Chapter 8
Technostress and Students in Sustainable Work Environment: An Empirical Study

K. Neelima Ravindran and M. Manjula

Abstract Technological advancements have significantly transformed the modern educational landscape, offering new opportunities and challenges for students. However, the widespread integration of technology in learning environments has also led to the emergence of a phenomenon known as "technostress" among students. This empirical study aims to investigate the impact of technostress on students in a sustainable work environment. The study employs a descriptive approach, using a quantitative survey method to gather comprehensive data from a diverse group of students. Participants were selected from various educational institutions and diverse socio-economic backgrounds to ensure a representative sample. The survey instrument measured the frequency and intensity of technostress experienced by students providing valuable insights into the underlying causes and coping mechanisms. Preliminary findings indicate that a significant number of students are affected by technostress in their educational pursuits.

Keywords Higher education · Students · Technostress

8.1 Introduction

With technological advancements and widespread use, ICT is being utilized more frequently in higher education institutions (HEIs). To enhance learning and automate work, technology is commonly employed in educational settings. In an effort to satisfy student expectations and gain from government incentives, technology-enhanced learning (TEL) has become increasingly adopted in academic contexts. Programs like integrated digital-based assessment, massive open online courses, learning management systems, student life cycle management, and attendance management systems are examples of how technology is being used for academic administration and student self-service. Student polls have shown that they are usually

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in favor of the use of ICT in the classroom, and online education and MOOCs have been found to cut the expenses of higher education for students. It has been shown that technology may assist HEIs in lowering bureaucracy and distance barriers.

ICT also makes it possible for HEI (Higher Education Institutions) to be transparent, process academic data more quickly, and streamline academic administration. The teaching and learning process is thought to be enhanced by the use of technology in the classroom. Although it is difficult to ignore the advantages of technology, there is a growing need to understand how it harms its users. In-depth analysis of technostress, or the "inability to change with changing technology," and its effects on work performance has been done on organizational people research. In a recent review, one of the six psychological and behavioral effects of technological stress was discussed, including how it negatively affects employee productivity.

There aren't many empirical researches that examine how prevalent technostress is among the younger population, especially among students. By causing students to be less productive, drop out, and deviate from their academic work, technology stress may increase the burden on higher education institutions. It is necessary to research how common technostress is among pupils as well as its effects. As they display a unique spectrum of traits and behaviors, today's students make for an intriguing group to study.

Due to the urgent use of online platforms in the midst of a scary epidemic, face-to-face instruction has been replaced, exposing personnel in higher education to new shifts. There have been some negative effects, notably on worker welfare and output. It is now important to comprehend how people have used technology to make remote employment possible. Every leader strives to achieve efficient academic and support staff operations under such circumstances. Understanding how the finest academic practices are evolving is vital for scholars. This study comprises six key sections. The introduction sets the stage, providing the context and significance of exploring technostress among students in sustainable work environments. The literature review probes into technostress manifestations in students, the role of technology in sustainability, and existing research in this intersection. The research methodology outlines the approach of study made, sample selection, data collection methods, and analysis techniques. Findings are presented, encompassing quantitative survey results on technostress. The discussion interprets the results, and exploring technostress implications for student well-being and academic performance. The conclusion summarizes key findings and reiterates the study's significance, ultimately emphasizing the importance of technostress management in fostering sustainable work environments for students along with recommendations, Limitations are acknowledged, and future research areas are proposed.

8.2 Literature Review

Scholars' curiosity on the negative effects of technology has grown over the last years. There is a wealth of material regarding professionals who experience technostress, or stress brought on by technology, in the literature. Although digital devices are more common in academic settings, there are few studies that address the frequency of technostress and its impacts among students. As a result of higher education's growing use of technology, students are now forced to use computers to complete all of their academic work, including exams. To utilize programs that employ technology to promote learning, such as learning management systems, MOOCs, and digital exam devices, students must develop ICT skills. The study examines the impact of technological stress on pupils' academic performance. The findings indicate that students had only mild levels of technological stress, and with just minor modifications, the technostress instrument may be used in a learning setting. Also, it was demonstrated that technological stress reduced students' academic performance (Upadhyaya and Vrinda 2020).

