MEGA INSTITUTE FOR ADVANCE RESEARCH AND DEVELOPMENT

Journal of Arts and Linguistics Studies
ISSN Print 2959-0957 ISSN Online 2959-0965
Volume 4 Issue 6 2026
Pages 1-23
Open Access

Enthusiasm, Suspicion, and Everything Between: Pre-Service Teachers' Attitudes Toward Artificial Intelligence in Pakistan's Initial Teacher Education Context

Publication Details
Paper Received:
March 15, 2026
Paper Accepted:
June 18, 2026
Paper Published:
June 20, 2026

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Article DOI: https://doi.org/10.71281/jals.v4i6.664

Abstract
Artificial intelligence is reshaping educational systems worldwide, but limited qualitative evidence exists regarding how pre-service teachers in non-Western, under-resourced contexts understand this change. This study examined the attitude formation and negotiation processes of pre-service teachers in Initial Teacher Education (ITE) programmes in Punjab, Pakistan, using AI. Semi-structured interviews were conducted; data were analysed using Reflexive Thematic Analysis with 20 purposively selected pre-service teachers working in public-sector ITE institutions in Punjab. NVivo 15 was used as a qualitative data management platform with AI-assisted auto-coding for initial data organisation. Three themes were constructed from the data: AI as a gateway to professional possibility, AI as a threat to what teaching means, and shaped by silence: structural and institutional conditions as attitude shapers. The findings reveal that participants held ambivalent orientations toward AI, shaped by perceptions of pedagogical usefulness, fears of professional displacement, persistent ethical scepticism, and structural inequalities within the institutional and infrastructural context. These findings challenge instrumentalist framings of AI integration in teacher education and necessitate critically informed, contextually situated AI integration in Pakistani ITE syllabuses.

Keywords: artificial intelligence, pre-service teachers, attitudes, initial teacher education, Pakistan, Punjab, reflexive thematic analysis.

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1. Introduction

The integration of artificial intelligence into educational systems has moved from theoretical possibility to operational practice in most parts of the world. This has led to the development of a series of AI-based tools and systems for lesson planning, learning analytics, and adaptive tutoring, not only to change teaching and learning but also to change institutional management (Chen et al., 2020). AI's potential in education, particularly with regard to challenging pedagogical implications such as personalised learning plans, real-time feedback, and lowered administrative burden have garnered significant interest from the scholarly and policy circles (Tapalova & Zhiyenbayeva, 2022; Zhang & Aslan, 2021). At the same time, the ethical implications of generative AI usage, epistemic dependence, and the loss of teacher agency have highlighted a worry about how teachers view their role and make decisions when relying on generative AI in their daily teaching and learning processes (Ng et al., 2023).

The role of the teacher is particular in this change in rectitude. These decisions are driven by their attitude, which may take the form of an open embrace of AI technologies and associate an organization with them, outright refusal of AI, or unsuspicious use of AI technologies (Cabero-Almenara et al., 2021; Zawacki-Richter et al., 2019). Attitude, a multidimensional psychological construct, has been repeatedly shown to be a powerful predictor of technology use in the classroom, with regard to affective, cognitive and behavioural dimensions (Kaya et al., 2022; Schepman & Rodway, 2020). Pre-service teachers represent a particularly important locus of inquiry, as they are currently undertaking initial teacher education. The attitudes they form towards AI during the first training will likely shape their pedagogical practice (Falloon, 2020).

Although research on AI attitudes toward AI is increasing worldwide, gaps remain. Most existing research relies on quantitative instruments, focusing on

quantifiable constructs instead of the nuanced, context-specific meanings that people assign to AI (Bewersdorff et al., 2025; Schepman & Rodway, 2023). There are also relatively limited qualitative studies on pre-service teacher attitudes towards AI, and those that are available are heavily based in the Global North, in European, North American, or East Asian contexts that possess comparatively strong digital infrastructure and have established AI literacy curricula (Li & Huang, 2023; Zawacki-Richter et al., 2019). This geographic bias of the literature is a substantive blind spot: how pre-service teachers struggle to find their place in AI processes in under-resourced settings, where infrastructure inequity, the lack of institutional direction, and the rivalry of professional demands fundamentally influence engagement with technology, is poorly theorised.

