



Social Sciences Spectrum

A Double-Blind, Peer-Reviewed, HEC recognized [Y-category](#) Research Journal

E-ISSN: [3006-0427](#) P-ISSN: [3006-0419](#)

Volume 05, Issue 03, 2026

Web link: <https://sss.org.pk/index.php/sss>



Check for updates

Between Uncertainty and Obligation: Pre-Service Teachers' Experiences of AI Anxiety in Initial Teacher Education in Punjab, Pakistan

Razia Boota¹ Rumana Anjum² Maimoona Anjum³

Article Information [YY-MM-DD]

Received 2026-05-31 Revised 2026-07-04 Accepted 2026-07-23

Citation (APA):

Boota, R., Anjum, R & Anjum, M (2026). Between uncertainty and obligation: Pre-service teachers' experiences of AI anxiety in initial teacher education in Punjab, Pakistan. *Social Sciences Spectrum*, 5(3), 398-410. <https://doi.org/10.71085/sss.05.03.589>

Abstract

In Punjab, Pakistan, artificial intelligence (AI) is fast gaining its way into educational settings, but pre-service teachers are largely left to manage this shift with minimal institutional guidance and much psychological anxiety. This paper examines the anxiety about AI among pre-service teachers who are enrolled in the Initial Teacher Education (ITE) programmes in Punjab and how the examined anxiety influences the professional identity and confidence of these teachers in their pedagogical practices. The data were collected using semi-structured interviews with 20 pre-service teachers based in the ITE institutions in Punjab. Data generation was aided by an AI-assisted transcription, and data organisation and management were assisted by NVivo 15 using AI-assisted coding. The analysis produced three themes, including the institutional void that increases uncertainty; anxiety posing a threat to professional identity; and the necessity to embrace AI without preparing it. The results demonstrate that AI anxiety among pre-service teachers is not only a technical issue but a highly relational, institutional experience, influenced by policy pressure and lack of curriculum, and a sense of professional competence fragmentation. The research paper is a contribution to the qualitative research on AI in teacher training and provides a practical implication on curriculum reform of ITE in Pakistan.

Keywords: AI Anxiety, Pre-service Teachers, Initial Teacher Education, Punjab Pakistan, Reflexive Thematic Analysis, Professional Identity, Qualitative Research.

¹ MPhil Scholar, Government College Women University, Sialkot, Punjab, Pakistan.

² Primary School Teacher, School Education Department Gujrat, Punjab, Pakistan.

³ District Education Officer Literacy Jhelum, Punjab, Pakistan.

Corresponding Author: Razia Boota, **Correspondence through:** raziaboota@hotmail.com



Content from this work may be used under the terms of the [Creative Commons Attribution-Share-Alike 4.0 International License](#) that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.

1. Introduction

The application of artificial intelligence to the field of education is growing increasingly faster among the global population and poses both benefits and emotional difficulties to the teachers. The Punjab government has openly announced that it is going to introduce AI in government schools, but ITE programmes in Punjab records a large gap in the intention of the policy and the institutional practice of the government policy of introducing AI in government schools. This contradiction leaves pre-service teachers in a structurally subordinate situation where they must apply AI-enhanced pedagogies, which they have not been trained in.

Uncertainty, perceived threat, and anticipatory fear of AI technologies make up the multidimensional psychological construct of AI anxiety as an important affective obstacle to technology integration in education (Johnson & Verdicchio, 2017; Wang & Wang, 2022). It includes the fear of personal uncertainty, professional displacement, ethical confusion, and the belief that human judgment is being displaced in the teaching field, in addition to the other ones mentioned earlier as (Canbeldek Erol et al., 2026; Wan et al., 2026). These concerns are especially relevant to pre-service teachers who are also trying to form their professional identities and begin to encounter AI in the teaching profession.

