 'quality', but, on the contrary, that one wants to put the qualitative problem in the most concrete and realistic way". For the author, the use of quantitative data comes from the researcher's desire to develop qualitative analyses according to a mode of development that can be controlled and measured.

We understand the need for interaction between quantitative and qualitative approaches, since they are real phenomena that give concrete meaning to data, allowing "[...] social relations to be analyzed in their most "ecological" and "concrete" aspects and deepened in their most essential meanings" (MINAYO; SANCHES, 1993, p. 247). In this sense, the confluence between these two natures contributes to generate and deepen research questions.

Based on this proposal, a structured questionnaire was developed as an instrument for data collection, using the Google Forms application, consisting of thirty questions distributed as follows: ten questions about socio-professional data and twenty questions about perceptions, feelings, skills, and support from the HEI during the Emergency Remote Learning period.

The criterion used for the stratification of the sample was conditioned to Brazilian teachers who work in in-class courses at HEIs that joined the ERE, between the months of June and September 2021. According to data from the Anísio Teixeira National Institute for Educational Studies and Research (Inep), in the last census published in 2020, there were 386,073 teachers linked to higher education and in service. Based on this, considering the margin of error of 5% and confidence level of 90% on the population highlighted by Inep, the universe of participants was statistically selected, defining a minimum of 273 respondents. The survey participants were invited to participate in the study by e-mail, WhatsApp, Instagram, and Facebook. The invitation already included the link to access the online questionnaire, and 311 completed questionnaires were returned.

For this article, four questions were selected and analyzed: 1) What is your stress load during the pandemic of COVID-19? 2) To what reasons do you attribute this stress load? 3) Did your HEI promote continued training to teachers for the use of ICTs? 4) How do you evaluate your competence for the use of ICTs? For the analyses, descriptive statistics was used, which, according to Reis and Reis (2002, p. 5), "[...] is the initial phase of this process of study of the collected data" and contributes to "[...] organize, summarize and describe the important aspects of a set of characteristics observed" in the collected data.

Such questions were selected from the research instrument applied, and the participants had access to the Free and Informed Consent Form even before answering, in which the research objectives and risks were presented, according to the ethical guidelines of the Ethics Committee on Human Beings (ECHB) linked to the University that approved the research, as well as the National Committee for Ethics in Research (Conep).

4 Results

The socio professional profile of the research participants, and according to the data obtained, was outlined as follows: 63% identified themselves as female; 31.8% as 36 to 45 years old and 25.4% as 51 to 60 years old; 21.5% have 25 years or more of service in the classroom and 17.4% between 20 and 25 years of service. Regarding the place of residence, there were respondents from all Brazilian states, however, the most representative were 42.8% from Mato Grosso do Sul; and 15.8% from São Paulo. Regarding the level of education, 47.9% have a doctorate, 29.3% a master's degree, and 15.1% a post-doctorate, and the predominant academic area is Applied Social Sciences (29.9%), followed by Human Sciences (24.8%). Regarding professional ties, 50.8% come from public HEI and 40.8% from private HEI; furthermore, 64.3% work in universities and 13.5% in university centers.

The answers given to the questionnaire: "What is your stress load during the COVID-19 Pandemic?", presented in Graph 1, allow us to observe that this group of teachers already presents worrying data.