The ITE scenario of Pakistan is interesting and rather underexplored. The Pakistani province of Punjab has many diverse public-sector institutions of teacher education, and although the integration of AI in the ITE curriculum has started to emerge, it remains nascent and largely unstructured (Halai, 2011; Ng et al., 2023). In this case, pre-service teachers experienced AI mostly through informal means such as social media, peer networks, and personal experimentation, as opposed to formal, pedagogically scaffolded programmes. The attitudes they develop in such circumstances and the meanings they construct regarding the role of AI in their new professional identities are an underexplored dimension of global scholarship on AI in education.

This study aims to fill these gaps by exploring (qualitatively and interpretively) pre-service teachers' attitudes towards AI in ITE programmes in Punjab, Pakistan. An emphasis on rich constructions, contestations and contextualisation of attitudes is used throughout the analysis in an attempt to go beyond mere attitude measurements as perhaps embodied in the essence of

Reflexive Thematic Analysis (Braun & Clarke, 2008, 2022). The following two questions were used to guide the inquiry:

RQ1: How do pre-service teachers in Punjab, Pakistan, build and explain their attitudes toward artificial intelligence?

RQ2: Which structural, institutional, and personal elements do pre-service teachers perceive to influence their attitudes towards AI in their ITE context?

With the foregrounding of qualitative, context-sensitive knowledge, the study adds to a more geographically and epistemically varied literature on AI in teacher education and its implications for policy and curriculum design of ITE in Pakistan and other similar contexts. The paper proceeds as follows: the thematic literature review provides the background of the theory and existing empirical data; the methodology section describes the research design, participants, and analytical methods; the findings are presented based on three themes; the discussion section provides the applicability of the findings to the literature; and finally, the conclusion outlines the contribution and implications of the study.

2. Literature Review

2.1. AI in Education: Expanding Possibilities and Emerging Tensions

AI applications in education have expanded rapidly over the past decade, with smart tutoring and feedback systems, learning analytics based on AI, and natural language processing systems emerging as examples of AI applications in education (Chen et al., 2020). The advocate attempts to state that AI opens up differentiated instruction on a large scale, reduces teacher workload, and generates real-time data on student learning that is difficult to collect manually (Tapalova & Zhiyenbayeva, 2022; Zhang & Aslan, 2021). This potential has gained the attention of policymakers as a means of addressing educational inequity, with AI

attributed as one of the tools that can help address long term issues of access, quality and equity.

However, this narrative is one that has been taking a more complex turn when it comes to critical scholarship. Extensibility of the procedures that underpin AI decision-making have been grieved by researchers with a profound impact on professional and pedagogical growth and creativity in teaching practice; epistemic dependence has been a strong candidate for researchers' dismay, which cannot be ignored as a structural barrier to professional and pedagogical development (Tan et al., 2022). The privacy of data, the dangers of an algorithmic bias, and how the established educational inequalities can be replicated by means of AI systems have complicated the image further (Ng et al., 2021). Within early childhood education and primary education where ITE preparation would be best situated in Punjab, Su and Yang (2022) note that the extent of AI adoption is also quite uneven; contestation in its use; and that it depends on the context – something not largely captured by quantitative designs. This is especially relevant to under-resourced settings, where the structural backgrounds of viable AI implementation occur unequally.

2.2. Understanding Attitudes Toward AI: Theoretical and Empirical Perspectives

The attitudes towards AI are mostly theorised as being positive or negative, with positive attitudes representing a belief in the potential of AI to improve efficiency, innovation, and professional practice, while negative attitudes capture ethics, concerns about threat to the human sense of autonomy, and displacement concerns (Schepman & Rodway, 2020). The General Attitudes towards Artificial Intelligence Scale (Schepman & Rodway, 2020; Schepman & Rodway, 2023) has been widely used as a psychometric instrument for mapping the dimensions and shows that attitudes towards AI are positive and negative dimensions that are

relatively independent and influenced by specific personal and situational factors. Kaya et al. (2022) built on this research and demonstrated that the relationship between demographic variables and personality traits on positive and negative attitudes toward AI is different; negative attitudes toward AI proved to be less difficult to influence as a result of informational interventions than positive attitudes.

