

## THE INFLUENCE OF CHATGPT USER EXPERIENCE ON TECHNO-INSECURITY AMONG COLLEGE TEACHERS: EXAMINING THE MODERATING ROLE OF ROLE AMBIGUITY

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### ABSTRACT

*The rapid adoption of AI tools like ChatGPT in educational settings has the potential to enhance teaching and streamline academic tasks. This study investigates the influence of ChatGPT user experience (UX) on techno-insecurity (TIS) among college teachers, with a particular focus on the moderating role of role ambiguity (RA). Data were collected from 60 college teachers in Kerala, India, using a structured questionnaire measuring ChatGPT user experience, role ambiguity, and techno-insecurity. Gender and age differences were also explored through independent sample t-tests and one-way ANOVA. The findings revealed no statistically significant differences in techno-insecurity, role ambiguity, or user experience across gender and age groups. Linear regression analysis indicated that both ChatGPT user experience and role ambiguity significantly influenced techno-insecurity. However, moderation analysis showed that role ambiguity did not significantly moderate the relationship between user experience and techno-insecurity. These findings emphasize the need for educational institutions to provide comprehensive training and clear guidelines to reduce role ambiguity and mitigate the stress associated with the adoption of AI tools like ChatGPT. Future research could explore additional contextual factors, such as organizational support, to better manage technostress in academic environments.*

**Keywords:** ChatGPT User Experience, Techno-Insecurity, Role Ambiguity, College Teachers, AI in Education.

### Introduction

In this age of fast-paced technological advancement, numerous nations have started incorporating new technologies into their educational frameworks to enhance learning outcomes. The widespread adoption of these technologies in various aspects of daily life, driven by their increasing affordability, is a trend that is likely to continue (Khlaif, Sanmugam, Joma, et al., 2023). Integrating ICTs in education offers many benefits, such as enhancing collaboration, productivity, and institutional transformation while potentially reducing teachers' workloads. However, adopting these technologies is challenging, as teachers must acquire new skills and knowledge, which adds to their workload and increases stress (Khlaif, Sanmugam, Hattab, et al., 2023). Stress represents the imbalance that occurs when perceived demands exceed an individual's capacity to respond effectively (Tarafdar et al., 2019), which is a pertinent issue in this context. Understanding the impact of ICTs, especially technostress, is essential for improving the educational experience for teachers and students (Khlaif, Sanmugam, Hattab, et al., 2023). Technostress refers to the strain experienced by individuals when they struggle to adapt to new technology in a balanced manner (Lee & Lim, 2020). Continuous technological upgrades expose teachers to ongoing technostress due to their lack of knowledge in using new tools. However, effectively integrating technology into teaching is essential for driving educational innovation (Penado Abilleira et al., 2021). The latest arrival of AI-powered systems such as ChatGPT in academic environments has made this situation even more complex.

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Launched by OpenAI on November 30, 2022, ChatGPT has quickly become a transformative tool used across professional, educational, and everyday settings. Positive user experiences with ChatGPT are typically associated with its ability to simplify tasks and provide precise, detailed information (Skjuve et al., 2023). While these tools offer immense potential to improve educational practices, their adoption also poses significant challenges for educators, particularly in the realm of technostress—a phenomenon that emerges when users experience stress due to their interactions with technology (Zhai, 2022). A specific form of technostress, known as techno-insecurity, arises when individuals fear losing their jobs to new technologies or to colleagues who possess superior ICT skills. The increasing reliance on ICTs can exacerbate this anxiety, as employees feel pressured to continuously upskill or reskill to stay competitive in the workforce (YeniAras & AltiniĖne, 2023). Additionally, technology can exacerbate job insecurity by creating uncertainty regarding the anticipated methods of work. Role ambiguity (RA) refers to the uncertainty and confusion employees experience regarding their job expectations and responsibilities, particularly when dealing with technology (Mehmood et al., 2023). In the context of using ChatGPT, teachers may be unclear about how to incorporate the tool into their teaching methods, how it aligns with their educational goals, or what support is available to help them navigate these challenges. This ambiguity can intensify the effects of techno-insecurity, making it crucial to understand its moderating role in this context.