Graph 1. Level of Teacher Stress
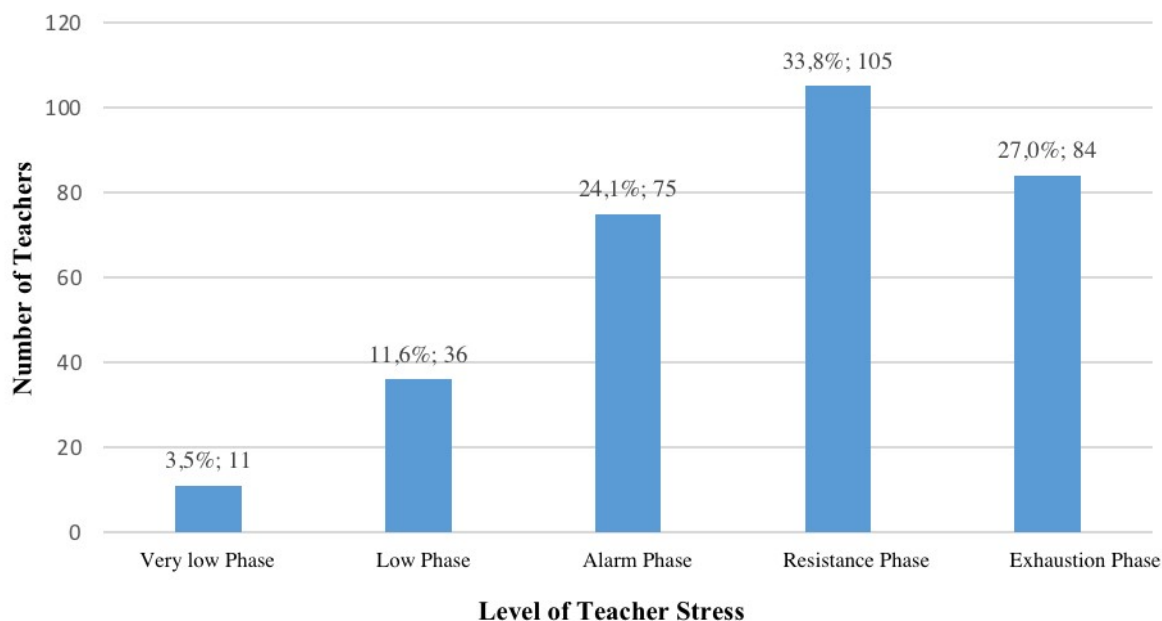
Source: Prepared by the authors, based on survey data.

According to the results illustrated in Graph 1, it can be seen that 84.9% of the teachers already present some level of stress, of which 24.1% are in the alarm phase, 33.8% in the resistance phase and 27% in the exhaustion phase. Even considering that stress is not the pathogenic element of diseases, it leads to a weakening of the somatic and psychological that manifests itself due to the state of exhaustion present (LIPP; MALAGRIS, 2005). Besides this, it should be considered that "[...] when stress acts for a long period of time, or is very intense, the organism has to spend a lot of energy, causing an unbalance, and may thus become vulnerable to diseases" (SILVA; MARTINEZ, 2005, p. 55). In this sense, from March 2020 to September 2021, when this article was written, 18 months have passed in which these teachers have felt this exhausting experience, which may lead to a greater predisposition to diseases.

It is also worth reinforcing that stress promotes a general wear and tear on the body, which can lead teachers to levels that may escape self-control, especially due to the burden of responsibilities that the condition of MPE has caused, not only to plan and act in a differentiated didactic and pedagogical way, but also due to the demands that go beyond teaching, inducing teachers to become producers of videos and editing, scriptwriters, presenters, digital influencers, and other activities and confrontations required by the pandemic period and in all areas of life.

Continuing the analysis, for the next question: "To what reasons do you attribute this load of stress?", the teachers explain the following reasons, presented in Graph 2:

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Graph 2. Reasons for the Teachers' Stress Load
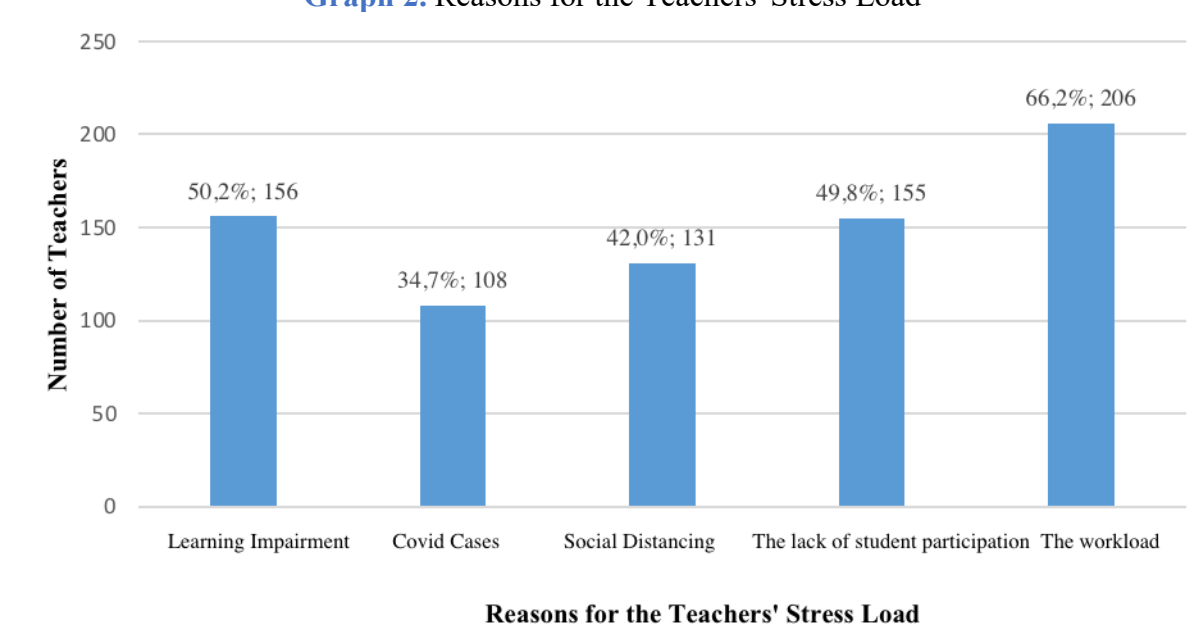
Source: Prepared by the authors, based on survey data.

