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Exploring Technostress Effects on Job Performance of Higher Education Peruvian English Teachers

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ABSTRACT

The aim of this research as a literature review is to explore the impact of technostress on the job performance of university teachers in Peru within the post-pandemic context. By conducting a comprehensive review of the literature, we delve into the various aspects of technostress, identify the factors that contribute to its occurrence, and assess its effects on the psychological well-being of Peruvian university teachers. Elements such as information overload, constant interruptions, insufficient technological competence, technological dependency, and technical difficulties are identified as causes of technostress among teachers. Additionally, it is highlighted that the post-pandemic context, with the transition to online learning and limitations in access and quality of technology, has exacerbated this phenomenon. As a conclusion, the technostress experienced by Peruvian university teachers has negative consequences on their psychological well-being, manifesting as anxiety, exhaustion, difficulties in interpersonal relationships, sleep problems, and decreased academic performance. Based on these findings, the importance of developing intervention strategies and support that address technostress in Peruvian university teachers is emphasized, promoting a healthy use of technology in the post-pandemic context.

INTRODUCTION

In January 2020, the World Health Organization (WHO) declared a public health emergency of international concern due to the spread of COVID-19. As a result of this event, numerous challenges arose that required adaptation in various aspects of life, and education was one of them. Different pedagogical phenomena emerged to quickly implement a reengineering of teaching and learning for virtual or remote contexts. Education policies in Peru were not designed to successfully cope with virtual education. Face-to-face instruction prevailed in all undergraduate and graduate programs. The complications became immediately evident due to the limited knowledge of digital competencies required to conduct a class session using video conferencing platforms such as Zoom, Google Meet, Blackboard Collaborate, or Teams.

On March 15, 2020, a state of emergency was declared in Peru through Supreme Decree No. 044-2020-PCM. Starting from the following day, the suspension of all in-person educational activities was ordered, and a new teaching methodology was rapidly implemented. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), by May 2020, over 1.2 billion students worldwide had stopped attending face-to-face classes in their educational institutions (CEPAL-UNESCO, 2020). This has posed difficulties for teachers in effectively addressing resources within semi-presential class sessions, such as time management and conducting activities in the post-pandemic context.

The integration of Information and Communication Technologies (ICT) has become an effective strategy to adapt educational processes during this period of

change. Educational activities were able to continue by incorporating educational technology. Both public and private universities implemented hybrid and distance learning modalities, which provided a series of advantages but also presented didactic and methodological challenges. This transition directly affected some university teachers as they had to adapt to different environments from their traditional classrooms, interacting with students through screens and exploring various technological options. This created an educational challenge where teachers were compelled to consider improvements in their pedagogical practices and ensure the achievement of learning objectives in different curricular experiences. This is where the phenomenon of technostress emerges, conceptually defined by Coppari *et al.* (2018) as the emotional, physical, and cognitive difficulty that leads to fatigue or exhaustion due to the inappropriate use of technologies.

LITERATURE REVIEW

It is imperative to highlight the need to investigate this issue in this new social context where, after three years of pleasant and challenging situations, we are experiencing a new normal. In addition, certain universities have implemented the Blended Learning methodology in their curriculum, which provides them with a specialized platform to carry out activities and achieve cumulative learning. The Zoom platform is used for undergraduate English courses, along with the MyELT platform from National Geographic Learning for foreign language English sessions. Teachers have expressed on several occasions that they feel stressed or anxious from working most of the day in front of a computer. Others believe

