



EXPLORING COMPUTER ANXIETY AND PHOBIA AMONG FUTURE TEACHERS: A DEMOGRAPHIC ANALYSIS

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ABSTRACT

Computer anxiety and computer phobia are critical psychological barriers that affect the integration of technology in teacher education. Despite the growing emphasis on digital literacy in the National Education Policy (NEP) 2020, limited research has examined how demographic factors shape these challenges among teacher trainees. The present study investigated the influence of gender, locality, and type of institution on computer anxiety and computer phobia among B.Ed. students in Rohtak district, Haryana. A stratified random sample of 400 trainees (200 male, 200 female) was assessed using standardized scales. Results indicated significant differences across gender and locality, with female and rural trainees reporting higher levels of anxiety and phobia. However, no significant difference was observed between government and private institution trainees. These findings highlight the role of socio-cultural and environmental factors in shaping digital readiness. The study emphasizes the need for targeted interventions, including confidence-building workshops, digital skill enhancement, and teacher training modules that address psychological barriers to technology use. By linking demographic patterns with psychological constructs, this research contributes to policy and practice aimed at preparing digitally competent teachers in alignment with NEP 2020.

Keywords: Computer anxiety, Computer phobia, B.Ed. trainees, Demographic variables, Educational psychology.

1. INTRODUCTION

The rapid growth of information and communication technology (ICT) has transformed education, making computer literacy an essential skill for modern teachers. Today, computers are not optional; they play a crucial role in lesson planning, teaching, assessment, and professional development (Tarhini, 2016). In B.Ed. programs, teacher trainees are expected to develop both technical skills and teaching strategies to effectively use digital tools in the classroom.

However, many trainees face **computer anxiety**, which is a feeling of tension, uneasiness, or apprehension when anticipating the use of computers (Igbaria&Parasuraman, 1989). This anxiety can manifest in various forms, such as fear of making mistakes, lack of confidence in using software, hesitation in exploring new digital



tools, or discomfort with online communication platforms. In some cases, these feelings are accompanied by physiological symptoms, including increased heart rate, sweating, or nervousness, which further hinder effective learning and technology use (Durnell & Haag, 2002).

In more severe situations, computer anxiety can escalate into **computer phobia**, a persistent and irrational fear of computers that may lead individuals to avoid using them altogether (Rosen et al., 1987). Trainees with computer phobia may experience intense stress even at the thought of operating digital devices or participating in technology-based activities. Such phobia not only affects their academic performance but can also reduce their willingness to integrate ICT into their future classrooms, limiting their teaching effectiveness and professional growth. Researchers have noted that computer phobia often develops from repeated negative experiences with technology, lack of prior exposure, or societal stereotypes that create self-doubt and fear (Brosnan, 1998 and Morahan-Martin & Schumacher, 2007).

Research has shown that demographic factors such as gender, locality, and type of institution influence levels of computer anxiety and phobia. For example, female trainees often report higher anxiety and phobia compared to males, while rural trainees tend to experience more fear than those from urban areas (More, 2025). Similarly, the type of institution government or private may affect the availability of ICT resources and training opportunities, though personal motivation and digital literacy often play a more decisive role (Kumar & Gupta, 2016 and Hussein & Ali, 2023).

Understanding these demographic influences is crucial because it identifies which groups may require additional support. By recognizing at-risk trainees, teacher education programs can design targeted interventions, such as confidence-building workshops, hands-on computer practice, and mentoring programs, to reduce anxiety and promote digital readiness (Rajasekar & Vaiyapuri Raja, 2006).

The National Education Policy (NEP) 2020 also emphasizes the integration of technology in teacher education. It highlights the importance of experiential and inquiry-based learning supported by digital tools, while stressing the need for equitable access to ICT facilities for all students. Research that examines how demographic factors affect computer anxiety and phobia aligns directly with these NEP goals, offering valuable guidance for policy and practice aimed at preparing digitally competent and psychologically confident teachers.

RATIONALE OF THE STUDY

With digital technology becoming a core part of education, teacher trainees must develop both competence and confidence in using computers. Yet, many face psychological barriers like anxiety and phobia, which can limit their ability to use technology effectively in classrooms.



