
The Relationship between Technostress and Academic Engagement among Undergraduate Students

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ABSTRACT

Technostress has emerged as a major concern in higher education, particularly in technology-integrated learning environments. The present study aimed to examine the relationship between technostress and academic engagement among undergraduate students. The investigator adopted the normative survey method for the study. A sample of 102 undergraduate students was selected using a stratified random sampling technique. The Technostress Scale and Academic Engagement Scale prepared by the investigator were used to collect data. Descriptive statistics and correlation were used for interpreting the data. The findings revealed that undergraduate students experience a moderate level of technostress and exhibit a moderate level of academic engagement. The study also found a significant negative relationship between technostress and academic engagement, indicating that higher technostress leads to lower engagement levels. The investigator concluded that reducing technostress through effective coping strategies and digital literacy initiatives can promote more sustainable digital practices among students.

The contemporary era is often characterised as the age of technology, where machines and artificial intelligence (AI) have become integral drivers across various aspects of life, including education (Khedrane, 2024). Technology has revolutionised the educational landscape by enabling instant access to



information, facilitating communication, and promoting innovative teaching and learning practices. In today's digital society, students rely heavily on devices and online resources for research, collaboration, and knowledge creation. The use of technology in education enhances engagement, supports diverse learning styles, and fosters critical thinking and creativity. Smart classrooms, e-learning platforms, and digital content delivery have made education more flexible, interactive, and learner-centred. Moreover, technology plays a crucial role in bridging geographical and socio-economic barriers by providing equal opportunities for learners from different backgrounds. In the context of higher education, especially among the younger generation, technology is not merely a supplementary tool but an essential component of academic and personal development. Its integration into the teaching-learning process prepares students for the demands of a globalised and technologically driven world, promoting lifelong learning and digital competence.

Technostress refers to the stress experienced by individuals due to difficulty in adapting to new technologies, excessive use of digital tools, and the constant need to stay updated with technological changes (Wang et al., 2008). In educational settings, it emerges when students are required to manage multiple digital platforms, frequent updates, and constant online communication without adequate support. The main dimensions of technostress are techno-overload, techno-invasion, techno-complexity, techno-insecurity and techno-uncertainty represent how technology can overwhelm, intrude into personal time, and challenge one's ability to use digital tools effectively, cause fear of losing value due to others' better skills, and lead to confusion from constant changes and updates. When these pressures accumulate, students may experience fatigue, frustration, and reduced motivation toward learning.

Technostress has been found to have significant effects on students' academic engagement, which includes cognitive, behavioural, and emotional dimensions. Students experiencing high levels of technostress may struggle to maintain concentration, exhibit lower participation in learning activities, and show decreased enthusiasm toward their studies (Wang et al., 2020). Techno-overload may cause mental fatigue and cognitive disengagement, while techno-invasion can blur boundaries between study and personal time, reducing emotional involvement and satisfaction. Similarly, techno-complexity can diminish confidence in using digital tools, leading to frustration and withdrawal from academic activities. As a result, technostress disrupts students' learning processes by lowering their motivation, reducing academic performance, and limiting their capacity for meaningful engagement with learning materials (Rajnish & Kumar, 2024).



Despite the growing use of technology in higher education, especially in Kerala, the connection between technostress and academic stress among undergraduate students is still not well studied. Earlier research has focused on teachers or working professionals rather than students. While studies have shown that technostress can reduce productivity and emotional well-being in workplaces, its effects on students' academic life are less understood. In Kerala, where students increasingly depend on digital and blended learning, the pressure of adapting to new technologies, competition, and limited resources may increase their academic stress. Therefore, this study is important to understand how technostress influences students' academic experiences and to promote a healthier, more supportive learning environment.

OBJECTIVES OF THE STUDY

The objectives of the present study are;

- To find out the level of technostress of undergraduate students.
- To find out the level of academic engagement of undergraduate students.
- To find out the relationship between technostress and academic engagement of undergraduate students.
- To find out whether there is any significant difference in technostress of undergraduate students based on gender.
- To find out whether there is any significant difference in academic engagement of undergraduate students based on gender.

HYPOTHESES OF THE STUDY

The hypotheses of the present study are;

- The level of technostress of undergraduate students is moderate.
- The level of academic engagement of undergraduate students is moderate.
- There is a significant relationship between technostress and academic engagement of undergraduate students.
- There exists a significant difference in technostress of undergraduate students based on gender.
- There exists a significant difference in technostress of undergraduate students based on gender.

METHODOLOGY

The investigator adopted a normative survey method for the study.