As for the reasons that teachers attribute to the increase in the stress load, according to the answers it is possible to see that, for 66.2% of the respondents, the increase in the workload of the RPE with the exhaustive use of digital technologies was the greatest source of increased stress. The perceived damage to student learning with the synchronous and asynchronous activities promoted was also cited as a reason for stress for 50.2% of the faculty members participating in the survey. And the lack of student participation during classes in the remote modality was pointed out by 49.8% of the teachers.

These answers indicate that stress may be directly related to the drastic changes in the way university teachers teach who, used to the traditional teaching model, found themselves performing several digital activities simultaneously, as well as the difficulty of adaptation of students who were not prepared for teaching exclusively in this modality. Based on the studies already mentioned by Brod (1984), we can also state that the Covid-19 pandemic has forced teachers and students to reinvent themselves, requiring great efforts of adaptation from everyone, causing symptoms of technostress, whether affective, attitudinal and/or cognitive.

In this same path, it was pointed out that the HEIs also needed to adapt, both to equip themselves with modern and intuitive technological tools and also to provide continuing education for teachers to deal with the use of ICTs. On this aspect, the answers given by the participants of this research to the question "Did your HEI promote continued training for teachers to use the DTICs?" points out that most HEIs were concerned with offering these trainings, as shown in Graph 3.

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**Graph 3**. Does your HEI promote continued education for the use of ICTs
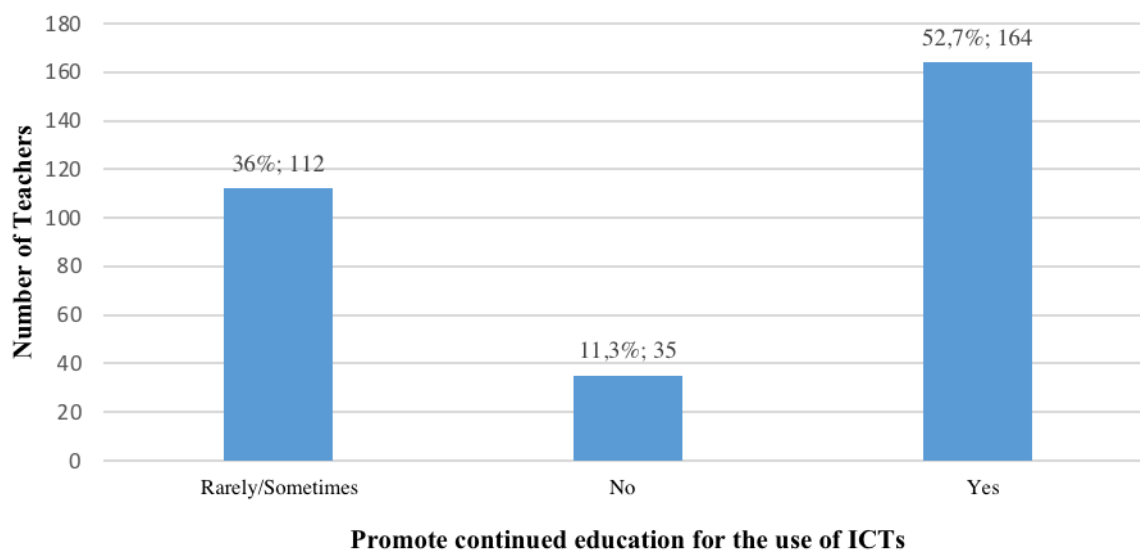
Source: Prepared by the authors, based on survey data.