Existing research shows that gender, locality, and type of institution can influence these experiences, with female trainees, those from rural areas, and government institutions often reporting higher anxiety and phobia. However, in India, few studies have examined how these factors interact together to affect computer-related fears among B.Ed. trainees. This study addresses that gap by exploring the combined impact of gender, locality, and institution type on computer anxiety and phobia in the Indian context. Its findings will help teacher education programs develop targeted, context-sensitive interventions, in line with NEP 2020, to promote equitable digital readiness and prepare future teachers to use technology confidently and effectively in their classrooms.

2. LITERATURE REVIEW

The rise of digital technology in education has made computer anxiety and computer phobia important psychological factors affecting teacher trainees. **Computer anxiety** refers to feelings of tension or worry when anticipating computer use, while **computer phobia** is a more intense fear that may lead to avoiding computers altogether (Durnell & Haag, 2002 and Rosen & Weil, 1995). These emotional barriers can limit trainees' ability to effectively integrate technology in teaching.

Gender Differences: Numerous studies indicate that female teacher trainees report higher levels of computer anxiety and phobia compared to males. For instance, **Russo et al. (2025)** and **Morahan-Martin & Schumacher (2007)** highlight that persistent gender stereotypes and lower self-efficacy contribute to this disparity. **Bandura's (1997)** self-efficacy theory further explains that female's lower perceived competence in technology exacerbates anxiety. Internationally, **Nguyen et al. (2025)** found that targeted STEM interventions and mentoring programs effectively reduce female trainees' anxiety and phobia in Vietnam, suggesting the importance of early support.

Locality Impact: Rural teacher trainees often experience higher anxiety and phobia than urban counterparts due to limited access, exposure, and ICT infrastructure. Indian studies by **Sharma and Joshi (2024)** and **Ali & Awan (2013)** demonstrate that rural trainees frequently lack sustained ICT training. **Garcia & Kim (2024)** similarly note a persistent rural-urban digital divide. Internationally, **Jones & Smith (2025)** observed that rural students in the UK and Australia exhibit higher technology-related fears linked to socio-economic and infrastructural barriers, reinforcing the global relevance of locality as a factor.

Institution Type: The influence of institution type on computer anxiety is mixed. Indian studies by **Kumar & Gupta (2025)** and **Rao & Singh (2024)** show that private institutions with better ICT resources may reduce anxiety, while **Hussein & Ali (2025)** emphasize that personal motivation, prior experience, and digital literacy are often more decisive than institutional type. **Patil & Deshmukh (2025)** highlight the role of psychosocial support, including mentoring and peer guidance, in reducing anxiety.



Mehta &Kaur (2025) and Sharma &Verma (2025) note that hands-on practice and supportive learning environments enhance digital self-efficacy regardless of institution type. Internationally, Nguyen et al. (2025) confirmed that mentoring and peer support reduce anxiety in both urban and rural schools, indicating that personal and social factors can outweigh mere institutional resources.

Relationship between Computer Anxiety and Phobia:

Research consistently shows a positive correlation between computer anxiety and phobia. Indian studies by Chen et al. (2025) and Kulkarni and Rao (2025) suggest that higher anxiety levels often precede phobic avoidance. Internationally, Brosnan (1998) and Wilson & Park (2025) support this progressive relationship, emphasizing that early management of anxiety through hands-on practice, cognitive-behavioural techniques, or mindfulness interventions can prevent escalation into full phobia.

Research Gap:

While multiple studies address individual demographic factors or psychological barriers, few explore the combined influence of gender, locality, and institution type on both computer anxiety and phobia among B.Ed. trainees in India. Additionally, international comparisons remain limited, and empirical evidence linking these demographic characteristics with psychological barriers in teacher education is sparse. This study fills the gap by simultaneously analysing these factors to provide insights for targeted interventions aligned with the National Education Policy (NEP, 2020).

