

HUMAN-AI CO-TEACHING: ENHANCING PEDAGOGICAL AGENCY OF PRE-SERVICE ENGLISH TEACHERS

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Abstract

Generative AI in the education sector is quickly becoming a successful application, offering new opportunities but also challenges in teacher education, particularly within the English as a Foreign Language (EFL) context. One of the current popular technologies is ChatGPT, which has potential in assisting in teaching, reflection, and teacher professional development. However, a lack of research has focused on pre-service English teachers' perceptions of ChatGPT or how those perceptions may influence a teacher's perception of professional empowerment. An empirical qualitative research method will be used in this paper, analyzing Indonesian preservice higher education teachers' perceptions of ChatGPT in EFL teacher preparation programs, how they use ChatGPT, and how those perceptions may influence preservice teachers' perceptions of professional empowerment. Methods of research include conducting in-depth semi-structured interviews, analyzing findings through a thematic assessment. Findings also show how preservice teachers' perceptions of ChatGPT, an empowering cognitive/teaching tool, influence preservice teachers' perceptions of overall personal/professional teacher empowerment. Also identified are five increasingly interrelated perspectives of preservice teachers' perceptions of teacher empowerment, including identity, teaching competence, technological agency, teaching efficacy, and teaching innovation.

Keywords: *Generative AI, Higher Education, EFL Education, GenAI-Supported Thesis Writing, Chatbot-Assisted Academic Writing*

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has transformed educational landscapes worldwide, especially within English as a Foreign Language (EFL) context where digital tools increasingly shape teachers' instructional practices and learners' engagement (Lo et al., 2025; Marzuki et al., 2023). Among these innovations, generative language models such as ChatGPT have gained significant prominence due to their ability to generate human-like responses, deliver instant explanations, support feedback processes, and assist teachers in completing pedagogical tasks (D. Yan & Zhang, 2024). Rather than serving merely as grammar-checking systems, ChatGPT functions as an interactive instructional partner capable of facilitating lesson planning, scaffolding student learning, modeling academic language, and providing diverse teaching examples (Youssef et al., 2024; Zhang, 2025). These affordances make ChatGPT particularly appealing for pre-service teachers who are still developing their pedagogical identity, confidence, and instructional decision-making skills (Mo & Crosthwaite, 2025).

Growing evidence indicates that integrating ChatGPT into EFL instruction can enhance learners' writing performance, promote reflective thinking, build learner autonomy, and reduce teachers' cognitive load by automating routine tasks (T. T. T. Tran, 2025; Urzúa et al., 2025). For pre-service teachers, ChatGPT offers hands-on opportunities to explore various teaching strategies, design learning materials, and access real-time instructional support (Tarannum et al., 2025; Zhang, 2025). However, concerns remain regarding potential overdependence on AI-generated responses, reduced originality, and the risk of producing generic or formulaic language patterns (Nazari et al., 2021; Tarannum et al., 2025).

These issues underscore the importance of understanding how novice teachers critically evaluate, regulate, and contextualize AI-generated content during the early stages of their professional development (Zou et al., 2025). As pre-service teachers transition from learners to emerging educators, their experiences with AI-assisted teaching tools shape key dimensions of professional empowerment, including technological self-efficacy, autonomy, reflective competence, pedagogical creativity, and readiness for innovative teaching (Kılıç et al., 2025). Their perceptions matter because beliefs about the usefulness, trustworthiness, and limitations of AI-based tools directly influence technology adoption and future classroom practices (Escalante et al., 2023). Pre-service teachers who feel empowered through AI-supported learning environments are more likely to apply technology confidently, make informed instructional choices, and engage in innovative pedagogical approaches (Weidlich, Gotsch, et al., 2025).