Despite the majority (52.7% of respondents) confirm that they received support from their HEIs through continuing education in ICTs, it is necessary to consider that a representative part of the teachers in this group participating in the research did not receive support to face the disruptive process of the "analog" model practiced in face-to-face teaching, for another, remote. In this case, part of the complaints of teachers with high levels of stress and technostress may be associated with the lack of skills for didactic transposition, with such available resources. And, in this case, continuing education for the development of skills for the use of ICTs is fundamental to minimize teachers' stress.

In 2010, therefore before the pandemic context treated here, Carlotto and Câmara (2010) already warned that

> [...] in this scenario of multiple organizational demands for updating and training, the worker is constantly called upon to deal with new information and increasingly finds himself faced with numerous situations to which he needs to adapt. Their work requires greater cognitive demands and, for this reason, the greater the overload on their mental processes. This overload, caused by internal stimuli (personal needs and perspectives) and external (demands of productive systems and social pressure), is increasing and more recurrent (CARLOTTO; CAMARA, 2010, p. 311).

As for the skills to use ICTs in the teaching and learning process, from the answers given to the question: "How do you evaluate your competence to use ICTs?", the participants of this research answered as shown in Graph 4.

Graph 4. Teachers' competencies for the use of ICTs
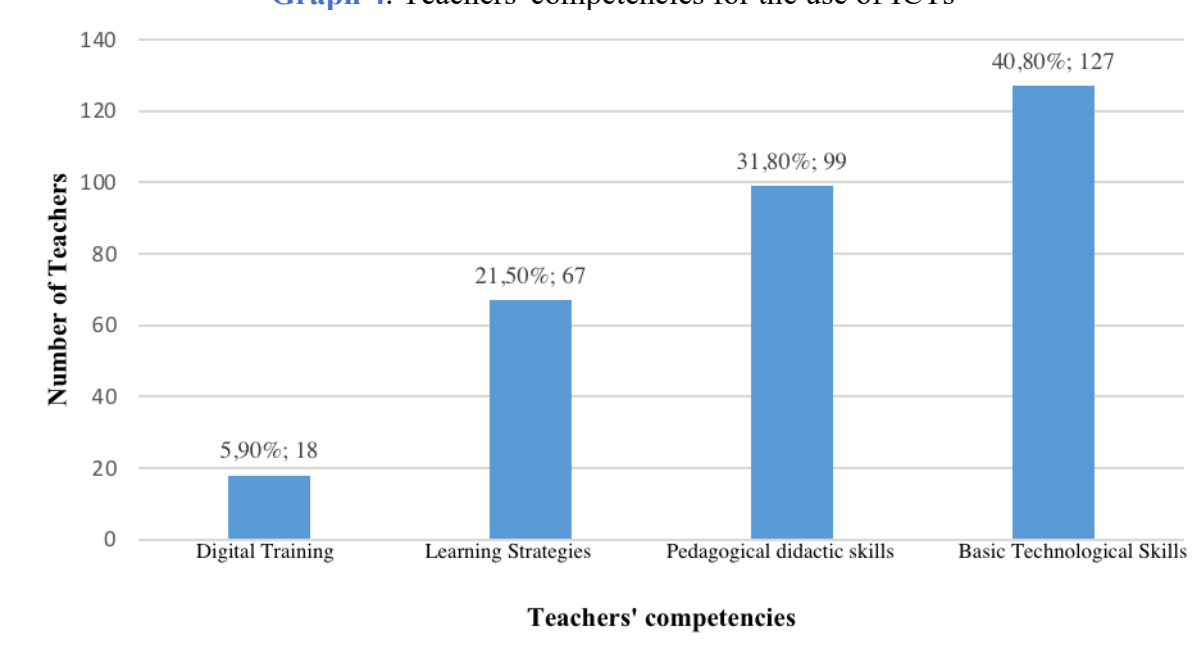
Source: Prepared by the authors, based on survey data.