Using multiple educational settings, moderate and high levels of AI anxiety have been reported, with technology intimidation, job displacement and ethical concern as the main parameters of AI anxiety. However, the vast majority of the literature comes from a western, east Asian or high resource context. The literature on the Global South, and Pakistan in particular, is limited, so the lived experiences of ITE students in Punjab have hardly been studied.

Current quantitative research studies have quantified AI anxiety using scales and questionnaires, which have delineated its prevalence and predictors (Canbeldek Erol et al., 2026). These studies confirm that AI literacy mediates anxiety (Canbeldek Erol et al., 2026) and that self-efficacy functions as a protective factor against it. However, they cannot illuminate the meaning which pre-service teachers attribute to their anxiety, the way it manifests in their ITE experiences, and the reasons it persists even when AI is used informally. A qualitative approach is therefore needed to understand not only the extent of anxiety experienced by pre-service teachers but also what it entails.

In this study, three research questions were addressed.

1. How do pre-service teachers describe and explain their experiences of AI anxiety in ITE in Punjab?
2. How does the institutional environment of ITE influence or exacerbate AI anxiety?
3. In what ways does AI anxiety affect the emerging professional identities of pre-service teachers?

This paper contributes to an emerging body of qualitative literature on AI anxiety, which frames affective responses to AI as socially and institutionally produced rather than individually deficit.

2. Literature Review

2.1 AI Anxiety: Conceptual Foundations

AI anxiety has its origins in broader conceptualisations of technophobia and computer anxiety but has its own unique characteristics connected with the nature of AI. In contrast to previous digital technologies, AI systems are adaptive, generative and opaque in terms of their functioning, which

contributes to a perceived lack of control, power and certainty (Johnson & Verdicchio, 2017). AI anxiety is a multi-faceted phenomenon, according to scholars, comprising of fear of losing their job, a sense of technological security, and loss of agency (Canbeldek Erol et al., 2026). Bandura's (1997) social cognitive theory views anxiety as a result of negative efficacy expectations; when people have negative beliefs about their ability to effectively utilise AI, they tend to develop anxiety through a threat appraisal rather than a challenge appraisal (Bandura, 1997). This is especially important for educators, as professional competence is central to occupational identity (Wan et al., 2026).

Recent empirical research reports moderate to high levels of AI anxiety among pre-service teachers, with technology intimidation being the most frequently reported dimension, followed by job displacement and technology dependence (Kuzu, 2025). These dimensions are unevenly distributed across contexts, whereby gender, subject area, and prior technology experience all moderate anxiety levels. Taken together, AI anxiety is a structural and contextual phenomenon rather than a personality characteristic.

2.2 Teacher Professional Identity and AI

The formation of pre-service teacher professional identity, in which they come to understand their role as teachers and what teaching entails, is one of the central developmental processes of ITE (Cochran-Smith, 2016). It is a process which is relational in nature, as it develops through interactions with mentors, institutions, curricula, and policy landscapes. introducing AI as an obligation rather than a choice generates identity friction (Canbeldek Erol et al., 2026). Pre-service teachers must balance their emerging pedagogical identity with institutional requirements to embrace unfamiliar technology.

Studies on teacher professional identity and technology indicate that anxiety is more severe when teachers perceive AI as a threat to the relational and ethical dimensions of teaching, including relational care, ethical judgment, and creative pedagogy (Wan et al., 2026; Zawacki-Richter et al., 2019). Especially teachers in under-resourced contexts are at risk due to a lack of scaffolding in professional development (UNESCO, 2026). Assisting pre-service teachers in creating their own understanding of AI, especially in the absence of professional knowledge sharing regarding AI in Pakistan's ITE domain, becomes a challenging matter.

2.3 AI in Education: The Pakistani Context

Infrastructure and policy deficiencies are ongoing challenges for education in Pakistan and both impact on AI's classroom level experiences (Rasheed, Qureshi, & Muhammad, 2026). Connectivity, hardware, and teacher training are mostly lacking, and the government is promising a shift to digital (UNESCO, 2026) but that does not seem to be happening in most parts of Punjab. Thus, pre-service teachers' use of AI in their role of ITE creates a paradoxical institutional situation for them: the policy interest and the institutional unpreparedness.