Although much research has been conducted on technostress and role ambiguity in various fields, there is a limited exploration of how these factors interact in the educational sector, particularly with the use of AI tools like ChatGPT. Understanding the influence of ChatGPT User Experience (UX) on techno-insecurity is vital for developing effective training programs and support systems for college teachers. This study aims to analyze how ChatGPT usage enhances teaching and learning while considering the influence of age and gender on this perception. Additionally, it seeks to measure the effects of age and gender on techno-insecurity (TIS) and examine whether role ambiguity moderates the relationship between user experience and techno-insecurity.

## **Review of Literature**

### **User Experience with AI Tools and Technostress**

In recent years, the rapid development and integration of artificial intelligence (AI) tools, particularly ChatGPT, into educational environments have revolutionized teaching and learning processes (Zhai, 2022). ChatGPT, developed by OpenAI, has made a significant impact across multiple sectors, including education (Van Dis et al., 2023) by automating routine tasks and offering personalized learning experiences (Zhai, 2022). The launch of ChatGPT has drawn considerable attention to its transformative potential in conversational AI, underscoring the need for research into how users experience interactions with such tools (Skjuve et al., 2023). In the past decade, "user experience" (UX) has gained prominence in human-computer interaction (Hassenzahl & Tractinsky, 2006). User experience with AI tools like ChatGPT is shaped by their ability to deliver coherent, accurate, and organized responses, which help streamline academic tasks and reduce users' cognitive load (Zhai, 2022). User experience refers to the perceptions and responses from using a system or product. It includes pragmatic qualities like usefulness and usability, and hedonic qualities, which address the system's ability to satisfy a user's desires or provide pleasure (Skjuve et al., 2023).

While AI tools like ChatGPT enhance efficiency and information retrieval, their swift adoption can cause technostress among educators who face challenges in integrating these tools into their teaching. Additionally, using AI for tasks like grading and tutoring can heighten anxiety and stress among teachers, particularly when their professional roles feel threatened or redefined (Zhai, 2022). Users often had negative experiences with ChatGPT due to its failure to provide relevant or accurate responses, resulting in frustration and a sense of being misled. Additionally, trust issues arose when ChatGPT presented misinformation with confidence, which further harmed the user experience and added to technostress (Skjuve et al., 2023). Technostress refers to the adverse effects of technology on people's attitudes, thoughts, behaviours, and psychological well-being (Tu et al., 2005). It is the stress and discomfort resulting from difficulty in adapting to new technology, which can lead to both psychological and physical strain (Khlaif, Sanmugam, Joma, et al., 2023). To effectively incorporate AI tools like ChatGPT into education and reduce technostress, it is vital to improve user experience by providing comprehensive training and support for educators (Zhai, 2022).

### **Role Ambiguity in the Adoption of AI Tools in Education**

Role ambiguity involves the uncertainty and confusion employees face about their job expectations and responsibilities, especially concerning technology. This confusion can stem from

unclear roles, inadequate guidance on technology use, or conflicting demands between technology tasks and core job duties. Technology-induced role ambiguity specifically refers to employees' uncertainty about how much time and effort to allocate to technology-related issues instead of their primary responsibilities (Mehmood et al., 2023). The adoption of AI tools like ChatGPT in educational settings can create confusion about teaching roles and responsibilities, especially when these tools alter traditional teaching methods. Ayyagari et al. (2011) identified that technology characteristics, such as complexity and usability, significantly influence role ambiguity and work overload. Their study emphasized that perceived role ambiguity is a strong predictor of strain in employees using technology. This indicates that college teachers might feel uncertain about how to incorporate AI tools like ChatGPT effectively, leading to increased technostress and job dissatisfaction.

