

Technostress: An Emerging Challenge in the Age of Artificial Intelligence–Based Learning among University Faculty

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Received: November, 01, 2025; Revised: November, 17, 2025

Accepted: December, 27, 2025; Published: June, 22, 2026

Abstract

Purpose: The rapid integration of artificial intelligence (AI) technologies in higher education offers significant opportunities but also introduces technostress among university faculty. This study qualitatively explores faculty members' lived experiences of technostress in the context of AI-based learning environments.

Methodology: This qualitative study employed an interpretive phenomenological approach. Twenty-one faculty members from the University of Tabriz and Farhangian University of Tabriz were purposefully selected. Data were collected through semi-structured interviews and analyzed using Colaizzi's seven-step method. The trustworthiness of the findings was ensured through the criteria of credibility, transferability, dependability, and confirmability.

Findings: The data analysis revealed four main themes: (1) antecedents of technostress (individual–psychological factors, educational–organizational conditions, the nature of technology, and environmental–social norms); (2) consequences and impacts (weakened teaching–research performance, threats to professional quality of life, and psychological challenges); (3) professional growth and adaptation of faculty in the face of technostress (teaching innovation, development of digital skills, enhanced research opportunities, and increased flexibility); and (4) confronting strategies (individual strategies, organizational support, and policy and planning measures).

Conclusion: Despite differing views on the positive or negative nature of technostress, this phenomenon can influence faculty members' mental health, professional quality of life, and academic productivity. At the same time, beyond its negative effects, it may also provide opportunities for professional growth, instructional innovation, and the development of digital skills.

Value: This study contributes to a deeper understanding of the interplay between emerging technologies, organizational environments, and faculty well-being, offering practical strategies to empower faculty members and inform the design of more supportive digital learning environments.

Keywords: *Technostress, Artificial Intelligence, University Faculty, Higher Education*

How to Cite:

Moradi Toranche, S., Adib, Y., & Kardan Halvae, Zh. (2026). Technostress: An Emerging Challenge in the Age of Artificial Intelligence–Based Learning among University Faculty.. *Journal of Knowledge-Research Studies*, 5 (2), 103-119.

Doi: <https://doi.org/10.22034/jkrs.2026.21139>

URL: https://jkrs.tabrizu.ac.ir/article_21139.html?lang=en

Article Type: Original Article

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Publisher: University of Tabriz

E-ISSN: [2821-045X](#)

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Extended Abstract

Introduction: The rapid advancement of information and communication technologies, particularly AI-based tools, has transformed the landscape of higher education by creating capabilities beyond those offered by previous technological innovations, thereby redefining traditional teaching models, faculty roles, and educational relationships (Pasupuleti & Thiyyagura, 2024). These changes have increased the complexity of faculty responsibilities, placing them under multiple and overlapping demands, including continuous interaction with students, maintaining high professional standards, achieving educational and research goals within set deadlines, and fulfilling other routine duties, all of which can contribute to high levels of professional stress and anxiety (Belarmino et al., 2025).

Although AI provides significant benefits for teaching, its integration also presents challenges. Faculty face an increasing volume of digital content, the need to constantly update technological skills, and high expectations from students for immediate responses, all of which can elevate stress and anxiety levels (Li & Shiong, 2021; Sueyo-Vega et al., 2022). These conditions have given rise to the phenomenon of “technostress,” a type of stress related to technology that stems from individuals’ difficulties in adapting to technological changes and can lead to various psychological and physical consequences (Camacho & Barrios, 2022; Estrada-Muñoz et al., 2021). The term “technostress” was first introduced by Craig Brod in 1984 and defined as a “psychological phenomenon associated with the inability to adapt healthily to new computer technologies” (Dragano, 2020). Panisouara et al. (2020) also described it as “a consequence of inadequate adaptation to technology,” rooted in individuals’ inability to cope with technological changes, potentially causing psychological and physiological stress.

Despite extensive research on technostress among students and teachers, the experiences of university faculty in using AI tools—especially the new generation of generative AI—remain underexplored. Existing studies have primarily focused on overall stress levels or technology acceptance, with less attention given to the contextual factors, psychological dimensions, and professional consequences of technostress for faculty. Consequently, the psychological, behavioral, and professional impacts of this phenomenon in higher education contexts have yet to be fully examined.