STATEMENT OF THE PROBLEM

“Exploring Computer Anxiety and Phobia among Future Teachers: A Demographic Analysis”

OBJECTIVES OF THE STUDY

1. To examine gender-based differences in computer anxiety and computer phobia among B.Ed. teacher trainees.
2. To investigate differences in computer anxiety and computer phobia between urban and rural B.Ed. teacher trainees.
3. To explore differences in computer anxiety and computer phobia among trainees from government and private institutions.
4. To determine the relationship between computer anxiety and computer phobia among B.Ed. teacher trainees.

HYPOTHESIS

Based on the objectives, the following null hypotheses were formulated:

Hypothesis 1 (Gender Differences):

H₀₁: There is no significant difference in computer anxiety and computer phobia between male and female B.Ed. teacher trainees.



Hypothesis 2 (Locality Differences):

H₀₂: There is no significant difference in computer anxiety and computer phobia between urban and rural B.Ed. teacher trainees.

Hypothesis 3 (Institution Type Differences):

H₀₃: There is no significant difference in computer anxiety and computer phobia between trainees from government and private institutions.

Hypothesis 4 (Relationship between Variables):

H₀₄: There is no significant relationship between computer anxiety and computer phobia among B.Ed. teacher trainees.

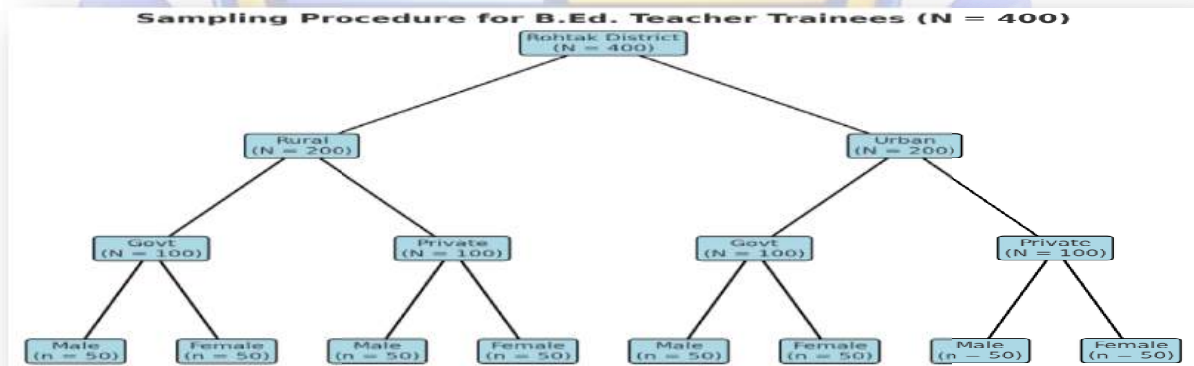
3. METHODOLOGY OF THE STUDY

3.1 Research Design

This study used a **descriptive survey design** with a quantitative approach. This design is suitable for collecting factual information about computer anxiety and phobia and examining their relationship with demographic factors such as gender, locality, and type of institution.

3.2 Population and Sample

The population consisted of all B.Ed. teacher trainees enrolled in government and private institutions in Rohtak district, Haryana. A stratified random sampling technique was used to ensure representation across gender, locality, and institution type. The final sample included 400 trainees, evenly distributed as follows:



Locality	Institution Type	Male	Female	Total
Rural	Government	50	50	100
Rural	Private	50	50	100
Urban	Government	50	50	100
Urban	Private	50	50	100
Total		200	200	400



This balanced distribution allowed fair comparisons across demographic categories.

3.3 Tools Used

1. **Computer Anxiety Scale (Embi, 2007):** Measures general anxiety about using computers, confidence in learning computers, motivation, and perceptions of computer control.
2. **Computer Phobia Scale (Rajasekar& Raja, 2006):** Assesses the intensity of fear or avoidance of computers. Both tools are widely validated in Indian educational contexts.

3.4 Data collection Procedure

After obtaining permission from institutional authorities, questionnaires were administered in classroom settings under the researcher's supervision. Participants were assured of confidentiality and anonymity. Out of 420 distributed questionnaires, 400 were complete and suitable for analysis.