Lee and Lim (2020) explored how mobile technology features impact technostress among school teachers and found that complexity and lack of interactivity in technology significantly increased stress levels. They argued that clear guidelines and continuous support are essential to reduce role ambiguity and stress among teachers using emerging technologies in their teaching practices. Role ambiguity can moderate the relationship between technostress and techno-insecurity, influencing how educators perceive and respond to the adoption of AI tools like ChatGPT. Mehmood et al. (2023) noted that role ambiguity exacerbates the impact of technostress on job performance, indicating that teachers who are unclear about their responsibilities are more likely to feel insecure about the integration of new technologies. Moreover, Ayyagari et al. (2011) suggested that addressing role clarity is crucial to reducing technostress and its negative impact on job satisfaction and performance. This is particularly relevant in educational settings where teachers are adapting to AI tools and may feel uncertain about how these tools fit into their traditional teaching roles. To alleviate the negative impacts of role ambiguity and technostress among educators, clear communication, training, and support are vital.

## Methods

### • Participants and Procedures

Data was collected through a structured questionnaire. It contained questions relating to the variables of user experience, role ambiguity and techno insecurity. Additional questions intended for obtaining the gender and age of respondents were also included in the questionnaire. The data was collected during December 2023 from the college teachers of Kerala State. A total of 60 valid responses were received. 80% of the participants were female and the rest of the 20% were male. The respondents were distributed across three age groups, with 46.7% being in the 31-40 range, followed by 28.3% in the 20-30 range and 25.0% in the 41-60 range.

### • Measures

Existing scales were modified to measure role ambiguity and techno insecurity. Three items from the scale proposed by Bowling et al. (2017) were modified and used for measuring role ambiguity. Techno-insecurity was measured by adopting the scale proposed by Ragu-Nathan et al. (2008). Since there was no scale for measuring the user experience of ChatGPT a six-item scale was developed after reviewing the existing literature. Participants were given the option to rate their agreement towards the statement on a 5-point Likert scale.

## Data Analysis

Data was analysed using Jamovi 2.3.28. Statistical tests like independent sample t-test, ANOVA and regression were used to arrive at the inferences of the study. Moderation analysis was performed using the medmod module available on the Jamovi library.

## Results

Independent sample t-test was conducted to analyse the influence of gender on the variables.

**Table 1: Influence of Gender**

Variable	Statistic	df	p
UX	-0.924	58	0.359
RA	0.195	58	0.846
TIS	0.114	58	0.910

Table 1 shows that the p-value for User Experience is 0.359, which is greater than the conventional significance level of 0.05. This indicates that there is no statistically significant difference in user experience between male and female teachers. The p-value for Role Ambiguity is 0.846, which is

also much greater than 0.05. This suggests that gender does not have a statistically significant effect on role ambiguity. The p-value for Techno-insecurity is 0.910, which is again much higher than 0.05, indicating no significant gender difference in techno-insecurity.

To test the influence of age on the variables one-way ANOVA was used.

**Table 2: Influence of Age**

Variable	F	df1	df2	p
UX	2.62	2	31.9	0.089
RA	0.841	2	33.0	0.440
TIS	0.829	2	30.5	0.446

Table 2 reveals that the p-value of 0.089 is slightly above the conventional significance level of 0.05. While the result does not show a statistically significant difference, it suggests a marginal effect of age on user experience. This means that age might have some influence on user experience, but the effect is not strong enough to be statistically confirmed in this sample. The p-value of 0.440 indicates that there is no statistically significant effect of age on role ambiguity. Similarly, the p-value of 0.446 suggests that age does not have a statistically significant influence on techno-insecurity.

The influence of user experience of ChatGPT and role ambiguity on techno-insecurity was analysed using linear regression. The results of the analysis are represented in Table 3 and Table 4.