It is a non-supportive, non-pedagogical, non-mechanized and unconfirmed kind of interaction that leads to the emergence of an anxiety producing condition (Tariq, Dilawar, & Muhammad, 2019): pre-service teachers use AI tools without any pedagogical and institutional guidance or critical literacy frameworks (UNESCO, 2026). The result is what this research calls the obligation without preparation dynamic, which is basically a felt pressure, and dread of being prepared to, use AI.

3. Research Methodology

3.1 Research Design

A qualitative research design was used as a basis in this study was the Reflexive Thematic Analysis, which was formulated by Braun and Clarke (2006, 2022). Research questions which aim at shedding light on the meaning, context and relational aspects of experiencing AI anxiety also require a methodology which is sensitive to people's ways of making and telling experiences. In contrast to other qualitative analytic approaches (Interpretative Phenomenological Analysis or Grounded Theory), Reflexive TA was selected for its ability to provide the theoretical flexibility suitable for a constructionist inquiry without having to align with a particular epistemology. This research is driven by one of the values of Qualitative research (Big Q), depth as opposed to breadth (Braun & Clarke, 2021).

3.2 Philosophical Paradigm

The present study is based on a fundamental premise of ontological approach (i.e., constructionist) as construction of 'AI anxiety' is never a fixed or objective 'presence,' but is rather actively created by means of language, interaction and institutional background which highlight 'AI anxiety' (Crotty, 1998). The epistemological orientation is constructionist, which means that constructing knowledge around the conception of AI anxiety is a relational process and takes place within occurrences of socio-institutional conditions, based on the subjectivity of the research and their interpretive practices (Braun & Clarke, 2022; Willig, 2021). Language is treated as constructive rather than reflective; accounts given by participants are not descriptions of pre-existing psychological states but, in the process of narration, make some sense themselves and constitute meaning (Crotty, 1998). The analytic orientation is primarily critical, examining how institutional structures and discourses generate and sustain anxiety among pre-service teachers.

3.3 Analytic Approach

The approach was primarily inductive: Themes were generated from the data rather than imposed from theory (although theoretical resources, especially the Social Cognitive Theory (Bandura, 1997) and research on teacher professional identity were used to inform the interpretive commentary. The aspects under analysis were at the latent and semantic levels. The focus of semantic analysis is on what the participants directly state; the focus of latent analysis is to ask questions based on what people describe, as well as what is assumed or the conditions of an institution that are the basis of those descriptions. This twin emphasis is attuned to the ability of Reflexive TA to generate both experiential and critical data readings.

3.4 Participants and Sampling

Participants were selected using purposive criterion sampling (Patton, 2015) at ITE institutions in the Punjab. The inclusion criterion included participants currently enrolled in a B.Ed. or M.Ed. programme at a state-sector institution, employed at least one AI tool in an academic environment, and were willing to discuss their experiences of AI in ITE. The exclusion criteria were participants who had formal training in AI during their program curriculum, as this would have changed the institutional conditions of interest.

The sample comprised 20 participants (12 women and 8 men) aged between 20 and 29 years. Participants were enrolled in the second or third year of a four-year B.Ed. programme. All analyses

and reporting were performed using pseudonyms. Information power (Malterud et al., 2016) was used to decide the sample size: due to the specificity of questions used in the research, the purposive nature of the sample, and the complexity of semi-structured interview data, 20 participants would yield sufficient informational depth for robust analytic claims without pursuing saturation, a concept incompatible with the epistemology of Reflexive TA.

3.5 Data Collection

Data collection was conducted using semi-structured interviews (individually) in Urdu and English, per the participant's preference, from October to December 2025. Online interviews were conducted using Google Meet and face-to-face at the institutions of the participants, lasting between 45 and 75 minutes. The interview guide was developed iteratively based on the literature on AI anxiety, professional identity, and the context of ITE. The questions addressed their interactions with AI technologies, attitudes toward AI in teaching, attitudes towards how their institutions respond to AI, and efficacy regarding their readiness for AI-based classrooms. An initial pilot version was piloted using two graduate students and corrected in a new version (Flick, 2022; Kvale & Brinkmann, 2015).