3.5 Data Analysis

Data were coded and analysed using SPSS (Version 26). Statistical techniques included:

- **Independent samples t-tests** to compare computer anxiety and phobia across gender, locality, and institution type.
- **Pearson's correlation** to examine the relationship between computer anxiety and computer phobia.

3.6 Delimitations of the Study

1. The study focused only on 400 B.Ed. teacher trainees from selected institutions in Rohtak district.
2. Only computer anxiety and computer phobia were examined.
3. Only gender, locality, and type of institution were considered as influencing factors.

4. ANALYSIS AND INTERPRETATION OF DATA

H₀₁: There is no significant difference in computer anxiety and computer phobia between male and female B.Ed. teacher trainees.

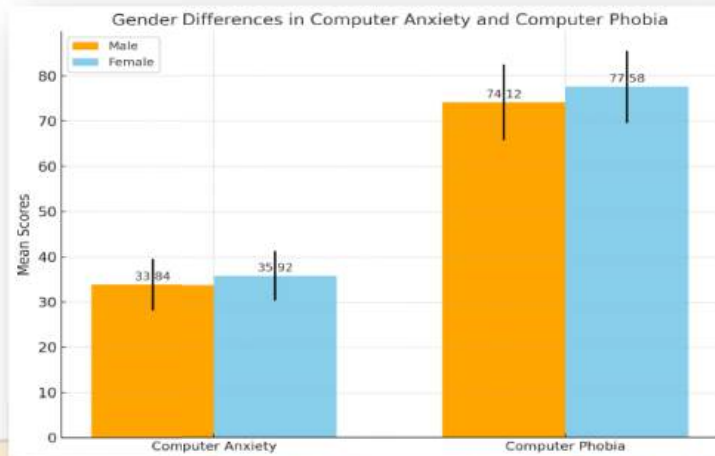
Table 4.1: Independent Samples t-test Comparing Gender Differences in Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees

Variable	Gender	N	Mean	SD	t value	df	P value	Level of Significance
Computer Anxiety	Male	200	33.84	5.72	-2.46	398	.014*	Significant at 0.05 level
	Female	200	35.92	5.48				
Computer Phobia	Male	200	74.12	8.35	-2.94	398	.003*	
	Female	200	77.58	7.96				



* Significant at the 0.05 level ($p < .05$). Table value at .05 level= 1.96

Bar diagram showing Gender Differences in Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees



Interpretation:

Table 4.1 presents the results of an independent samples t -test examining gender differences in computer anxiety and computer phobia among B.Ed. teacher trainees. The findings show that female trainees reported higher computer anxiety ($M = 35.92$, $SD = 5.48$) than male trainees ($M = 33.84$, $SD = 5.72$), and this difference was statistically significant, $t(398) = -2.46$, $p = .014$. Similarly, female trainees showed greater computer phobia ($M = 77.58$, $SD = 7.96$) compared to male trainees ($M = 74.12$, $SD = 8.35$), which was also significant, $t(398) = -2.94$, $p = .003$.

Hence, the null hypothesis is **rejected**, indicating that gender significantly influences the levels of computer anxiety and computer phobia among B.Ed. teacher trainees.

H_{02} : There is no significant difference in computer anxiety and computer phobia between urban and rural B.Ed. teacher trainees.

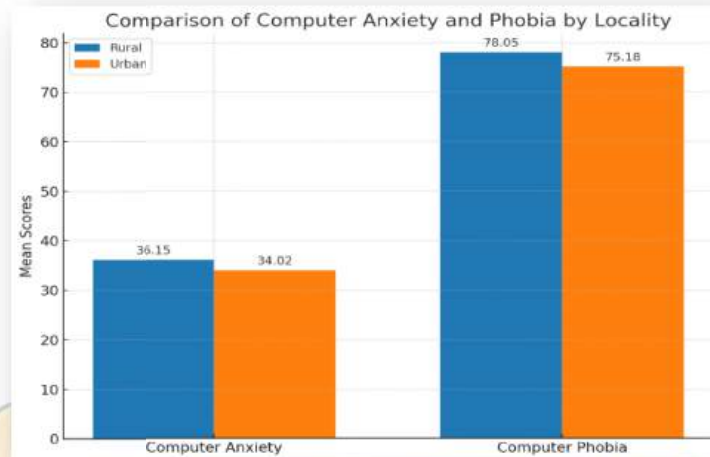
Table 4.2: Independent Samples t -test Comparing Computer Anxiety and Computer Phobia between Urban and Rural B.Ed. Teacher Trainees