Naiseh et al. (2025) also indicated that positive attitudes towards AI are positively correlated with self-efficacy and perception of professional competence, and that uncertainty and institutional support reinforce scepticism. To form a theoretical framework, Bandura's social cognitive theory SCT offers a convenient theoretical framework. The attitudes of the SCT are not stable individual characteristics but the result of social modelling, vicarious learning and evaluative consequences of important persons with respect to the individual. For ITE, this means that the pre-service teacher narratives they are experiencing (or the lack thereof) related to AI are very attitudinal, a phenomenon which has garnered very little attention in the mostly individual-level literature on AI attitudes.

2.3. Pre-Service Teachers, AI, and the Challenge of Professional Identity

Pre-service teachers' relationship to AI is interwoven within the process of the formation of their professional identity. Investigations often reveal that teachers' attitudes to AI stem from concerns about the usage of the technology rather than from a lack of insight regarding its utility, but from more fundamental questions about the nature of teaching, specifically in a relational, epistemic, and professional sense of teaching in the presence of intelligent systems (Zawacki-Richter et al., 2019). Bewersdorff et al. (2025) found that university students exhibit two attitudes towards AIs: an Optimistic supporter highlighting its benefits and efficiency, but also an ethical question, and a Sceptical detractor who prioritises ethical concerns and requirements of professionalism. To this point,

there are two types of profiles, both dynamic, that evolve as experience and exposure, and context-rich messages regarding the professional use of AI and the use of AI in a professional life (receive) accumulate.

There is ample research to suggest that there is a disconnect between teachers' stated attitudes and what they do in the classroom (Falloon, 2020). Li and Huang (2023) discovered that anxiety and negative attitudes functioned as significant mediators between AI exposure and behavioural intention, with attitudinal dimensions potentially having practical implications for whether and how teachers employ AI tools in the future. In the case of ITE programmes, this has an implication for both attitude and disposition, being a practical consequence; attitudes formed during initial training are likely to persist and shape subsequent AI integration in classrooms throughout the lives of teachers. The literature shows a persistent tendency to treat AI attitudes as flexible, mostly playing the direct exposure and literacy training issue, though little consideration is given to how broader structural conditions -curriculum design, institutional culture, infrastructure, and policy environment- generate and sustain particular attitudinal orientations. This has been of particular consequence in regions such as Punjab, Pakistan, where structural conditions differ substantially from those in the Western-centric locations that still prevail in the literature.

3. Methodology

3.1. Research Design

The qualitative inquiry design applied in this study was Reflexive Thematic Analysis (Reflexive TA) (Braun & Clarke, 2008, 2022). It was chosen for its theoretical flexibility and compatibility with constructionist epistemological commitments, and its ability to produce interpretively rich, context-sensitive accounts of attitudinal meaning-making. Reflexive TA, in contrast to more codified qualitative methods such as Interpretative Phenomenological Analysis or

grounded theory, focuses on identifying patterns of shared meaning across a dataset, generating themes as interpretive accounts rather than mere descriptions of the data (Braun & Clarke, 2019; Creswell & Poth, 2023). Reflexive TA was the most methodologically appropriate option because it aligned well with the purpose of the study to grasp the way in which pre-service teachers, as a collective construct, negotiate within this concrete structural and institutional context, attitudes towards AI.

3.2. Philosophical Paradigm

A constructionist epistemology was used as the basis for the study because knowledge of AI attitudes cannot be captured through a single universal instrument, but in the process of researcher-participant-data and interpretative interaction (Crotty, 1998). The study adopted an ontologically relativist position: plural, constructed, and contingent upon circumstances, instead of a predetermined object that must be discovered. The language theory that informed the analysis was constructionist: attitudes as active processes of construction, contestation, and performance rather than pre-existing inner states. Participant talk was analysed. The analytic orientation was critical as well as interpretive, not only to render the perspective of the participants but also to question the conditions underlying their possibility.

3.3. Analytic Approach

The analysis was mainly inductive, where the patterns were derived from the data instead of being forced by the existing theories. Nevertheless, theoretical sensitivity informed by literature on AI attitudes, social cognitive theory, and even the sociology of the professional identity of the teacher was upheld throughout, especially at the latent stages of the interpretation. The analysis concentrated on both latent and semantic meaning, attending to explicit attitudinal accounts and the latent assumptions, anxieties, and hopes that structured them. Themes were not

constructed as topic-based summaries of all that was reported by participants but instead structured as patterns of shared meaning unified by a central organising concept (Braun & Clarke, 2022).