Participants were interviewed and audio recorded. Initial transcription was performed using AI-assisted transcription (TurboScribe), and all transcripts were fine-tuned by the researchers. This approach is consistent with recent guidance on responsible use of AI tools in qualitative data preparation.

3.6 Data Analysis Procedures

The six stages of Reflexive TA, as conceptualised by Braun and Clarke (2022), were used for the analysis.

Phase 1 involved familiarisation: All 20 transcripts were fully read and re-read before any formal coding was done. The researcher noted first impressions, frequently occurring concepts, and instances of interpretive interest. This phase is immersive and recursive rather than systematically procedural. Phase 2 consisted of coding: the full dataset systematically generated a comprehensive set of initial codes that were concise, analytically grounded, and sensitive to latent meaning. Coding was approached as an interpretive process rather than a neutral categorisation activity (Braun et al., 2019). Phase 3 involved creating initial themes: Codes that shared a defining organising concept were clustered into candidate themes. Thematic maps were produced to visualise possible relationships between clusters (Braun & Clarke, 2022).

Phase 4 included the development and review of themes: Candidate themes were compared to the coded extracts and the entire dataset. Several early clusters were revised, and one candidate theme was dissolved and its codes redistributed. This phase was iterative and reflexive rather than sequential (Braun & Clarke, 2022). Phase 5 was the refining, defining, and naming of themes: Themes were assigned names that captured their organising principle rather than simply labelling their content. Theme definitions were written to describe the nature of what each theme embodied as a pattern of common meaning. Phase 6 was writing up: the analytic narrative was built by combining interpretive commentary and illustrative quotes made by participants, emphasising the analytic voice of the researcher (Braun & Clarke, 2022).

3.7 Trustworthiness and Ethical Considerations

Quality was ensured through conceptual coherence across the research design and analytic stages, and through transparent reporting. Emphasis was placed on analytic depth and data-grounded evidence rather than breadth of coverage. These standards are consistent with quality frameworks suitable for Big Q qualitative research (Tracy, 2010; Yardley, 2000).

The institutional review board approved the study before data collection. Informed consent was provided in writing by all participants, who were informed of their right to withdraw at any point without penalty. We ensured confidentiality by using pseudonyms and eliminating any identifying information from all transcripts. Audio files and transcripts were stored on a password-protected institutional laptops. After each interview, all the participants were debriefed.

4. Findings

Three themes were produced in the analysis, each with two or three subordinate themes. The themes are: (1) The Institutional Void as a Generator of Anxiety; (2) AI Anxiety as a Threat to Becoming a Teacher; and (3) Obligated to Use, Unprepared to Understand.

Theme 1: The Institutional Void as a Generator of Anxiety

The organising principle of this theme is that anxiety does not arise from AI itself alone, but due to the lack of institutional direction of what AI is and what it requires when applied in teaching instruction. Participants repeatedly described their ITE institutions as silent on the topic of AI, and this silence produced the most acute anxiety, rather than a direct negative encounter with AI.

Sub-theme 1.1: Policy noise without pedagogical clarity

The participants were keenly aware that the Punjab government had promised to introduce AI in schools. This consciousness failed to calm them; instead, it put a strain on them. There was a policy signal, but no pedagogical signal in their programmes. Participant 2 (Aisha) explained: “We read on the outside that AI is being introduced to all schools but here in our college, no one informs us what that would mean as a teacher. And there you are, asking yourself. Am I already behind? The fear created in this situation does not lie in a particular experience with AI but in the interpretive labour needed to make sense of a policy requirement to which the institution refuses to respond. Bilal (Participant 7) described a similar experience that since AI is not mentioned in lectures, they use ChatGPT on their own and feel guilty, as if they were doing something bad. Institutional silence creates this guilt, which is an affective dissonance common with participants in a policy noise.