**Table 3: Model Fit Measures**

Model	R	R <sup>2</sup>	Overall Model Test			
			F	df1	df2	p
1	0.655	0.429	21.4	2	57	< .001

There is a moderate-to-strong relationship between predictors and techno-insecurity. 42.9% of the variance in techno-insecurity is explained by the combined influence of user experience and role ambiguity. The F-statistic (21.4) and the p-value (<0.001) show that the overall model is statistically significant.

**Table 4: Model Coefficients - TIS**

Predictor	Estimate	SE	t	p
Intercept	2.892	0.0891	32.45	< .001
RA	0.429	0.0844	5.09	< .001
UX	0.413	0.1442	2.86	0.006

Role ambiguity has a positive and statistically significant effect on techno-insecurity ( $p < 0.001$ ). User experience also has a positive and statistically significant effect on techno-insecurity ( $p = 0.006$ ).

Regression analysis was performed by taking user experience of ChatGPT as the independent variable, role ambiguity as moderator and techno-insecurity as the dependent variable.

**Table 5: Moderation Estimates**

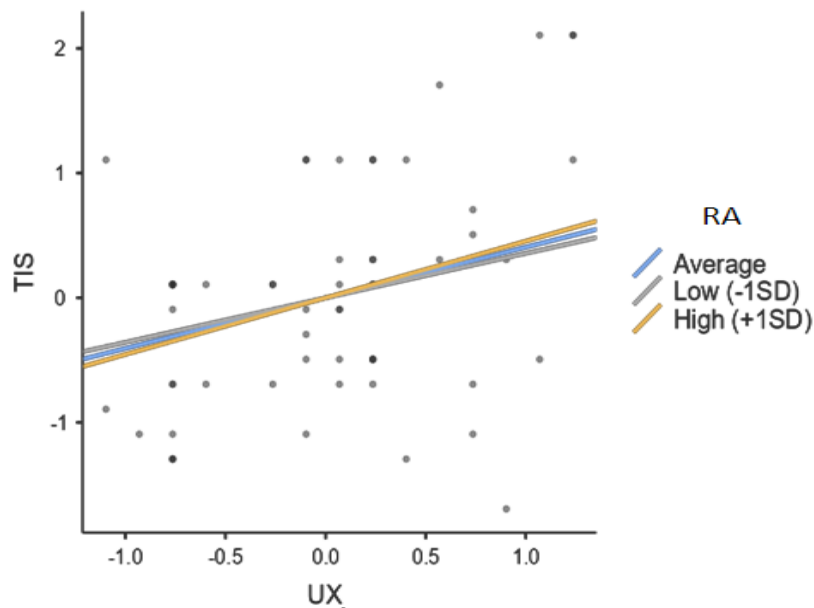
	Estimate	SE	Z	p
UX	0.4056	0.2094	1.937	0.053
RA	0.4174	0.0943	4.427	< .001
UX * RA	0.0451	0.1656	0.272	0.785

The interaction term between user experience and role ambiguity (UX \* RA) has a coefficient of 0.0451, which is not statistically significant ( $p = 0.785$ ) as per Table 5. This means that there is no significant moderation effect of role ambiguity on the relationship between user experience and techno insecurity.

The simple slope analysis in Table 6 and Figure 1 shows the effect of the independent variable (user experience, UX) on the dependent variable (techno insecurity, TIS) at different levels of the moderator (role ambiguity, RA).

**Table 6: Simple Slope Estimates**

	Estimate	SE	Z	p
Low (-1SD)	0.357	0.334	1.07	0.285
Average	0.406	0.209	1.94	0.052
High (+1SD)	0.454	0.192	2.36	0.018



**Figure 1: Simple Slope Plot**

When role ambiguity is low (one standard deviation below the mean), the relationship between user experience and techno insecurity is not significant ( $p = 0.285$ ). At the average level of role ambiguity, the effect of user experience on techno insecurity is positive and marginally non-significant ( $p = 0.052$ ). At high levels of role ambiguity (one standard deviation above the mean), the effect of user experience on techno insecurity is positive and statistically significant ( $p = 0.018$ ). This suggests that when role ambiguity is high, increased user experience is significantly associated with higher techno insecurity.