3.4. Participants and Sampling

Twenty pre-service teachers enrolled in a Bachelor of Education (B.Ed.) programme in institutions of higher education managed by the public sector in Punjab, Pakistan. Purposive sampling ensured variation in terms of gender, year of study, and type of institution (Creswell & Poth, 2023; Patton, 2015). Participants were required to be currently enrolled in an existing ITE programme in Punjab and have some prior awareness of AI tools. Students in their first to fourth year participated in it with an age bracket of 19-26 years. This sample comprised 14 females and six males, which is a wider representation of what ITE enrolment in Punjab entails in terms of gender. Instead of data saturation, which is epistemologically incompatible with the premises of Reflexive TA, the sufficiency of the sample was measured within the framework of information power (Malterud et al., 2016): the information power generated by this specific sample and setting.

3.5. Data Collection

Data were generated through semi-structured individual interviews, mostly conducted in English, and participants were encouraged to use Urdu where English could not adequately express the meaning they had in their response. This bilingual flexibility was intended to enable richness of expression and avoid the conceptual impoverishment of linguistically constrained interview protocols that can come with linguistically limited protocols (Flick, 2022; Kvale & Brinkmann, 2015). The interview guide was developed iteratively by allowing open-ended questions that looked into the awareness of AI among participants, data on its perceived relevance to the teaching profession, personal feelings toward AI-related teaching

situations, and institutional readiness in terms of AI involvement. Interviews lasted between 42 and 67 minutes, were audio-recorded with the participants' consent, and were transcribed with the use of an AI-aided transcription tool. All transcripts were reviewed by the researcher prior to analysis. Data were collected across six weeks of fieldwork.

3.6. Data Analysis Procedures

The analysis was carried out based on six stages of Reflexive TA described by Braun and Clarke (2022). During Phase 1 (Familiarisation), the researcher had to read through all the transcripts repeatedly and actively, constructing written notes on first impressions and analytic intuitions, as opposed to passively receiving information. Phase 2 (Coding) entailed the systematic, line-by-line coding of all the data resulted in creating a rich and dynamic code set of 194 distinct codes that reflected semantic content and latent meaning. Phase 3 (Generating initial Themes) entailed coding, clustering together codes with an underlying organising concept and generating an early thematic map of eleven possible themes.

Phase 4 (Developing and Reviewing Themes) entailed testing of candidate theme coherence with coded extracts and the entire dataset, collapsing, branching and reorganising themes in the process of ongoing iterative analytical work. Phase 5 (Refining, Defining, and Naming Themes) entailed formulating the definition of each theme that embodied the key organising concept of each theme and the evocative, analytically expressive names used in the Findings section. Phase 6 (Writing Up) entailed the integration of analytic narrative with data extracts of choice and adopting participant voice to help articulate interpretational assertions (Braun & Clarke, 2019).

3.7. Trustworthiness and Ethical Considerations

The quality criteria applied were appropriate to constructionist, interpretive qualitative research that employs such methods as conceptual coherence between

research design and the transparency of analytic decision-making, as well as the thoroughness of interpretation and the rigour with which themes were based on data extracts. The study did not apply inter-coder reliability processes, as these are philosophically incompatible with a reflexive, constructionist methodology, whereby the subjectivity of the researcher is placed as a resource and not a source of error (Braun & Clarke, 2022). Sustained analytic engagement with the data, openness in reporting the analytic choices, and a range of voices of participants working through the themes supported the credibility of the analysis.

Informed consent was obtained from all participants in written form, and it was made clear that being a participant was voluntary and that one could withdraw at any time with no repercussions. The participants were anonymised using pseudonyms (P1-P20). Data were kept in encrypted password-secure devices, which could only be accessed by the research team and will be destroyed securely at the end of the project cycle.

4. Findings

This analysis produced three themes, each with two to three subthemes. A combination of these themes is an interpretive narrative of the nature of pre-service teachers' attitudes towards AI: attitudes which are both enthusiastic and suspicious, individually patterned but structurally produced and inherently bound up in professional identity, institutional trust, and structural inequality issues. The theme names and their subthemes are listed below.