Despite the increasing integration of AI tools in teacher education, empirical evidence specifically examining pre-service English teachers' perceptions of ChatGPT as an assisted-teaching tool remains limited (Weidlich, Gotsch, et al., 2025). Existing studies have primarily focused on student outcomes, ethical concerns, or AI-supported writing improvement, leaving significant gaps in understanding how teacher candidates engage

with AI for pedagogical purposes (Teng, 2024). Additionally, few studies explore how ChatGPT contributes to broader aspects of professional empowerment such as reflective thinking, pedagogical autonomy, and identity formation (van Niekerk et al., 2025). Another notable gap concerns the lack of research examining how pre-service teachers negotiate the accuracy, appropriateness, and reliability of AI-generated instructional content a crucial skill for preventing overreliance and cultivating responsible AI literacy (Nasr et al., 2025). Furthermore, research within the Indonesian teacher-education context remains scarce, despite cultural, pedagogical, and technological factors that may uniquely shape how AI tools are perceived and applied in local classrooms (Borromeo Ferri & Greefrath, 2026; Kılıç et al., 2025).

Despite the rapid expansion of Artificial Intelligence (AI) within educational contexts, current research has predominantly focused on the functional application of AI systems in improving learning outcomes, enhancing instructional efficiency, and supporting language learning processes. Within the broader field of Artificial Intelligence in Education (AIED), recent developments have positioned AI not merely as supplementary educational technology but increasingly as an integral component of instructional design and interactive learning environments. In English as a Foreign Language (EFL) education particularly, the emergence of generative AI systems such as ChatGPT has accelerated this transformation by enabling adaptive, dialogic, and increasingly human-like interactions that support a wide range of academic and pedagogical activities (Lo et al., 2025). This technological shift suggests that AI is no longer simply an external tool assisting learning, but is gradually becoming embedded within the cognitive and instructional processes.

However, within teacher education, the implications of AI integration extend beyond questions of efficiency or technological functionality alone. As AI systems become increasingly involved in lesson planning, material development, academic writing, and instructional decision-making, pre-service teachers are required not only to use AI technologies but also to critically interpret, evaluate, and meaningfully negotiate AI-generated outputs within their emerging professional practice. Despite this growing reality, existing studies have largely concentrated on the effectiveness of AI implementation or its impact on learning performance, while relatively limited attention has been given to understanding how pre-service teachers themselves perceive AI integration and how these interactions influence their autonomy, professional judgment, and identity formation as future educators. Without sufficient critical examination of these perspectives, there is a risk that teacher education programs may encourage unreflective technological dependence, potentially weakening teacher agency and constraining independent pedagogical decision-making.

To address this gap, the present study investigates how pre-service English teachers perceive ChatGPT as an AI-assisted learning and teaching partner and examines how these interactions shape their sense of professional empowerment within teacher education. Using a descriptive qualitative approach, this study explores how pre-service

teachers interpret, evaluate, and negotiate AI-assisted pedagogical support while simultaneously constructing their emerging professional identities during the early stages of teacher preparation. Unlike previous studies that primarily focus on measuring the effectiveness of AI adoption or its direct impact on instructional outcomes, this study extends current scholarship by foregrounding teachers' subjective perceptions, reflective engagement, and professional meaning-making processes in navigating AI integration within educational contexts.

Artificial Intelligence (AI) increasingly impacts modern learning environments through the automation of typical teaching chores, the improvement of engagement experiences, as well as informed teaching choices through data analytics. Recent years have witnessed the application of AI changing from being supplementary technology in learning to being core learning design and language learning context components in English as a Foreign Language education, as argued by (Lo et al., 2025). Such a transformation, which started from being rule-based systems towards being generative systems, represents major teaching changes, given that AI systems currently support adaptive, flexible, and dialogic learning interactions, which are simulate human communication.

In teacher education, though, the relevance of AI goes beyond the issue of efficiency. In AI-mediated environments, it becomes necessary for preservice teachers to engage with interpreting, assessing, and meaningfully making sense of AI-generated material in lesson planning, design, and reflection. AI systems become active agents in the process of constituting teacher instruction-related reasoning. This calls for an understanding of the meaning-making process of preservice teachers in understanding AI-related practice in teacher education.

ChatGPT represents the dawn of a new breed of generative AIs capable of customizing explanation, crafting educational instructions, developing illustrative texts, and modifying these and other educational outputs to be in line with the context. Research reveals that it positively aids teachers in improving the use of language in class and in planning writing lessons and conducting immediate class feedback and educational materials design responsive to targeted students (J. Yan, 2024; Zhang, 2025; Zhong et al., 2025). Unlike the conventional grammar corrector software, the ChatGPT function is an enabling and responsive educational assistant.