Variable	Locality	N	Mean	SD	t	df	P value	Level of Significance
Computer Anxiety	Rural	200	36.15	5.80	3.12	398	.002*	Significant at 0.05 level
	Urban	200	34.02	5.45				
Computer Phobia	Rural	200	78.05	8.10	3.45	398	.001*	Significant at 0.05 level
	Urban	200	75.18	7.85				

* Significant at the 0.05 level ($p < .05$). Table value at .05 level= 1.96



Bar diagram showing locality Differences in Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees



Interpretation:

Table 4.2 presents the results of an independent samples *t*-test comparing rural and urban B.Ed. teacher trainees on computer anxiety and computer phobia. The results show that rural students reported higher computer anxiety ($M = 36.15$, $SD = 5.80$) than urban students ($M = 34.02$, $SD = 5.45$), and this difference was statistically significant, $t(398) = 3.12$, $p = .002$. Similarly, rural students showed higher computer phobia ($M = 78.05$, $SD = 8.10$) compared to urban students ($M = 75.18$, $SD = 7.85$), which was also statistically significant, $t(398) = 3.45$, $p = .001$.

Based on the results, the null hypothesis (H_{02}) is **rejected**, indicating that locality significantly influences computer-related emotional factors. Rural students experience higher levels of both computer anxiety and computer phobia compared to urban students.

H_{03} : There is no significant difference in computer anxiety and computer phobia between trainees from government and private institutions.

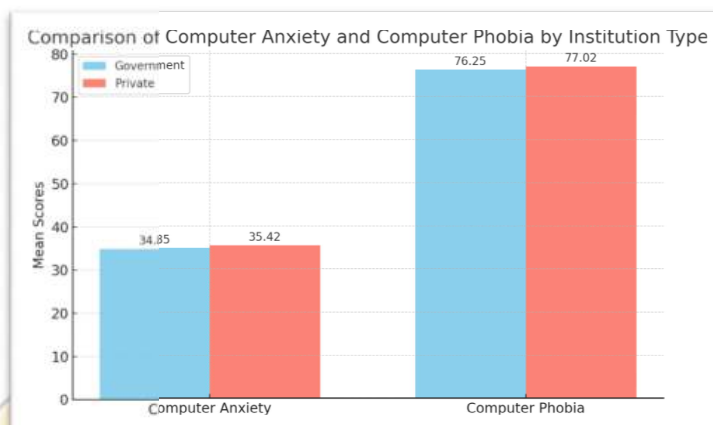
Table 4.3: Independent Samples t-test Comparing Computer Anxiety and Computer Phobia between Trainees from Government and Private Institutions

Variable	Institution Type	N	Mean	SD	t	df	p
Computer Anxiety	Government	200	34.85	5.70	-1.15	398	.250*
	Private	200	35.42	5.55			
Computer Phobia	Government	200	76.25	8.05	-1.05	398	.294*
	Private	200	77.02	7.92			



* Significant at the 0.05 level ($p < .05$). Table value at .05 level= 1.96

Bar diagram showing Institutions Type Differences in Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees



Interpretation:

Table 4.3 presents the results of an independent samples *t*-test conducted to examine differences in computer anxiety and computer phobia among B.Ed. teacher trainees from government and private institutions. The results show that government trainees ($M = 34.85$, $SD = 5.70$) and private trainees ($M = 35.42$, $SD = 5.55$) did not differ significantly in computer anxiety, $t(398) = -1.15$, $p = .250$, indicating that both groups experienced similar levels of anxiety toward computer use. Similarly, no significant difference was found in computer phobia scores between government trainees ($M = 76.25$, $SD = 8.05$) and private trainees ($M = 77.02$, $SD = 7.92$), $t(398) = -1.05$, $p = .294$.