Theme 1: AI as a Gateway to Professional Possibility

The most prominent positive attitudinal construction revolved around the perceived ability of AI to make the teaching process more efficient, creative, and professionally dignified rather than a burdensome, under-resourced practice. This was not blind technophilia but pragmatic optimism that was informed by the keen

consciousness of participants of the true limitations of the teachers at the public school system in Punjab.

Subtheme 1a: Lightening the Load — AI and Pedagogical Efficiency

Most participants built favourable intentions towards AI by relying on accounts of the relief of burden. There is a common perception of teaching in the Punjab public school system that includes large student-teacher ratios, administration, and lack of time to prepare students–parameters that were characterised in the study by the participants as defining conditions of their anticipated careers as teachers. In this perspective, AI was positioned as a means of reallocating effort and reclaiming professional time.

> *It takes two to three hours to create a lesson plan right now and would only take twenty minutes with ChatGPT or something similar, which is not laziness, but rather efficiency, and allows me to have more time to sit with students. (P7)*
>
> *AI is used to create worksheets and quizzes by my friend, who assures that it is not considered cheating but rather working smarter. I wonder whether I can do it or not, but why not? (P12)*

This discourse of efficiency was not an uncritical one. Some participants stated the risk of uncritical dependence on AI-generated outputs; however, this was a professional competence to be developed rather than a rationale for avoiding AI (Bewersdorff et al., 2025). The predominant attitudinal stance was conditional enthusiasm: AI was valued when deployed in service of professional judgement and exercising that judgement remained the teacher's responsibility and not the tool.

Subtheme 1b: Visualising the Differentiated Classroom

The second positive attitude ascription focused on the prospect that AI will provide what many participants saw as an elusive pedagogical ideal: instruction that is

responsive to individual student needs. The participants were painfully conscious of the fact that in their ITE programmes, differentiated instruction was promoted, which was absolutely unrealistic in classes of 50 or 60 learners.

> *I have read about adaptive learning - how AI can adjust the difficulty according to each student. I had sixty-two children in a single class in my school placement; how will I differentiate without an assisting program? That is a legitimate concern. (P3)*

This narrative positioned positive AI attitudes not as impersonal technophilia but as a continuation of teaching care - AI was valued for enabling genuinely responsive pedagogy when structural constraints of schooling limited such opportunities. The formation of attitudes is important in theory, as it situates AI in a professional ethics of practice.

Theme 2: AI as a Threat to What Teaching Means

This theme focused on concerns about professional identity, institutional confidence and epistemic honesty. These did not represent the presence of technophobes but showed critical reflective pre-service teachers who were in the midst of negotiating substantive attitudinal ambivalences about AI and teaching.

Subtheme 2a: "They Will Not Need Us" — Displacement and Deskilling

Negative attitudes (mainly emotional) were associated with the fear of becoming redundant in their professions. More importantly, it was not only the fear that people might lose their jobs, but the fear that teaching—with its social and embodied character, its directionality and its humanity—may not be capable of withstanding the onslaught of the AIs.

> *I keep hearing that AI will replace teachers. That question scares me more than the technology itself. (P9)*

> *I am not worried about losing my job. Will I develop as a teacher when AI does everything? Will I ever know how to teach, or will I merely control a machine? (P14)*

These descriptions demonstrate that there is a more complicated attitudinal framework that is not merely opposed to change. Participants were raising the question of professional formation - of whether ITE was able to prepare them for the practice of teaching, continuing to be distinctively human, in a world where AI was taking on an ever more diverse set of cognitive functions. The fear that AI might erode professional judgement before professional identity has fully matured proved to be especially relevant to first- and second-year participants, who were still learning their professional identity and professional judgment abilities in the early part of the process (Zawacki-Richter et al., 2019).

Subtheme 2b: A Tool That Lies — Ethical Distrust and Epistemic Anxiety

The second aspect of negative attitudinal construction focused on what participants perceived as the epistemic unreliability and ethical opacity of AI systems. Participants strongly reported first-hand experiences of AI-generated misinformation, and the experiences created a generalised epistemic scepticism that influenced the attitudes participants held towards AI in learning environments in general.