In this study, technostress among college students using technology-enhanced learning (TEL) was examined from a multidimensional person-environment mismatch viewpoint. Person-organization (P-O) mismatch, person-TEL (P-TEL), and person-people (P-O) misfit were the three aspects of technostress that were explored, in that order. A study model was created in order to analyze the relationships between the three dimensions of technostress and how they affected student burnout, persistence in TEL, and perceived performance. The findings show that P-O misfit has a strong predictive power for technostress on the P-TEL and P-P misfit dimensions. Technostress P-TEL mismatch was expected, as was Technostress P-P misfit. Their perceived burnout, which was closely associated with the three elements of technostress, had a substantial negative influence on the students' reported performance in TEL. Moreover, P-O technostress mismatch had the most substantial effect on students' burnout. Also, group comparisons based on gender and grade level reveal that females and students in lower grades were more susceptible than others to burnout associated with P-P mismatch of technostress. Also, research seemed that female students' performance was more negatively impacted by burnout than that of male students. The results of this study have important implications for pinpointing the elements affecting TEL students' academic development and welfare as well as for developing effective treatments for technostress (Wang et al. 2020a).

Technostress could be seen as a significant factor that could affect student performance and satisfaction. Very little research has been done on the simultaneous effects of the four components of technology stress—technological overload, technological complexity, technological insecurity, and technological uncertainty—on student satisfaction and performance expectations. Performance expectation may be used as an endogenous construct in this study because it was done during the open and distant learning (ODL) implementation and before the final exam. So, the aim of this study is to investigate the link between the four technostress features and student satisfaction. Also, this study attempts to look into the connections between undergraduate

students' performance expectations and general student happiness. In this study, the measurement model was evaluated and the hypotheses were tested using SEM. This study found that technological complexity considerably adds more to student satisfaction and performance expectations than technological uncertainty. Yet, the results clearly indicate that there is no significant connection between students' satisfaction, performance expectations, and technology overload and insecurity (Abd Aziz et al. 2021).

University students are gaining in ways never previously imaginable as a consequence of technology-enhanced learning's growing prominence in higher education, but they may also experience technostress as a result of the greater demands and revised academic standards that come with it. The aim of this study was to develop a psychometric scale to measure the levels of technostress experienced by university students during technologically aided learning. Using the person-environment fit theory and related research, a prototype technostress scale was developed. In order to identify students who are not suitable for technology-enhanced learning and to protect their well-being in order to increase their positive and active participation in it, the development of the technostress scale is an essential first step (Wang et al. 2020b).

Booker et al. (2014), in higher education, information technology is being leveraged to provide students 24/7 access to resources. One of the factors influencing this acceptance is the students' evident demand for constant access to academic material. Technology-related stress, or technostress, is already common in today's modern environment. Working in an online learning environment increases this type of stress. This study provides a technique for calculating the stress that technological advancements cause among online students. Tools that are already used to assess general technology-related stress and technology-related stress in the workplace were looked at with the goal of establishing the initial study questions. The findings, which were studied using a convenience group of students, demonstrate a link between technological stress and academic performance in the online context.

Deng et al. (2022) examines the impact of academic and familial stress on students' depression levels and its subsequent effect on academic performance, drawing insights from Lazarus' cognitive appraisal theory of stress. Research consistently shows that academic stress leads to increased depression levels among students, negatively affecting their academic performance. Similarly, familial stress plays a significant role in students' mental well-being, either acting as a protective factor or exacerbating vulnerability to depression. Depressed students often experience difficulties in concentration, motivation, and cognitive functioning, resulting in poor academic outcomes.

8.3 Methodology

The survey method was employed to collect data from 94 B.com and M.com candidates at Dr. NGP Arts and Science College, specializing in International Business, Finance, Marketing, and Computer Applications. This empirical paper aims to analyze factors contributing to technostress among students. Percentage calculations were used for clarity and ease of analysis. The questionnaire captured technostress experiences, stressors related to technology use, coping mechanisms, and technology's impact on academic and personal lives. Sampling ensured representation from both B.com and M.com candidates across diverse specializations, enabling insights into potential variations in technostress. Anonymized responses ensured data accuracy and reliability. The use of percentages allowed straightforward presentation and comparisons between factors influencing technostress across various specializations.

8.4 Theoretical Framework

To start with a discussion on technostress the first thing enquired was if there was any vision problem for the students. Among the participants, a small portion of students had vision problems. Among those students suffering from vision problems, many students had vision problems only when using technological devices. Responses by the students on technology integration in their current study were discussed. As there were many learning management systems nowadays, these were compared on the basis of their ease of use. Many students responded as both online and offline mode of education is equally important. Technology inclusion in education was discussed and impacts were noted. Consequences of technology integration in education are discussed. When asked about online and offline mode of education, offline mode was preferred by the majority. Many of the students were feeling lonely when integrating technology into education. Technological inclusion helps students to think and work independently. Technologically driven classes are supposed to increase retention level of students. Many students feel PPT presentation method of teaching can reduce stress levels among students.