**SAMPLE USED FOR THE STUDY**

A sample of 102 undergraduate students from the state Kerala was selected for the present study. The investigator used stratified random sampling technique was employed for the present study.

TOOLS USED FOR THE STUDY

The technostress scale and academic engagement scale used in this study were prepared by the investigator. The technostress scale consisted of the three components: techno-overload, techno-invasion and techno-complexity. The academic engagement scale included three dimensions: cognitive, behavioural and emotional. Both tools were based on Likert scale with five options - Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree.

STATISTICAL TECHNIQUES USED FOR THE STUDY

- Descriptive statistics
- Karl Pearson coefficient of correlation

ANALYSIS AND INTERPRETATION OF DATA**LEVEL OF TECHNOSTRESS AND ACADEMIC ENGAGEMENT OF UNDERGRADUATE STUDENTS****Table 1**

The level of technostress of undergraduate students

Level	N	Percentage
High	19	18.62
Moderate	67	65.68
Low	16	15.68

Table 1 depicts that 18.62% of undergraduate students have high level of technostress, 65.68% of undergraduate students have a moderate level of technostress, and 15.68% of undergraduate students have a low level of technostress. Hence the investigator concluded that the technostress of undergraduate students is moderate.

Table 2

*The level of academic engagement of undergraduate students*

Level	N	Percentage
High	9	8.82
Moderate	79	77.45
Low	14	13.72

Table depicts that 8.82% of undergraduate students have high level of academic engagement, 77.45% of undergraduate students have a moderate level of academic engagement, and 13.72% of undergraduate students have a low level of academic engagement. Hence the investigator concluded that the academic engagement of undergraduate students is moderate.

RELATIONSHIP BETWEEN TECHNOSTRESS AND ACADEMIC ENGAGEMENT OF UNDERGRADUATE STUDENTS

Table 3

Correlation between technostress and academic engagement of undergraduate students

Variable Correlated	N	r	Level of Significance
Technostress Academic Engagement	102	-0.446	0.01

The correlation between technostress and academic engagement is -0.446. this indicate that there is a negative relationship between the technostress and academic engagement. Hence the investigator concluded that higher technostress leads to lower academic engagement in students.

TECHNOSTRESS OF UNDERGRADUATE STUDENTS BASED ON GENDER

Table 4

Data and Results of the Test of Significance of Difference between the Mean Scores of Technostress based on Gender

Subsample	N	Mean	Standard Deviation	Standard Error of Mean	Critical Ratio
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Girls	74	50.66	9.05	1.05	0.169
Boys	28	51.01	9.99	1.88	

From the table it is clear that the critical ratio obtained for the comparison of technostress level of girls and boys is 0.169 ($p > 0.05$) which is less than the limit set for significance at 0.05 level of significance of the test. This reveals that there is no significant difference between girls and boys in technostress.

ACADEMIC ENGAGEMENT OF UNDERGRADUATE STUDENTS BASED ON GENDER

Table 5

Data and Results of the Test of Significance of Difference between the Mean Scores of Academic Engagement based on Gender

Subsample	N	Mean	Standard Deviation	Standard Error of Mean	Critical Ratio
Girls	74	56.47	12.55	1.45	0.326
Boys	28	55.57	12.09	2.28	

From the table it is clear that the critical ratio obtained for the comparison of academic engagement level of girls and boys is 0.326 ($p > 0.05$) which is less than the limit set for significance at 0.05 level of significance of the test. This reveals that there is no significant difference between girls and boys in academic engagement.

FINDINGS OF THE STUDY

The findings of the study are consolidated and listed as given below,

- The majority of undergraduate students shows moderate level of technostress.
- The majority of undergraduate students shows moderate level of academic engagement.
- There is a significant negative relationship between technostress and academic engagement of undergraduate students.
- There is no significant difference in technostress in undergraduate students based on gender.



- There is no significance difference in academic engagement in undergraduate students based on gender.

EDUCATIONAL IMPLICATIONS

- Institutions should organise awareness programmes and workshops on digital literacy to help students manage digital platforms effectively and stay actively involved in learning.
- Students should be provided with guidance to develop self-regulation and time-management skills and to maintain healthy boundaries between screen time and study time.
- Institutions should provide counselling to help students manage technostress and develop coping strategies and emotional balance, enabling them to stay focused on learning.
- Students should be encouraged to visit libraries and develop regular reading habits, which can help reduce excessive screen time, improve concentration, and enhance academic engagement.
- Institutions should promote peer learning and group projects to enhance collaboration and social connection among students.

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