> *I had an assignment on Gemini, and it provided me with misleading information that sounded so self-assured as to seem confidently true, but I cannot now rely on it, even when it could be accurate. (P5)*
>
> *In Pakistan, issues regarding the quality of information in textbooks already exist; introducing an AI that fabricates information is a worse idea than improving the existing problem of information quality. (P18)*

> *What happens when a student becomes aware of something wrong because an AI informs his or her teacher about it? Who is to blame? I have posed this in my ITE classes, and nobody has answered it. (P11)*

The issues of accuracy were not the only concerns about the ethics of AI, since they also created doubts about data privacy and monitoring of the institution, as well as the cultural embeddedness of AI systems. Several participants outlined a very postcolonial scepticism: a sense that AI tools made elsewhere in the world made major assumptions and values that were not neutralised regarding Pakistani educational and cultural contexts.

> *These are those instruments that are made in America and China, and they do not know Urdu on a proper basis, they do not know our curriculum, and they do not know our students. Why then should I have faith that they can be of any benefit to me in my teaching? (P2)*

This epistemologically grounded scepticism is opposed to the reduction to technophobia or digital illiteracy. Instead, it is a critically conscious interpretation of the situated and partial nature of AI systems - an understanding that technologies are not neutral tools but are infused with the same assumptions as those who create them.

Theme 3: Shaped by Silence — Structural and Institutional Conditions as Attitude Shaper

The third theme is analytically different as it transcends individual attitudinal material to question the circumstances in which attitudes are generated. A concerning pattern of institutional silence and structural deficiency emerged as one of the key backgrounds on which the participants formed their attitudes: most were navigating AI without institutional guidance from their ITE programmes or institutions.

Subtheme 3a: The Infrastructure Gap

Participants repeatedly reported a discrepancy between the AI-enabled educational futures they were exposed to via global media and Internet discourse and the material realities of their training centres and future school applications.

> *In education, I have one computer lab that may have thirty computers, many of which are not functioning, and the Internet is not fast, but it cuts out frequently. The question for me when people discuss AI and learning is: has anyone been to a school in Punjab? My placement school does not even have Internet. Therefore, when I consider utilising AI, I must ask: AI, to whom? In urban schools? In private schools? Not to the students that I will teach. (P19)*

Not only did these structural facts get asserted as operating as obstacles, but they were also deeply intertwined with attitude formation. The perception of the infrastructure gap created a perception of AI as "efficient" and "accessible" only to the privileged and to those living in an educational space rather than the present one. This created a strong and uncomfortable ambivalence - a longing to have what AI could provide and a lamentable realisation of structural inaccessibility - in a few of the participants. This trend aligns with the critique of research on the adoption of innovations in education, which methodologically dismisses the issue of material inequality when analysing innovation adoption (Cabero-Almenara et al., 2021).

Subtheme 3b: When the Curriculum Is Silent

The most analytically significant pattern across the data was the extent to which the participants' ITE programmes had a direct push for AI. Most of them reported using AI either as self-directed, incidental, or facilitated by informal peer networks, but not as part of structured pedagogical encounters.

> *Under this programme, AI has been mentioned in passing on two occasions by one lecturer. That is all. How should I form an opinion? I am making it up as I go along. (P6)*
>
> *The lack of an AI module and the absence of any discourse on AI use in ethical terms has not prepared us to work in AI-based classrooms, though no one is addressing us about it. (P16)*
>
> *I believe that my tutors are not really sure about AI. They do not discuss it. Another source of my learning is YouTube, as well as my peers and my own experience. That will provide me with the information, but not the advice. (P11)*

Attitudinal neutrality did not emerge from the absence of institutionalised AI discourse in ITE. Instead, it has produced a space filled with informal, unscaffolded, and frequently anxiety-inducing encounters with AI. Participants who were most deeply involved with AI through informal information channels were more likely to have the most ambivalent attitudes: excited about the possibilities of AI but at the same time acutely aware that they were not adequately responsible in their use of AI without professional advice. The meaning of this finding is significant; it seems that the issue of attitudinal ambivalence identified among pre-service teachers in Punjab is not necessarily a matter of individual disposition but an institutionally produced condition (Ng et al., 2023; Tan et al., 2022).