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that the virtual mode does not greatly facilitate the teaching process, and some find it difficult to relax after several hours of using video conferencing and educational platforms. This study is justified on several levels, according to Bernal (2010). Firstly, there is theoretical justification, which is based on current and relevant scientific literature in the psychopedagogical field. The aim is to understand the level of stress associated with the frequent use of educational technologies. Secondly, there is practical justification, as this study seeks to benefit the participants by providing knowledge on attitudinal, affective, and cognitive aspects that can be improved. Additionally, it aims for teachers to incorporate various active strategies to make class sessions more interesting and motivating for students. It is also intended for this study to serve as a relevant precedent for Peruvian universities to implement trainings related to stress and anxiety management for the student community's benefit. Furthermore, it seeks for teachers to be able to manage their efforts to learn under personal and academic pressure without neglecting their emotional stability. Thirdly, there is methodological justification, as the active research diagram (ARD) strategy is employed to construct the theoretical foundations in a systemic and heuristic manner (Sánchez *et al.*, 2022). Lastly, there is epistemological justification, which is useful for analyzing the research problem by applying the scientific method. It focuses on digital transformation and promotes autonomous learning (Nina-Cuchillo *et al.*, 2021). In response to the COVID-19 pandemic, educational institutions have had to adapt their teaching methods and migrate towards online learning. This sudden migration has brought about significant changes in how teachers adapt and face these new challenges, including technostress. Technostress refers to the negative reactions associated with the excessive use of technology and can impact the psychological well-being of teachers. With the aim of better understanding this phenomenon and proposing effective intervention strategies, this research will focus on examining the factors contributing to technostress in Peruvian university teachers in the post-pandemic context. The study will seek to identify dimensions of technostress, as well as elements such as information overload, frequent interruptions, insufficient technological competence, technological dependence, and technical difficulties, which can trigger technostress in teachers.

MATERIALS AND METHODS

In this literature review, a comprehensive search of

scientific articles, postgraduate theses, and relevant documents related to the topic of technostress and job performance of university teachers in Peru within the post-pandemic context was conducted. Academic databases and online resources such as Google Scholar, SciELO and Scopus, were used to gather the necessary information. To narrow down the search, keywords related to technostress, job performance, university teachers, and the post-pandemic context were utilized. Studies published in both Spanish and English were included, with a specific focus on those addressing the topic in the Peruvian context. After collecting the information, a thorough analysis and synthesis of the most relevant findings were performed. Factors contributing to the development of technostress among university teachers in Peru, as well as its effects on psychological well-being, were identified. Dimensions of technostress were explored, and elements such as information overload, constant interruptions, insufficient technological competence, technological dependence, and technical difficulties were highlighted as potential triggers of technostress in teachers. The contribution to knowledge of this research lies in the in-depth analysis of the impact of technostress on the job performance of university teachers in Peru, specifically within the post-pandemic context. Through a comprehensive literature review, the factors contributing to the development of technostress among teachers have been identified, and the negative effects on their psychological well-being have been highlighted. Furthermore, this research has provided an understanding of the dimensions of technostress and how elements such as information overload, constant interruptions, insufficient technological competence, technological dependence, and technical difficulties can trigger technostress in teachers. This detailed comprehension of the triggering factors of technostress in the specific context of Peru is a valuable contribution to existing knowledge.

Analysis of the Topic

Technostress: Definition and Contributing Factors

Technostress refers to the negative response and adverse effects that individuals experience due to the excessive use of technology (Brod, 1984; Salanova, 2003; Tarafdar *et al.*, 2007; Wang *et al.*, 2008; Sellberg & Susi, 2014; Tacy, 2016; Betancourt, 2022). This definition encompasses both the physical and psychological aspects associated with prolonged and problematic use of technological devices and digital tools.

Table 1: Definitions of Technostress

Authors	Conceptual definition
Brod (1984)	Technostress is a condition related to the difficulty of adequately adapting to new computer technologies.
Salanova (2003)	Technostress is a negative psychological state that arises as a result of using Information and Communication Technologies (ICT) or perceiving a future threat in their use. This state is conditioned by the perception of an imbalance between the demands and resources associated with the use of ICT, leading to a high level of unpleasant psychophysiological activation and the development of negative attitudes towards ICT.

