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ARTIFICIAL INTELLIGENCE ANXIETY, SELF-EFFICACY AND ACADEMIC PERFORMANCE AMONG UNIVERSITY STUDENTS

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ABSTRACT

The rapid integration of artificial intelligence (AI) technologies into higher education has introduced both opportunities and challenges for university students. This study explores the interrelationships among AI anxiety, self-efficacy, and academic performance. AI anxiety refers to students' emotional apprehension toward AI tools used in educational settings, while self-efficacy denotes their belief in their capacity to accomplish academic tasks. Drawing on a quantitative, correlational research design, data were collected from a sample of undergraduate students using standardized instruments measuring AI anxiety, general academic self-efficacy, and academic performance via grade point average (GPA). Results indicate that AI anxiety is negatively correlated with both self-efficacy and academic performance, while self-efficacy demonstrates a significant positive association with academic achievement. These findings highlight the importance of enhancing AI literacy and self-belief in educational contexts to mitigate the adverse effects of AI-related stress and improve student learning outcomes.

Keywords: *Artificial Intelligence Anxiety, Self-Efficacy, Academic Performance.*

INTRODUCTION

Artificial intelligence (AI) anxiety refers to the apprehension or fear that individuals, particularly students, may feel about the growing integration of AI technologies in education and society. This anxiety stems from concerns about surveillance, job displacement, academic dishonesty, or the perceived threat of being replaced or judged by machines. As AI becomes more prevalent in learning environments—through tools like automated grading systems, intelligent tutoring, and writing assistants—students may experience heightened stress, uncertainty, or resistance toward using these technologies. Such emotional responses can shape their learning engagement, reduce confidence in their own abilities, or lead to avoidance behaviors, particularly when AI tools are perceived as opaque or overly evaluative (Almaiah et al., 2022; Ijaz & Ishaq, 2024).

The relationship between AI anxiety and academic performance is complex. While moderate levels of anxiety may motivate students

to perform better, excessive AI-related worry can impair cognitive functioning and academic outcomes. Research has shown that when students perceive AI tools as unfair or overly critical, their intrinsic motivation and trust in the educational system may decline. This can result in reduced participation, procrastination, and a reluctance to engage with technology-enhanced learning resources. Conversely, clear communication about AI's role, its limitations, and supportive integration in classrooms may alleviate anxiety and enhance students' academic confidence and performance. Addressing AI anxiety is thus critical to ensure equitable and effective use of technology in education (Kim et al., 2025).

Self-efficacy, defined as a student's belief in their own ability to succeed academically, plays a crucial role in determining academic performance. Research consistently demonstrates that students with high self-efficacy are more likely to engage in self-regulated learning, adopt mastery-oriented goals, and persist through academic challenges. For instance, Honicke and Broadbent (2016) conducted a systematic review revealing a moderate to strong correlation between academic self-efficacy and performance across diverse educational settings, mediated by motivational and behavioral factors such as effort regulation and time management. Similarly, Ahmad and Safaria (2013) highlighted that students' academic achievements improved significantly when their self-efficacy was bolstered through targeted interventions, including mastery experiences and peer modeling (Qayyum. 2025).

The positive relationship between self-efficacy and academic success has also been observed across different cultural and educational contexts. A study by Akram and Ghazanfar (2014) found a significant link between perceived self-efficacy and CGPA among university students in Pakistan, suggesting that belief in one's academic competence directly influences actual achievement. Shkullaku (2013) identified gender differences in the expression of self-efficacy, with implications for designing more inclusive educational support systems. Furthermore, Meral et al. (2012) emphasized that self-efficacy accounted for a larger portion of variance in student performance than socioeconomic status or parental education. These findings underscore the importance of fostering academic confidence through pedagogical strategies that empower students and reinforce their sense of agency.

Method

Research Design

This study employed a quantitative, correlational research design to investigate the relationships among artificial intelligence (AI) anxiety, self-efficacy, and academic performance among university students. The purpose of using this design was to determine the predictive and associative strength of AI anxiety and self-efficacy on academic performance, without manipulating any variables.