5. Discussion

The results of this research further extend and complicate the current body of research on pre-service teacher attitudes towards AI in several important ways. The simultaneously enthusiastic and suspicious attitudes documented here align with the bifurcated attitudinal profiles of Bewersdorff et al. (2025) and the independent operation of the positive and negative attitude dimensions indicated

by Schepman and Rodway (2020); Schepman and Rodway (2023). However, rather than measuring attitudinal dimensions, this study offers an interpretive account of the structural conditions that produce them by paying attention to the particular conditions that determine the generation and maintenance of these attitudes.

The reported positive attitudinal constructions of Theme 1 centred around efficiency and differentiated instruction overlap with the larger literature linking perceived usefulness with positive attitudes towards technology (Davis, 1989; Li & Huang, 2023). More importantly, this work uncovers that perceived usefulness functions not as an abstract cognitive calculation but as a professionally situated appraisal, ingrained within certain institutional realities. Participants did not incline towards an abstract AI, but toward the AI as a reaction to actual pedagogical situations that they projected themselves living within, such as overcrowded classes, lack of preparation time, and resources. This contextual specificity has theoretical implications: it indicates that frameworks that treat perceived usefulness as a context-free variable systematically underspecify how structural conditions shape the professional meaning of how structural conditions define the meaning of professional usefulness.

As the negatively framed attitudinal structures in Theme 2–especially deskilling anxiety and epistemic distrust - can be related to the results of previous research which found that AI familiarity could intensify rather than reduce anxiety. The participants of the current study, who had interacted the most with AI, were not the most confident; in fact, in some cases, higher familiarity intensified the level of concern, especially when encounters with misinformation caused a lack of trust. The postcolonial scepticism articulated by several participants, the feeling that the AI systems possessed assumptions alien to their environment, has been somewhat neglected by the mainstream literature and represents a theoretically

generative result. This indicates that negative perceptions of AI among pre-service teachers in Global South ITE contexts may not be reducible to technophobia or digital illiteracy, but the negative perception can be an epistemically based critique of the knowledge whose meaning AI systems encode and reproduce (Ng et al., 2021).

Theme 3 has the strongest theoretical contribution, as it frames attitudinal ambivalence as a structural product, as opposed to an individual deficit. The lack of AI in the Punjab ITE Curriculum, reported by almost all 20 participants, is a type of institutional silence that produces attitudes signalling that AI is treated as a peripheral, uncertain, or institutionally unrecognised concern that does not deserve official discussion. This is consistent with Zawacki-Richter et al.'s (2019) observation that institutional culture is a more powerful mediator of the interaction between teachers and technology, and that professional development contexts are major mediators of how teachers learn about the role of AI in their use. In the case of ITE programmes in Punjab and similar situations, the implication of that becomes evident: The absence of AI from ITE curricula does not signal neutrality but actively shapes pre-service teachers' professional dispositions in the process of developing them.

6. Conclusion

This study aimed to understand how pre-service teachers in Punjab, Pakistan, form and negotiate their attitudes toward AI in the context of Initial Teacher Education. Through Reflexive Thematic Analysis of semi-structured interview data generated with 20 participants, the analysis generated three themes illuminating the nature of AI attitudes to be both enthusiastic and suspicious, individually enacted and produced structurally, and tied to the questions of professional identity, institutional trust, and material inequality in multiple ways.

These findings are important not only for the Pakistani case. Since AI is currently an inevitable, globally widespread part of educational systems, the topic requires in-depth analysis and qualitative, context-specific explanations of how teachers, especially those in under-resourced, non-Western educational institutions, make sense of this change. Accounts that reduce AI attitudes to easily quantifiable constructs risk instrumentalist framings that fail to adequately respond to the complexity that this study has reported.

In practice, this study urges ITE institutions in Punjab to end their curricular silence on AI: not by providing techno-optimistic training that bypasses the substantive anxieties and epistemically grounded critiques pre-service teachers hold, but by establishing pedagogically serious, ethically reflective spaces for discussing, interrogating, and imaginatively exploring AI. Future research should adopt longitudinal designs to track how ITE-formed attitudes evolve in service because attitudes formed in relation to ITE are influenced by in-service experience, and future qualitative work should extend these findings to other under-resourced provincial and international ITE contexts. Pre-service teachers in Punjab are already developing attitudes toward AI–they are enthusiastic, suspicious, and ambivalent in ways that demand institutional response. The question is whether their training institutions will engage with that complexity.

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