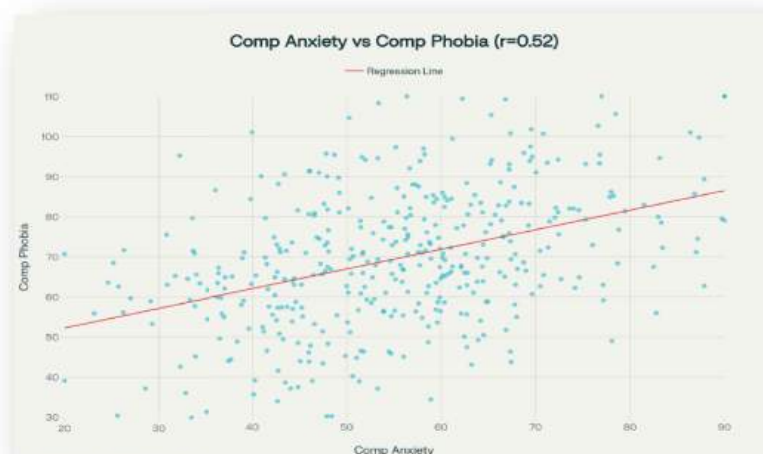
Based on the results, the null hypothesis (H_{03}) is **accepted**, indicating that the type of institution (government or private) does not significantly affect the levels of computer anxiety and computer phobia among B.Ed. teacher trainees.

H₀₄: There is no significant relationship between computer anxiety and computer phobia among B.Ed. teacher trainees.

Table 4.4 Pearson's Product-Moment Correlation between Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees (N = 400)

Variables	N	Correlation Coefficient (r)	p-value	Interpretation
Computer Anxiety & Computer Phobia	400	0.52	.001*	Moderate positive correlation
*. Correlation is significant at the 0.05 level (2-tailed). df=398				

Scatter diagram showing Correlation between Computer Anxiety and Computer Phobia among B.Ed. Teacher Trainees



Interpretation:

Table 4.4 presents the results of a Pearson correlation analysis conducted to examine the relationship between computer anxiety and computer phobia among B.Ed. teacher trainees. The findings revealed a moderate positive correlation between the two variables, $r = .52$, $df = 398$, $p = .001$, indicating a statistically significant association. This means that higher levels of computer anxiety are associated with higher levels of computer phobia, and vice versa.

Based on the results, the null hypothesis (H_{04}) is **rejected**, suggesting that computer anxiety and computer phobia is significantly and positively correlated. As computer anxiety increases, computer phobia also tends to increase among B.Ed. teacher trainees.

5. MAIN FINDINGS

1. An independent samples t-test revealed a significant difference in computer anxiety and computer phobia between male and female B.Ed. teacher trainees, with females exhibiting higher levels in both areas.
2. An independent samples t-test showed a significant difference in computer anxiety and computer phobia between rural and urban trainees, with rural trainees reporting higher levels of anxiety and phobia.
3. An independent samples t-test indicated no significant difference in computer anxiety and computer phobia between trainees from government and private institutions, suggesting similar levels across institution types.
4. A Pearson correlation analysis revealed a moderate positive relationship between computer anxiety and computer phobia, indicating that trainees with higher computer anxiety also tend to experience greater computer phobia.