Sub-theme 1.2: The absent curriculum

Participants recounted a curriculum that had been changed very little even with the rapid development that was being experienced by AI in the normal flow of academic life. Some participants reported that they have never dealt with AI in their technology or methods classes. One of the participants considered the following:

When I started my B.Ed. I believed that I would at least see a kind of course module concerning the subject of technology in the classroom, maybe a course module concerning AI tools. But there is nothing. Our ICT is studied in a textbook that was written many years ago. It does not even define what AI is or

*the process in place. I will be unable to say what when they ask me at school.
This is one of my worries. (Participant 11)*

The term that ‘worries’ is used in describing the low-level, extended anxiety brought about by curricular absence. It is not the fear of a certain event but the old sense of inadequacy which the curriculum has failed to respond to. Participants never blamed individual tutors but described a bigger systemic expression of inertia in the system that gave an informational and affective impression of being abandoned by their system.

Theme 2: AI Anxiety as a Threat to Becoming a Teacher

The organising principle of this theme is that AI anxiety does not exist independently of professional identity. Anxiety in all its manifestations emerged among the participants largely through the prism of professional becoming: Participants feared not that AI was challenging, but that it exposed perceived inadequacies in themselves as novice teachers.

Sub-theme 2.1: Fear of professional irrelevance

Some participants expressed concern that their input would be made unnecessary by AI as their careers progressed. Rather than an abstract (economical) issue, it is a very personal, discursive, ‘uselessness’ and ‘redundancy’ debate. To this end, the following quote from Sana (Participant 5) beautifully encapsulates what is on the minds of many: “When AI can make lesson plans and mark the essay and explain the concept then what about me? I do feel that I have been put in my place, but not even a month in to teaching.” From an analytical point of view, the fact that this anxiety is not necessarily a result of real classroom experiences with AI, but it is a predictive identity threat, created in the media and policy discussion surrounding the capability of AI, proves to be important.

Sub-theme 2.2: Anxiety and the performance of competence

Another trend throughout the data was anxiety about being perceived as technologically incompetent, especially when around peers and school placement supervisors. Some participants described performing confidence with AI tools they did not understand. Usman (Participant 14) said, “By the time I was able to figure out how to make AI output comprehensible, I was using it but pretending to be good friends with the AI when my head teacher was around. I was just pointing my head.” But this exercise of ability is actually not deceit – it is a coping mechanism adopted by an institutional culture, courtesy of a culture that views a need for support as an admission of failure. Thus pervades more anxiety: the participants are afraid of AI, and they are afraid to be revealed as being afraid of AI. Fatima (Participant 9) commented on a similar experience with regard to placement in teaching:

*The head teacher asked me, "Did you use AI to evaluate it?" To which I replied, "Of course." Although I attended the meeting, I must admit I was unwell and unaware of her intentions. I had no idea of what she wanted. I came home and honed and honed over for three hours to figure out, to think out what to do. I didn't have any concerns with AI. When it was found it was disturbing.
(Participant 9)*

This is the performative aspect of AI anxiety, this sub-theme indicates that in an institutional environment where need is not encouraged and those who are confident are rewarded, AI anxiety can be managed, concealed and amplified at the same time.

Sub-theme 2.3: Disruption to the teacher self

For many participants, teaching was a profession with a clear moral and relational orientation, being able to care about children, make learning possible, and establish relationships. This professional narrative was disrupted by AI. Participants were worried about how integrating AI would impact the human aspects of teaching that led them to their field.

I am not excited when I think about applying AI in my classroom. I believe it will be something that is taken away. The interaction with the students and the moment when a child realises something under my influence - will AI deprive me of it? It was people, not machines, which led me to choose teaching. (Participant 3)

It is not technophobia. It is a statement of value dilemma: the emerging teacher self which participants are erecting during ITE is now based on the principles of human-relational construction, and AI seems to question these principles without any institutional intervention to assist participants in resolving the dilemma.