Tarafdar <i>et al.</i> (2007)	Technostress occurs as a consequence of using Information and Communication Technologies (ICT), leading to a state of stress in individuals.
Wang <i>et al.</i> (2008)	Technostress is a negative psychological state that originates from the use of Information and Communication Technologies (ICT). It is characterized by feelings of unease, fear, tension, and anxiety when learning and using technologies related to direct or indirect computer use. This state of stress can generate a high level of non-pleasurable psychophysiological activation and the development of negative attitudes towards ICT.
Sellberg y Susi (2014)	It is characterized by high cognitive demands and constant physiological activation, experiencing difficulties in comprehending and having an overview of information.
Tacy (2016)	It is an emerging psychological disorder experienced by individuals who use technology.
Salazar (2019)	While technostress is generally associated with negative effects, it is important to note that it can also have some positive effects on individuals. For example, it can drive increased individual performance by generating greater motivation and focus on tasks related to the use of Information and Communication Technologies (ICT).
Betancourt (2022)	Negative manifestations of technostress are reflected in psychological rejection and an unfavorable experience in the use of technologies. This implies a negative perception of technostress with its corresponding consequences on individuals.

Note: Information compiled from various scientific articles and postgraduate theses.

Technostress manifests in various symptoms, including anxiety, exhaustion, irritability, difficulty concentrating, sleep problems, and interpersonal conflicts associated with technology use. These symptoms can negatively impact the psychological and emotional well-being of individuals experiencing technostress.

Contributing Factors to Technostress

In the case of Peruvian university teachers, there are several factors that can contribute to the development of technostress. These factors can be classified into the following dimensions of study

Information Overload

According to Parra-Medina and Álvarez-Cervera (2021), the knowledge and application of a large amount of information through technological devices can generate a sense of overwhelm and difficulty in filtering and processing that information properly.

Constant Interruptions

For Fernández-Martínez (2020), constant notifications and alerts on mobile devices and applications can disrupt workflow or study flow, affecting concentration and productivity.

Insufficient Technological Competence

Based on Prieto-Quezada (2023), limited knowledge of digital skills and the ability to efficiently use technological tools can generate stress and frustration when faced with academic tasks that require their use.

Technological Dependence

Excessive use and dependence on technology can create a sense of anxiety and discomfort when there is no access to it or when attempts are made to reduce its use (Losada and Lanuque, 2021).

Technical Difficulties

Technical problems, such as poor internet connections, device failures, and malfunctioning applications, can generate stress and frustration when trying to perform online academic tasks (Carrasco, 2021).

Impact of Technostress on Psychological Well-being

Taking into account Arredondo and Caldera (2022), technostress can have a significant impact on the psychological well-being of teachers. Some possible effects include:

Anxiety and Stress

Excessive use of technology can increase stress and anxiety levels, negatively affecting mood and mental health.

Fatigue and Burnout

Technological overload and lack of disconnection can lead to feelings of fatigue and burnout, impacting energy and job performance.

Difficulties in Interpersonal Relationships

Excessive dependence on technology can interfere with personal relationships, causing social isolation and difficulties in face-to-face communication.

Sleep Problems

Prolonged exposure to electronic devices before sleep can negatively affect sleep quality, hindering proper rest and impacting academic performance and overall well-being.

Decreased Academic Performance

Technostress can affect concentration and job performance due to constant distraction and difficulty in efficiently managing time.

The Post-pandemic Context and Its Relationship with Technostress

According to López *et al.* (2021) and Sarabadani *et al.* (2018), the post-pandemic context has led to a significant increase in the use of technology for academic and work activities. This has created an environment in which university teachers have been forced to quickly adapt to online learning and use digital tools intensively. Some relevant aspects include:

Abrupt Transition to Online Learning

The pandemic caused a sudden shift to online learning, which has presented challenges and adjustments in becoming familiar with new platforms and study methods.

Increased Workload

The migration to the digital environment may have led to an increase in workload, as teachers may face more online tasks and activities that require greater use of technology.