### Discussions

This research sheds light on how ChatGPT's user experience (UX) influences feelings of techno-insecurity among college instructors, offering important perspectives on the challenges educators face when incorporating advanced technologies into their teaching. Several themes do emerge after examining the study's results in line with existing research.

The findings highlight that both the quality of user experience and the presence of role ambiguity contribute significantly to feelings of techno-insecurity in teachers. Specifically, the study reveals a positive correlation between ChatGPT UX and heightened techno-insecurity. In other words, while AI tools like ChatGPT have the potential to boost efficiency, they also introduce new forms of stress. This aligns with previous research, such as the work by Tarafdar et al. (2014), which found that performance could be negatively affected by the technostress resulting from the complexity and novelty of new technologies. Likewise, Awang Kader et al. (2022) found that technological demands in teaching can exacerbate stress, underscoring that even useful innovations can cause disruption when they alter established routines.

The positive correlation between user experience and techno-insecurity found in this study may be explained by the increasing dependence on ICT tools for teaching, which creates pressure for educators to continuously update their skills. This pressure leads to concerns about job security, particularly when newer generations of educators, more familiar with these tools, enter the workforce. Zhai (2022) also noted that ChatGPT can create anxiety for educators, especially when professional roles become unclear or redefined by these tools.

The study found that role ambiguity significantly influences techno-insecurity and exacerbates its effects when combined with user experience. This finding is supported by Ayyagari et al. (2011), who emphasized that role ambiguity caused by technology integration is a strong predictor of stress, which can negatively impact job satisfaction and performance. The lack of clear guidelines on how to use AI tools in the classroom, as highlighted in this study, likely leads to increased role ambiguity, thereby elevating techno-insecurity.

The study's non-significant moderation effect of role ambiguity on the relationship between user experience and techno-insecurity ( $p = 0.785$ ) suggests that while role ambiguity influences techno-insecurity, its interaction with user experience does not amplify or diminish the relationship. However, this may be attributed to the specific context of AI tools in education, where the novelty of the technology itself poses independent challenges. Previous research, such as Lee and Lim (2020), supports the need for clear guidelines and training to reduce role ambiguity and alleviate technostress.

Interestingly, the study found no statistically significant differences in techno-insecurity, role ambiguity, or user experience across gender or age groups. This is somewhat surprising, as previous research has suggested that age plays a role in technostress levels. For example, Tu et al. (2005) found that older employees often experience higher levels of technostress due to lower technology literacy. The absence of significant age-related differences in this study could be due to the relatively small sample size or the specific population of college teachers, who may already possess a baseline level of technological competence.

### Implications for Policy and Practice

The study's findings highlight the need for more targeted interventions to reduce techno-insecurity and role ambiguity in educational settings. Drawing from the literature, it is evident that organizational support, clear communication, and comprehensive training are critical in addressing these issues. For example, Maipita et al. (2023) emphasize the importance of organizational support in reducing technostress, which is echoed in the current study's recommendation for more structured guidance on how to use AI tools in education.

Furthermore, strategies for managing technostress should not only focus on technological training but also on improving the overall user experience of educators. This aligns with Penado Abilleira et al. (2021), who argued for the need for continuous professional development and technological resources to support educators during the integration of digital tools.

### Conclusion

This study contributes to the growing body of research on the intersection of AI technologies and educator well-being. While tools like ChatGPT offer significant potential for enhancing teaching, their rapid adoption has also introduced new stressors, particularly around techno-insecurity and role ambiguity. To mitigate these effects, educational institutions must provide clear guidelines, continuous support, and training to ensure educators can confidently incorporate AI tools into their teaching without compromising their job security or well-being. Future research could further explore contextual factors, such as institutional support and policy changes, that might influence the relationship between technology use and educator stress.

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