Theme 3: Obligated to Use, Unprepared to Understand

The main organising principle of this theme is that there is a structural contradiction: social, peer, and policy pressures compel participants to engage with AI, but no conceptual resources are available to support critical or confident engagement. The generative state of their anxiety is this lack of preparedness.

Sub-theme 3.1: Informal use without ethical framing

All 20 participants reported using AI tools, most commonly ChatGPT and Google Gemini, to complete academic tasks such as writing assignments, creating lesson plans, and summarising notes. But without the practice of moral or critical schemes. The participants experienced a sense of guilt for cheating, even though they hadn't, as nothing the institution did had helped them to know what was ethical and what was not. This issue was most clearly stated by participant 17 (Rabia) when she said that she would use ChatGPT on everything now: "Each time I submit my work, I feel anxious. Is there anything wrong that I am doing? Is it allowed? No one has informed us, so our worry does not diminish." The no-ethical framing does not diminish the use of AI; more so, it increases anxiety as the user will need to evaluate the ethical status of his/her behaviour every time again.

Sub-theme 3.2: The literacy gap and its affective consequences

The participants were self-aware and knew about their low AI literacy and viewed it as an aspect of anxiety, but not one of neutral gaps in knowledge. A consciousness of a knowledge gap in a situation where knowledge is professionally anticipated generates a certain affective register, variously characterised by the participants through the concepts of shame, panic or dread. Hina (Participant 20)

I would want to understand more about AI; bias, how it works, what it is trained on, yet I do not see it; I feel ashamed because this knowledge should be possessed by the teachers. Emotional obligation and the lack of available information were the main causes of anxiety of this sub-motif.

5. Discussion

5.1 Interpretation of Findings

This study has found that institutional factors and not personal psychological weaknesses generate and maintain AI anxiety in pre-service teachers at Punjab. The anxiety of participants was not a mere fear of technology but a reaction to a certain institutional structure wherein policy requirements to implement AI were made without the support of pedagogical training, moral guidance, and the curricula. It can be correlated with the scholarship that sees an institutional silence as a crucial escalator of anxiety associated with AI in the educational field as a whole (Wan et al., 2026).

The three themes generated—the institutional void, the professional identity threat, and the obligation-without-preparation dynamic—articulate how macro-level policy failures produce micro-level affective distress. It is not that the pre-service teachers are frightened by the very nature of AI as threatening; it is that they have been put in a place of responsibility with no resources available. This finding aligns with Social Cognitive Theory of anxiety as a result of negative efficacy expectations (Bandura, 1997): the predictable outcome of lacking the means to perform an expected task is the presence of anxiety.

5.2 Relationship to Existing Literature.

These results both corroborate and extend previous studies on AI anxiety in teacher education. The quantitative literature determines that the main dimensions of AI anxiety among pre-service teachers are technology intimidation, job displacement anxiety, and ethical concerns, and identifying technology intimidation as the most frequently reported dimension (Canbeldek Erol et al., 2026). These dimensions are confirmed in this study and provide the institutional and relational texture for each. What the quantitative tools reflect in the form of a score in a subscale of job displacement, this research captures as an emotional, and multidimensional experience within a certain set of ITE institutions in Punjab.

The fact that the deficit in AI literacy intensifies rather than merely co-occurring with anxiety aids the quantitative model introduced by Erol et al. (2026), revealing that AI literacy has a dual impact, alleviating anxiety by means of self-efficacy and heightening anxiety because of increased awareness of the risks of AI at the same time (Canbeldek Erol et al., 2026). This paper identifies a third pathway: awareness of one's own literacy deficit, compounded by institutional obligation, creates shame-laden anxiety, which cannot be mitigated by literacy training or self-efficacy alone.