Purpose: The rapid integration of artificial intelligence (AI) technologies in higher education, while creating significant opportunities, has also introduced challenges such as technostress among university faculty. This study aims to qualitatively explore faculty members’ lived experiences of technostress within AI-based learning environments.

Methodology: This qualitative, interpretive study employed a phenomenological approach to examine faculty members’ experiences of technostress and their interactions with emerging technologies. Participants were selected through purposive, criterion-based sampling and included faculty members from the University of Tabriz and Farhangian University of Tabriz. Twenty-one semi-structured interviews were conducted until theoretical saturation was reached. Data were transcribed and analyzed using Colaizzi’s seven-step method, incorporating open and axial coding to extract themes. To ensure trustworthiness, the

criteria of credibility, dependability, transferability, and confirmability were applied. Additionally, findings were reviewed by participants and methodological experts to validate the results.

Findings: A qualitative analysis of the interviews revealed that technostress among university faculty is shaped by a complex set of multidimensional factors. Antecedent factors include individual-psychological dimensions, such as low technological skills, high workload related to technology, work-life interference, and fear of being replaced by technology, as well as educational-organizational dimensions, including lack of technical and instructional support, absence of clear guidelines and policies, and unequal access to tools and infrastructure. In addition, the complexity of emerging technologies, rapid technological changes, software malfunctions, concerns over data security and privacy, and socio-environmental norms—such as peer competition and conflicting traditional and modern attitudes toward digital education — make faculty experiences with technology challenging and stressful. These factors contribute to psychological pressure, mental fatigue, decreased self-confidence, and persistent stress, resulting in consequences such as weakened teaching and research performance, reduced quality of instruction and creativity in course design, overreliance on technology, concerns about research accuracy and integrity, decreased productivity, satisfaction, and professional competence, difficulties in maintaining work-life balance, and psychological challenges such as diminished motivation and a sense of inadequacy.

However, continuous engagement with technology can create opportunities for professional growth. Experiences of technostress have been associated with innovation in teaching, development of digital and technological skills, increased motivation, flexibility, and self-confidence, improved research opportunities, better organization of tasks, and facilitated access to academic resources and data. Effective coping strategies include individual-level measures such as skill development and careful planning, organizational and institutional support through workshops, peer support networks, and workload management; and macro-level policies including the development of clear ethical and legal frameworks, investment in infrastructure, and ongoing monitoring of the impacts of artificial intelligence. Constructive use of these strategies can reduce technological anxiety, enhance self-confidence, improve productivity, and support informed decision-making, demonstrating that while technostress presents challenges, it can also act as a catalyst for professional growth, innovation, and the enhancement of teaching and research performance. Figure 1 illustrates the network of themes representing university faculty experiences of technostress in the era of artificial intelligence.



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Figure 1: Thematic network of university professors' experience of technostress in the age of artificial intelligence

Conclusion: In the current era, rapid developments in information and communication technologies, especially AI tools, have significantly transformed university faculty work patterns. While offering new opportunities to enhance teaching and research quality, these changes also impose substantial technological pressures, resulting in technostress (Harteis & Billett, 2023; Kasemy et al., 2022; Uygungil-Erdogan et al., 2025). Technostress may threaten mental health, professional quality of life, and academic productivity, yet, when addressed through appropriate organizational support and individual coping strategies, it can promote professional growth, teaching innovation, digital skill development, research opportunities, and faculty adaptability (Li & Wang, 2021; Califf, 2022; Chan & Tsi, 2024; Malik & Saleem, 2023). Establishing supportive digital learning environments, targeted training, transparent ethical and organizational policies, and mental health support is essential for effective technostress management and faculty empowerment (Ertmer et al., 2023; Gabbiadini et al., 2023; Saleem et al., 2024; Özgür, 2020; Alasgarova et al., 2024; Engelbauer, 2023; Kim & Lee, 2021). Technostress is thus a dual-faceted phenomenon: it can pose challenges to mental health and productivity, yet with conscious management and institutional support, it may serve as a driver of professional development, innovation, and skill enhancement. Strategic planning in digital academic environments, attentive to individual, organizational, and technological dimensions, is crucial for enabling faculty to leverage technological opportunities while minimizing negative impacts.

Value: This study contributes to a deeper understanding of the interplay between emerging technologies, organizational environments, and faculty well-being, offering practical strategies to empower faculty members and guide the design of more supportive digital learning environments.

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