Participants

The study sample comprised undergraduate students (N = 300) drawn from three major public universities using stratified random sampling to ensure representation across academic disciplines and year levels. Participants included both male and female students aged 18–25 years. Inclusion criteria were full-time enrollment and familiarity with AI tools (e.g., ChatGPT, Grammarly, plagiarism detectors) used in academic settings.

Instruments

Three standardized questionnaires were used:

1. **AI Anxiety Scale (AIAS)** – adapted from techno-anxiety measures and validated for higher education contexts. It measured cognitive, emotional, and behavioral components of anxiety toward AI tools on a 5-point Likert scale.

2. **General Academic Self-Efficacy Scale (GASES)** – a validated tool by Chemers et al. (2001), used to assess students' belief in their academic capabilities.

3. **Academic Performance** – measured using students' self-reported **Grade Point Average (GPA)** from the most recent academic semester, which was cross-verified with institutional records for accuracy.

Procedure

Ethical clearance was obtained from the university's Institutional Review Board (IRB). Participants were recruited via email invitations

and class announcements. Informed consent was obtained, and confidentiality was assured. The questionnaires were administered online through a secure platform (e.g., Qualtrics or Google Forms), and completion took approximately 20 minutes.

Data Analysis

Descriptive statistics (mean, SD) were used to summarize the variables. Pearson correlation was applied to examine the relationships between AI anxiety, self-efficacy, and academic performance. To further assess predictive power, a multiple regression analysis was conducted with AI anxiety and self-efficacy as predictors and GPA as the outcome variable. **SPSS (v26)** was used for all statistical analyses, with significance set at $p < 0.05$.

Results

Table 1: Relationship between Artificial Intelligence Anxiety, Self-Efficacy and Academic Performance among University Students

Variables		1	2	3
1.	Artificial Intelligence Anxiety	-	-.45**	-.32**
2.	Self-Efficacy		-	.34**
3.	Academic Performance			-

**p < .01

This table presents the Pearson correlation coefficients among the three main variables: AI anxiety, self-efficacy, and academic performance (GPA). The results indicate significant relationships at the $p < .01$ level. AI anxiety is negatively correlated with both self-efficacy ($r = -0.45$**) and academic performance ($r = -0.32$**), suggesting that students who experience higher levels of AI-related anxiety tend to have lower self-efficacy and lower GPA. Conversely, self-efficacy is positively correlated with academic performance ($r = 0.34$**), implying that students with higher self-belief tend to perform better academically. These correlations support the hypothesis that AI anxiety can undermine academic outcomes indirectly by reducing students' self-confidence.

Table 2: Artificial Intelligence Anxiety and Self-Efficacy as predictors of Academic Performance among University Students

Variables	B	SE	F
Artificial Intelligence Anxiety	-.44**	.12	4.35**
Self-Efficacy	.32**	.05	

**p < .01

Table 2 presents the results of a multiple regression analysis assessing the predictive influence of artificial intelligence (AI) anxiety and self-efficacy on academic performance, measured by students' Grade Point Average (GPA). The standardized beta coefficient for AI anxiety is significant and negative ($B = -0.44$, $SE = 0.12$, $p < .01$), indicating that higher levels of AI anxiety are associated with lower academic performance. Similarly, self-efficacy shows a significant positive beta coefficient ($B = 0.32$, $SE = 0.05$, $p < .01$), indicating that higher levels of self-efficacy are associated with higher academic performance.

Discussion

The integration of artificial intelligence (AI) in academic environments has introduced a new psychological dimension—AI anxiety—which can significantly impact students' learning behavior and outcomes. Studies show that heightened AI anxiety, which includes fear or discomfort in using AI tools, is negatively correlated with both self-efficacy and academic performance. Wang and Li (2024) emphasized that students experiencing high levels of AI-related anxiety tend to report diminished self-belief in their ability to manage academic challenges, leading to poorer academic outcomes. Similarly, Zhao (2022) found that students in high-stakes

language learning environments experienced increased anxiety when exposed to AI tools, which subsequently weakened their learning performance due to reduced confidence and engagement. These findings underscore the need for careful pedagogical strategies when integrating AI in education, especially for students with limited prior exposure or low digital competence.