The performative dimension of anxiety identified in Theme 2 has received limited attention in previous research on AI anxiety but is consistent with the general body of work on managing emotions in teaching (Wan et al., 2026). The masking of anxiety by participants, especially on placement, indicates that ITE assessment approaches may systematically underestimate AI anxiety because of their incentives to hide it. Evaluating AI integration readiness through self-report measures alone, without qualitative triangulation, is therefore likely to underestimate the problem.

The evidence on Punjab is inconsistent, with certain positive results on AI in Pakistani education (UNESCO, 2026) which highlight the potential of AI as an educator partner and document increased teacher confidence following structured AI training interventions. However, these studies were related to practising teachers who were exposed to organised workshops. The

participants in this study received no such support, indicating that positive outcomes of AI training in other contexts cannot be assumed without corresponding investment in ITE curricula.

5.3 Implications

Theoretically, the findings contribute to the knowledge about anxiety linked to AI as a socially constructed phenomenon and not as a personal psychological characteristic. They support a constructionist interpretation of anxiety as situated within institutional circumstances and relational interactions and emphasise the importance of qualitative methods to illuminate the affective dimensions of AI integration that cannot be accessed through survey-based methods.

Practically, the findings have certain implications to the ITE curriculum reform in Punjab. AI literacy should be integrated throughout the B.Ed. course as a strand of critically oriented methodology, assessment and professional identity module instead of being a standalone technical module. Second, ITE institutions must establish and disseminate clear policies on the legitimate use of AI tools; without such policies, the use of AI tools will not be discouraged but will lead to anxiety among those who use these tools without guidance. Third, school placement supervisors require professional development to assist pre-service teachers with questions related to AI without unintentionally discouraging the demonstration of uncertainties.

5.4 Limitations

The research was carried out in three districts in the state of Punjab and cannot be straightforwardly generalised to other provinces or even the ITE institutions in the private sector, as they work under different conditions. AI-assisted transcription may have introduced transcription errors in code-switched passages between Urdu and English. Participants were recruited partly through self-selection, which may have over-represented those with heightened awareness of or concern about AI. The analysis presents a snapshot; AI adoption within the ITE field in Pakistan is gaining speed, and the situations outlined can undergo change.

5.5 Future Research Directions

Three avenues can be investigated. First, a longitudinal study tracing changes in AI anxiety across the full B.Ed. The programme would help identify whether and how anxiety evolves as pre-service teachers' institutional experiences deepen. Second, comparative qualitative studies of the provinces of Pakistan should be conducted to determine the extent to which the obligation without preparatory dynamic is province-specific to Punjab or a national consequence of the ITE. Third, a study of ITE tutors and institutional administrators' views would provide a more comprehensive answer regarding the reasons AI is not a part of the curriculum and the structural circumstances under which it would need to occur to implement it meaningfully.

6. Conclusion

This study aimed to examine how pre-service teachers in Punjab, Pakistan, experience AI anxiety in the context of initial teacher education and how the institutional environment influences their experiences. The analysis produced three themes: institutional voids as a source of anxiety, anxiety about AI as a threat to becoming a teacher, and the requirement to use AI without sufficient preparation. Together, these themes construct an account of AI anxiety, not as an individual psychological condition but as an institutional and relational phenomenon, produced when policy ambition outpaces pedagogical investment.

The contribution of this study is that it is a qualitative study. It illuminates aspects of AI anxiety, including its performative masking and its entanglement with professional identity development, and its generation through curriculum deficits, which cannot be captured through quantitative studies or large-scale survey instruments. In this way, it argues that qualitative scholarship is essential to comprehend the experience of AI integration at the ground level of teacher education in the Global South because the disjuncture between policy rhetoric and institutional reality is particularly pronounced in this context.

This is a direct message to the designers and implementers of the ITE in Punjab. AI is already in use, is already generating anxiety, and is already shaping pre-service teachers' professional identities. They are not anxious without reason; it is a logical reaction to being posed to bear a professional burden without institutional protection. This anxiety requires not reassurance but curriculum reform, policy clarity, and the creation of institutional spaces allowing uncertainty to be expressed without professional penalty.