6. DISCUSSION

- This study highlights how gender, locality, and institution type influence computer anxiety and computer phobia among B.Ed. teacher trainees. Female trainees showed higher anxiety and phobia than males, consistent with previous research (Morahan-Martin & Schumacher, 2007 and Russo et al., 2025 and Bhattacharya & Sharma, 2018). This difference is linked to socialization patterns and lower self-efficacy in technology use (Bandura, 1997 and Chen et al., 2025 and Liu & Thompson, 2024).
- Rural trainees experienced more anxiety and phobia than urban trainees, reflecting limited exposure to technology, poor infrastructure, and fewer digital resources (Durnell & Haag, 2002 and Rajasekar & Vaiyapuri Raja, 2006 and Singh & Kumar, 2022; Garcia & Kim, 2024 and Sharma & Joshi, 2024). International studies confirm that socio-economic and environmental factors contribute to this rural-urban gap (Muller & Weiss, 2025 and Wilson & Park, 2025).
- No significant difference was found between government and private institutions, suggesting that infrastructure alone does not determine technology attitudes (Hussein & Ali, 2023 and Wright et al., 2025 and Patil & Deshmukh, 2024). Instead, individual motivation, digital literacy, and psychosocial support are crucial.
- A positive link between anxiety and phobia was observed, supporting earlier findings (Brosnan, 1998 and Chen et al., 2025). Targeted interventions such as confidence-building workshops, experiential learning, and mindfulness strategies can help reduce anxiety and prevent phobia (Aurora, 2013 and Kulkarni & Rao, 2025 and Liu & Thompson, 2024 and Nguyen et al., 2025; More, 2025).
- These results support Bandura's (1997) self-efficacy theory and align with NEP 2020, emphasizing equitable access to technology. By addressing demographic-specific challenges, teacher education programs can better prepare trainees to become digitally confident and competent educators (Tarhini, 2016 and Igbaria & Parasuraman, 1989 and Sam et al., 2025 and Wright et al., 2025).

Practical takeaway: Teacher educators should design programs that provide hands-on ICT experience, confidence-building activities, and tailored support for female, rural, and government-institution trainees. Such measures can reduce anxiety, prevent phobia, and ensure all trainees are ready to effectively integrate technology into teaching.

EDUCATIONAL IMPLICATIONS

- **Focus on Gender-Sensitive Support:** Female trainees experience higher computer anxiety and phobia, so teacher education programs should include



mentoring by confident female tech users, role models, and activities that challenge gender stereotypes to build confidence and self-efficacy.

- **Enhance Rural Technology Access:** Rural trainees face more anxiety due to limited resources and training. Providing better technological infrastructure, hands-on computer practice, and on-going technical support in rural areas is essential to close the digital gap.
- **Individualized Interventions Matter:** Since institution type doesn't significantly impact anxiety, programs should focus on personal attitudes, motivation, and experience with technology to help trainees overcome emotional barriers.
- **Implement Early Anxiety Management:** The strong link between anxiety and phobia means teacher training should include early screening, stress management workshops, and psychological support to prevent anxiety from turning into severe phobia.

SUGGESTIONS FOR FURTHER STUDIES

- **Long-Term Impact Research:** Study how computer anxiety and phobia affect trainees' technology use and teaching success over time to understand lasting effects.
- **Intervention Effectiveness:** Evaluate how anxiety reduction programs influence real-world technology use and classroom outcomes.
- **Explore Lived Experiences:** Use qualitative methods to understand deeper cultural and personal factors affecting female and rural trainees' anxiety.
- **Diversify Study Samples:** Include trainees from various regions, education levels, and backgrounds to make findings more widely applicable.
- **Examine Personal Influences:** Investigate how digital literacy, prior experience, and personality traits contribute to anxiety and phobia differences.
- **Test Anxiety-Reduction Techniques:** Experiment with cognitive-behavioural, mindfulness, and other methods to find what best helps reduce computer phobia among teacher trainees.

These steps will help build supportive, effective teacher education programs that empower trainees to confidently use technology in their future classrooms.

6.CONCLUSION

This study underscores the demographic dimensions of computer anxiety and phobia among B.Ed. trainees. Findings revealed that female and rural trainees experienced significantly higher anxiety and phobia, while institutional type showed no major differences. These results suggest that socio-cultural factors, rather than institutional



affiliation, shape digital fears. The implications are twofold: first, teacher education programs should integrate targeted training to build confidence and digital self-efficacy among female and rural students and second, policymakers must address the digital divide by ensuring equitable access to technological resources. In alignment with NEP 2020, the study highlights the urgent need to design context-specific interventions that prepare future teachers to engage with technology confidently and effectively. By addressing these psychological barriers, teacher education can foster digitally competent professionals capable of advancing inclusive and technology-driven classrooms.

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