Comparing the data presented in Graphs 4 and 3, it is observed that, although most of the teachers in this research have received training by their HEIs, a large percentage (40.8%) still considers themselves to have basic levels of skills and competencies with the use of technologies that, if added to those who consider themselves to have didactic-technological competence, comes to 72.6% of respondents with some deficit or difficulty in the use of ICTs. That is, even if there is the effort of the teacher in seeking to adapt to the conditions imposed by the pandemic context that led to the SRE, the time factor to adapt to the "new" way of teaching and learning must be considered, after all, we are dealing with different groups of academic background, time of professional experience, age, professional bond, working conditions, access to resources and technological and informational equipment needed, among other factors that directly impact the teaching practice.

It is imperative that "[...] it is up to the university teacher the challenge of dialoguing with new technologies without losing his interactive didactics in the construction of knowledge in the classroom" (BONA, 2020, p. 18). Added to this effort is the need to consider that the well-being and quality of life in the teaching work is a basic condition for their actions to generate significant results.

With this, technology gains speed and dynamism during the RES period, directly affecting the teaching dynamics, whose results can be evidenced with the high rates of technological stress, called technostress. Given this context, we realize that the transformations generated by new technologies require preventive actions in order to avoid risks and negative effects for the worker and, consequently, for the organization in which teachers are professionally linked.

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5 Final Considerations

The changes generated by new technologies and, especially, by the pandemic period we are living through, demand several efforts of adaptation from teachers, students and HEIs to overcome the challenges posed by the RRE. In the specific case of the teachers, the focus of this study's analysis, it can be noticed that, despite several training and technological support actions offered by the HEIs, it was not possible to totally avoid the risks and negative effects on the teacher's health and work and, consequently, on the HEIs.

In the pandemic context, the technostress among university teachers is directly related to the negative effects of the excessive use of the DTICs, since, although the national legislation allows up to 40% of the application in the curricular integration of subjects in DE modality in the face-to-face university curricula, what was witnessed, in practice, was a rupture of the face-to-face teaching model without the introduction of these technological tools as didactic mechanisms of interaction between teachers and students.

With the development of the research, we observed in the responses of university professors that the RES generated both negative and positive effects on socioemotional well-being. In the first aspect, it caused an increase in anxiety and communication fatigue in teachers due to the continuous use of platforms provided by HEIs and the fact that students "invaded their personal social networks full-time. In the second aspect, the ERE generated new experiences in teaching didactics, accompanied by continuing education offered by the HEIs that contributed to the learning and perception of new ways of being a teacher.

In this set of impacts generated, we understand that the issue of technology itself is not "neutral", or rather, it does not by itself generate positive or negative effects on the didactic-pedagogical relationship. What is considered are the attributes that these factors (positive and negative) generate demands, the scarcity of technological resources, and the beliefs in one's own abilities and competencies to face the success of the change in the way of teaching and learning with the use of ICTs.

From the results, we can state that the mere exposure to ICTs in the teaching work does not generate negative socioemotional effects, but that there are intervening variables that mediate and modulate this relationship, such as the evaluation of past experience with the use of technologies, attitudes, and values (SALANOVA, 2003). The need for continued training so that the use of ICTs becomes a facilitator of the teaching and learning process during the pandemic period is a fact and was conducted according to the possibilities offered by the HEIs. However, it is necessary and urgent to consider the inclusion, in the curricula of initial teacher training, of subsidies that contribute to the development of "fundamental skills and competencies for [teachers] to deal with these new technologies, thus adding a relevant epistemology to teaching in the university environment [...] that are developed inside and outside academic circles" (BONA, 2020, p. 16).

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Given such challenges, we find that HEIs must continue to invest in continuing education for teachers in both technological and socioemotional aspects, so that there can be a balance between the integration of teaching resources used before the pandemic (more conservative teaching model) with those more interactive and innovative communicational resources, experienced during the ERE. When this issue is clarified, we believe that new possibilities will emerge, especially from the continuity of studies about the theme that involves the teaching well-being, considering the teaching practice more dynamic and necessary for the current times, which require personal attitudinal competencies and skills relevant to society in general.

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