Conflict of Interest

The authors showed no conflict of interest.

Funding

The authors did not mention any funding for this research.

References

- Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. W. H. Freeman.
- Braun, V., & Clarke, V. (2022). *Thematic Analysis: A Practical Guide*. SAGE Publications.
- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences* (pp. 843–860). Springer. https://doi.org/10.1007/978-981-10-5251-4_103
- Canbeldek Erol, M., Erol, A., Erol, M., & Budak Topaloglu, K. S. (2026). Determinants of artificial intelligence addiction: Anxiety, self-efficacy, attitudes, literacy, perceived ease of use, behavioral intention, and perceived usefulness. *International Journal of Human–Computer Interaction*. <https://doi.org/10.1080/10447318.2026.2619035>
- Cochran-Smith, M. (2023). What’s the “Problem of Teacher Education” in the 2020s? *Journal of Teacher Education*, 74(2), 127–130.
- Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. Sage Publications.
- Flick, U. (2022). *An Introduction to Qualitative Research* (6th ed.). Sage Publications.
- Johnson, D. G., & Verdicchio, M. (2017). AI anxiety. *Journal of the Association for Information Science and Technology*, 68(9), 2267–2270.
- Kvale, S., & Brinkmann, S. (2015). *InterViews: Learning the Craft of Qualitative Research Interviewing* (3rd ed.). SAGE Publications.
- Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*, 26(13), 1753–1760. <https://doi.org/10.1177/1049732315617444>
- Kuzu, S. (2025). Artificial Intelligence in Pre-service Teacher Education: Bibliometrics Analysis. *Pedagogical Research*, 10(4), em0249. <https://doi.org/10.29333/pr/17402>
- Patton, M. Q. (2015). *Qualitative Research and Evaluation Methods* (4th ed.). Sage.
- Rasheed, B., Qureshi, N., & Muhammad, Y. (2026). Authoring Professional Identity by Editing AI: An Analysis of Pre-service Teachers' Engagement with Generative AI Tools in Pedagogical Practice. *ProScholar Insights*, 5(1), 98–102. <https://doi.org/10.55737/psi.2026a-51159>
- Tariq, B., Dilawar, M., & Muhammad, Y. (2019). Innovative Teaching and Technology Integration: Exploring Elderly Teachers’ Attitudes. *International Journal of Distance Education and E-Learning*, 5(1), 1–16.
- Tracy, S. J. (2010). Qualitative Quality: Eight "Big-tent" Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16(10), 837–851. <https://doi.org/10.1177/1077800410383121>
- UNESCO. (2026). Empowering Pakistan's Educators for an AI-driven Future. <https://www.unesco.org/en/articles/empowering-pakistans-educators-ai-driven-future>

- Wan, Z., Zhang, Y., Cao, Y., & Tao, D. (2026). Educational Anxiety Triggered by Artificial Intelligence Technology: Pathways and Configuration Analysis Affecting Teachers' Professional Well-being. *Frontiers in Psychology*. <https://doi.org/10.3389/fpubh.2025.1717816>
- Wang, Y.-Y., & Wang, Y.-S. (2022). Development and Validation of an Artificial Intelligence Anxiety Scale: An Initial Application in Predicting Motivated Learning Behavior. *Interactive Learning Environments*, 30(4), 619–634. <https://doi.org/10.1080/10494820.2019.1674887>
- Willig, C. (2021). *Introducing Qualitative Research in Psychology* (4th ed.). Open University Press / Mcgraw-Hill Education.
- Yardley, L. (2000). Dilemmas in Qualitative Health Research. *Psychology and Health*, 15(2), 215–228. <https://doi.org/10.1080/08870440008400302>
- Zawacki-Richter, O., Marin, V. I., Bond, M., & Gouverneur, F. (2019). Systematic Review of Research on Artificial Intelligence Applications in Higher Education: Where are the Educators? *International Journal of Educational Technology in Higher Education*, 16(39), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>.