Conversely, the development of AI-specific self-efficacy has shown promise in mitigating the negative effects of AI anxiety and boosting academic success. According to Chen et al. (2024), students with high AI self-efficacy demonstrated more proactive engagement in AI-enhanced learning environments, which led to better academic performance and reduced avoidance behaviors. Asio and Suero (2024) also highlighted that students with strong self-efficacy beliefs viewed AI as a supportive tool rather than a threat, thereby fostering greater adaptability and resilience in academic tasks. The mediating role of self-efficacy between AI anxiety and performance was further confirmed by Hwang and Wu (2025), who suggested that confidence in using AI tools helped students regulate stress and maintain higher levels of academic motivation. These findings collectively suggest that interventions aimed at improving students' AI literacy and self-efficacy can be crucial in enhancing educational equity and performance in increasingly digital learning environments.

Conclusion

The findings of this study highlight significant interrelationships among artificial intelligence (AI) anxiety, self-efficacy, and academic performance among university students. AI anxiety was found to negatively influence both self-efficacy and academic achievement, indicating that students who experience greater discomfort or apprehension toward AI technologies are less confident in their academic abilities and tend to perform worse academically. Conversely, self-efficacy emerged as a positive predictor of academic success, reinforcing the pivotal role of students' self-belief in shaping their learning outcomes. Furthermore, the regression analysis confirmed that both AI anxiety and self-efficacy are significant predictors of academic performance, emphasizing the dual need to manage students' psychological responses to AI while simultaneously cultivating their academic confidence. These results underscore the importance of implementing educational interventions that enhance AI literacy and build self-efficacy to foster resilience, adaptability, and academic success in technology-driven learning environments.

REFERENCES

Ahmad, A., & Safaria, T. (2013). Effects of self-efficacy on students' academic performance. International Journal of Educational, Health and Community Psychology.

Akram, B., & Ghazanfar, L. (2014). Self-efficacy and academic performance of the students of Gujrat University, Pakistan. Academic Research International.

Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajjej, F., Thabit, S., El-Qirem, F. A., ... & Al-Maroof, R. S. (2022). Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: Students' perceptions at the university level. Electronics, 11(22), 3662.

Asio, J. M. R., & Suero, A. N. (2024). Artificial Intelligence Anxiety, Self-Efficacy, and Self-Competence among Students: Implications to Higher Education Institutions. Education Policy and Development.

Chen, C., Hu, W., & Wei, X. (2024). From anxiety to action: Exploring the impact of artificial intelligence anxiety and artificial intelligence self-efficacy on motivated learning of undergraduate students. Interactive Learning Environments.

Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. Educational Research Review, 17, 63–84. https://www.sciencedirect.com/science/article/pii/S1747938X15000639

Hwang, Y., & Wu, Y. (2025). The influence of generative artificial intelligence on creative cognition of design students: A chain mediation model of self-efficacy and anxiety. Frontiers in Psychology.

Kim, J. J., Soh, J., Kadkol, S., Solomon, I., Yeh, H., Srivatsa, A. V., ... & Ajilore, O. (2025). AI anxiety: A comprehensive analysis of psychological factors and interventions. AI and Ethics, 1-17.

Meral, M., Colak, E., & Zereyak, E. (2012). The relationship between self-efficacy and academic performance. Procedia-Social and Behavioral Sciences, 46, 1143–1146. https://www.sciencedirect.com/science/article/pii/S1877042812013936

Qayyum. I. A. (2025). Self-Efficacy as Predictor of Self-Control and Self-Loathing among Adults with Depression. Pakistan Journal of Positive Psychology, 2(1), 35–39.

Shkullaku, R. (2013). The relationship between self-efficacy and academic performance in the context of gender among Albanian students. European Academic Research.

Wang, X., & Li, P. (2024). Assessment of the Relationship Between Music Students' Self-Efficacy, Academic Performance and Their Artificial Intelligence Readiness. European Journal of Education.

Zhao, H. (2022). A study on the correlation between psychological anxiety, self-efficacy and foreign language learning achievement. International Journal of Neuropsychopharmacology, 25(S1), A63.

Ijaz, B., & Ishaq, N. (2024). Relationship between Academic Stress, Quality of Life and Time Management among College Students. Pakistan Journal of Mental Health, 1(1), 13–18.