8.5 Analysis and Discussion

From Table 8.1 it is analyzed that among the participants, out of 94 student respondents 41.3% of them are male and 58.7% of them are female respondents. 37.8% of students was having vision problems. Among those students suffering from vision problems; 47.8% had long sight, 17.4% was having short sight and 34.8% of students had vision problems only when using technological devices.

Table 8.1 Demographic profile of respondents

	No. of respondents	Percentage
Gender		
Male	39	41.3
Female	55	58.7
Vision problem		
Yes	35	37.8
No	59	62.2
Type of vision problem		
Short sight	16	17.7
Long sight	45	47.8
Others	33	34.8

Source Author compilation

Table 8.2 depicts **students'** perspectives on technology integration in Education that 74.5% of the students considers technology integration in education as a good option. 76.6% of students considers there is above 50% technology integration their curriculum. Google classroom is considered as one of the best learning management systems by 70.2% of the students. 59.6% of the students consider both offline and online modes of education is equally important. Technology inclusion in education is considered as environment friendly and technostress increasing component by 31.9% of the students.

The Table 8.3 represents Students' Concerns and Issues with Technology Integration about 42.6% of the population considers technology integration may cause health issues while 38.3% believes it may cause psychological issues. 67.4% of the students are facing headache while using technical devices. Offline mode of education is preferred by 54.3% of students. 42.6% of students feel lonely on using technological

Table 8.2 Students' perspectives on technology integration in education

Perspectives	Number of students	Percentage of students (%)
Considers technology integration as good	70	74.50
Considers >50% technology integration in curriculum	72	76.60
Considers Google classroom as one of the best learning management systems	66	70.20
Considers both offline and online modes of education equally important	56	59.60
Considers technology inclusion as environment friendly and technostress increasing component	30	31.90

Source Author compilation

Table 8.3 Students' concerns and issues with technology integration

Concerns and issues	Number of students	Percentage of students (%)
Technology integration may cause health issues	40	42.60
Technology integration may cause psychological issues	36	38.30
Facing headache while using technical devices	63	67.40
Prefer offline mode of education	51	54.30
Feel lonely on using technological aids in education	40	42.60
Feel more stressed while attending technology-related classes	50	53.20
Technological inclusion helps students think and work independently	62	66.00
Technology-driven classes increase retention level of students	63	67.40
Believe resource persons are capable enough to deliver content with technological aids	60	63.80
Prefer PPT presentations over lecture methods, interactive seminars, and Google classrooms	43	45.70
Consider technostress as a physical state of mind	26	27.70

Source Author compilation

aids in their education. 53.2% feel more stressed while attending technology-related classes. 66% of the students agree technological inclusion helps students to think and work independently. 67.4% agrees that technology driven class's increases retention level of students. 63.8% of the students believe that resource persons are capable enough to deliver contents with technological aids. 45.7% of the students prefer PPT presentations over lecture methods, interactive seminars, and Google classrooms. Technostress is considered as a physical state of mind by 27.7% of the students.

8.6 Conclusion

Technostress being an important phenomenon nowadays, more and more studies should be made in this area to increase awareness among the same among people. Depression, loneliness, and burn out are some of the common concerns that need to be addressed. The study concludes with recommendations for educators, institutions, and policymakers to address the technostress phenomenon effectively and promote

a sustainable work environment for students. Strategies such as digital detox initiatives, mindfulness training, and fostering a balanced approach to technology use are proposed to alleviate technostress and create a healthier learning atmosphere. By implementing these measures, educational stakeholders can pave the way for a more sustainable and student-friendly approach to technology integration in modern learning environments. Future study can be conducted on condition impacting both on physical and emotional state of mind of individuals, this need to be addressed efficiently to bring out best among students. Also, future research could involve longitudinal studies, cross-cultural comparisons, and objective measures of technostress. Addressing these aspects can lead to a more holistic understanding and effective strategies for managing technostress among students. Despite acknowledging limitations such as sample selection bias and self-reported data, the focus on a single institution may limit the generalizability of findings to other educational settings. However, the study's significance lies in shedding light on the technostress phenomenon and providing valuable insights for educators, policymakers, and institutions to develop effective strategies for managing technostress among students in sustainable work environments.

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