Restrictions on Access and Technology Quality

Digital disparities and limitations in obtaining devices and high-quality internet connection can result in inequalities in accessing online education, which can increase stress and discomfort levels.

Changes in Social Interaction

The lack of face-to-face interaction and reliance on virtual communication can impact social relationships and contribute to feelings of isolation and loneliness.

Job Performance in Teaching

In the field of organizational psychology and human resource management, job performance is a widely studied topic. Numerous relevant theoretical concepts have been developed, and notable authors have contributed to its research. The following are some of these theoretical concepts and mention of some of the most recognized authors in the study of job performance.

Motivation-Hygiene Theory (Herzberg)

Frederick Herzberg proposed a distinction between motivational factors and hygiene factors in the workplace (Madero, 2019). Motivational factors, such as recognition and professional growth opportunities, have been positively associated with job performance. On the other hand, hygiene factors, such as salary and working conditions, when not adequately satisfied, can generate dissatisfaction, and have a negative impact on performance.

Some Advantages of this Theory can be

Comprehensive approach: Herzberg's theory addresses both motivational and hygiene aspects of work, making it

a comprehensive theoretical framework for understanding job satisfaction.

Individualized Approach

This theory recognizes that the needs and factors influencing job satisfaction may vary among individuals. Therefore, it provides an individualized approach to understanding what motivates each employee and how to enhance their job satisfaction.

Disadvantages of the Motivation-Hygiene Theory Oversimplification

Some critics argue that this theory oversimplifies the complexity of human motivation at work. There may be other factors beyond those identified by Herzberg that also influence job satisfaction.

Not Applicable to All Employees

Herzberg's theory is primarily based on studies conducted with professionals and office employees. It may not be equally applicable to other types of workers, such as employees in operational or service roles.

Expectancy Theory (Vroom)

Victor Vroom focuses on individual expectations about effort, performance, and outcomes (Sanchis, 2020). According to this theory, job performance can be influenced by the belief that greater effort will lead to better performance and, in turn, positive outcomes such as rewards and recognition.

Job Demands-Resources Model (JD-R)

The JD-R model proposed by Arnold Bakker and Evangelia Demerouti emphasizes the importance of job resources and job demands on job performance. According to this model, job resources, such as social support and development opportunities, promote job performance, while job demands, such as stress and excessive workload, can negatively affect performance (Bakker & Demerouti, 2013).

Organizational Behavior Theory (Luthans)

Fred Luthans (2002) developed this theory that emphasizes the role of social and psychological factors in job performance. According to this theory, factors such as self-efficacy, social support, and effective leadership influence job performance. In addition to the previous information, Charlotte Danielson (2011) is a renowned educator and author who has developed a widely used framework for teacher performance evaluation known as the "Framework for Teaching." Her work has focused on improving teaching practice and providing a systematic approach to assess and develop teacher effectiveness.

Table 2: Conceptual and Operational Description of Charlotte Danielson's Theory

Theory	Dimensions	Description
Systematic Approach for Evaluating and Developing Teacher Effectiveness. The approach is based on the premise that effective teaching involves a combination of knowledge, skills, and practices that can be identified, evaluated, and improved.	Planning and Preparation	Involves effective planning of lessons and learning experiences, including setting clear objectives, selecting appropriate resources, and designing assessments.
	Learning Environment	Refers to creating a positive and conducive classroom environment for learning, promoting active student engagement, effective time management, and establishing behavioral norms.
	Instruction	Addresses the teaching strategies and practices employed by the teacher, such as clear content presentation, use of diverse methodologies, fostering critical thinking, and providing effective feedback.
	Professional Responsibility	Involves reflection on teaching practice, commitment to continuous learning, collaboration with colleagues, and engagement in the educational community.

Note: Adapted from Danielson (2011).

DISCUSSION

The literature review provided a deeper insight into the topic of technostress and its impact on the job performance of university teachers in Peru within the post-pandemic context. The findings reveal that the rapid transition to virtual education as a result of the COVID-19 pandemic has presented significant challenges for teachers (CEPAL-UNESCO, 2020). The lack of preparation and digital competencies has given rise to the phenomenon of technostress, negatively affecting teachers' psychological well-being (Wang *et al.*, 2008).

It has been observed that factors such as information overload, constant interruptions, insufficient technological competence, technological dependence, and technical difficulties contribute to the development of technostress in this context (Parra-Medina & Álvarez-Cervera, 2021). These factors can lead to anxiety, exhaustion, difficulties in interpersonal relationships, sleep problems, and decreased academic performance among teachers (Losada & Lanuque, 2021; Carrasco, 2021).

It is crucial to recognize that the post-pandemic context has intensified the use of technology in education, significantly impacting teachers' professional lives (Fernández-Martínez, 2020). The lack of preparedness and limited access to high-quality technological resources have been additional challenges for many teachers in Peru (Prieto-Quezada, 2023).

In the discussion, the importance of addressing this issue to ensure teachers' well-being and promote a healthy educational environment has been emphasized (Salanova, 2003). Proposed interventions include the development of digital skills, strategies to manage technostress, and the promotion of a healthy balance between technology use and personal well-being (Brod, 1984; Betancourt, 2022). Collaboration among educational institutions, continuous professional development, and the implementation of policies fostering work-life balance are key to creating a positive and successful educational environment in the post-pandemic context (Nina-Cuchillo *et al.*, 2021). By prioritizing teachers' well-being, a conducive learning environment can be established for both educators and

students (Sánchez *et al.*, 2022).

CONCLUSIONS

The COVID-19 pandemic has presented numerous challenges for the field of education, particularly in the transition to online teaching. In the case of Peru, a country where face-to-face education was predominant at all levels, the adaptation to virtual education has been particularly difficult. The lack of preparedness and digital competencies among teachers has given rise to phenomena such as techno-stress, which negatively affects their psychological well-being.

Techno-stress refers to the negative response and adverse effects experienced by teachers due to the excessive use of technology. Factors such as information overload, constant interruptions, insufficient technological competence, technological dependence, and technical difficulties contribute to the development of techno-stress in this context.

The impact of techno-stress on the psychological well-being of teachers is significant. It has been observed that this phenomenon increases levels of anxiety and stress, causes fatigue and exhaustion, hinders interpersonal relationships, negatively affects sleep, and decreases academic performance. It is crucial to address this issue to ensure the well-being of teachers and promote a healthy educational environment.

As the education system continues to navigate the post-pandemic context, it is essential to provide support and resources for teachers to enhance their digital skills, manage techno-stress, and promote their overall well-being. This can be achieved through training programs, the provision of technological tools and infrastructure, and the implementation of strategies that foster a healthy work-life balance and effective coping mechanisms. By prioritizing the well-being of teachers, we can create a positive and sustainable educational environment for both educators and students.

In the post-pandemic context, where the use of technology has become increasingly prevalent, it is crucial to provide support and training to teachers to effectively address

the challenges of virtual education. This includes the development of digital competencies, the implementation of strategies to manage techno-stress, and the promotion of a healthy balance between technology use and personal well-being. In addition to the above, it is essential to understand the factors contributing to techno-stress in Peruvian university teachers in the post-pandemic context in order to develop appropriate interventions. It is necessary to design support strategies that promote the psychological well-being of teachers and facilitate their adaptation to virtual teaching environments. This way, quality education can be ensured, and a conducive learning environment can be created for students. By prioritizing the well-being of teachers and providing the necessary resources and support, educational institutions can help mitigate the negative effects of techno-stress and create an environment where teachers can thrive in their virtual teaching roles.

Collaboration between educational stakeholders, continuous professional development, and the implementation of policies that promote work-life balance and mental health support are key to fostering a positive and successful post-pandemic educational landscape.

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