ChatGPT provides a more forgiving environment for pre-service English teachers to experiment with teaching concepts, inquire about pedagogical questions, and engage with reflective discussions with less scrutiny (Mo & Crosthwaite, 2025). However, such teaching benefits will not become inherently transformative by default. Perceptions of ChatGPT as a teaching partner, a technical tool, or a source of epistemic danger largely depend on pre-service teachers' understanding of its role within teaching practice.

There is also newly developing literature that identifies a set of pedagogical strengths ChatGPT offers in educational environments. There are findings that ChatGPT can improve the quality of revisions, as well as fluency in essays, and even metacognitive

learning on the part of students (H. N. Tran et al., 2025; Urzúa et al., 2025). ChatGPT can also serve as a cognitive amplifier for newly qualified teachers by relieving them of the burden of course preparation and example design. The immediate feedback ChatGPT provides has also been shown to relate to a high level of autonomy on the part of learners.

Despite the foregoing benefits, it is also noted that several educative risks can arise from the use of AI (Nazari et al., 2021; Tarannum et al., 2025). These include over-reliance on AI-produced content, lack of creativity, and the practice of formulaic speech if critical assessment skills are not used appropriately by the user. Other risks include inaccuracies, hallucinations, and lack of cultural fit and authorial and plagiarism problems. The foregoing indicates that the educative potential of ChatGPT can vary not only based on technological feasibility but also based on the perceptions and assessment abilities of the educator to appropriately monitor and control AI-produced content.

Professional empowerment in teacher education includes skills and competencies, autonomy, judgment and reflection, and developing a sense of professional identity, which are necessary for autonomous teaching practices. Recent research has suggested that involvement in AI-enabled contexts has improved self-efficacy in using technology effectively to empower pre-service teachers to adopt technologies independently in teaching and learning (Aldemir et al., 2025). Similarly, ChatGPT has emerged to promote autonomy in teaching practices to enable young teaching professionals to test new teaching approaches and redesign materials using instant feedback (Kılıç et al., 2025).

Reflective competence can be enhanced by pre-service teachers critically scrutinizing AI outputs for educational suitability and contextuality. AI-informed reflective practice has shown the capability to develop a higher level of pedagogical reasoning over the conventional reflective questions (van Niekerk et al., 2025). Additionally, ChatGPT could improve pedagogical creativity by encouraging pre-service teachers to picture multiple teaching contexts, develop novel tasks, and test teaching styles that lie outside the common realities faced by pre-service teachers.

The perspectives of pre-service teachers influence the degree to which technology is integrated in the classroom. The perspectives are normally encompassing of the apparent usefulness of the technology, the simplicity of the technology use, the reliance on information created through AI, as well as the concerns about accuracy, ethics, and the suitability of the technology within the standards of the profession itself (Escalante et al., 2023). The critical literacies required in assessing mastering the instructional outputs of AI require special considerations. According to (Nasr et al., 2025), teacher candidates are required to identify erroneous outputs, determine suitability in terms of both language and instruction, identify biases, and determine if there is a suitable context. Here, understandings are considered beyond attitudes toward technology because these understandings are essentially the lenses that define the value

of ChatGPT in instruction. The interpretative skills required for mastering ChatGPT are important in preventing overdependence. This study aims to examine how pre-service English teachers conceptualize, negotiate, and critically integrate ChatGPT into their pedagogical and academic practices.

METHOD

The study was situated in two Indonesian universities offering undergraduate English Language Education programs that incorporate formal teacher-training curricula and digital learning technologies. These contexts were selected for their relevance to examining pre-service teachers' pedagogical engagement with generative AI tools. Participants were recruited through purposive sampling and comprised 30 final-year pre-service English teachers enrolled in senior-level courses emphasizing instructional design, ICT integration, and practicum preparation. Positioned at the transition from student to novice teacher, participants demonstrated varying degrees of academic and pedagogical engagement with ChatGPT, providing a developmentally appropriate cohort for examining AI-mediated professional learning.

Ethical approval

A qualitative descriptive research design was employed to investigate pre-service English teachers' perceptions and meaning-making regarding ChatGPT as an assisted-teaching tool and its contribution to professional empowerment. This design was selected for its capacity to generate empirically grounded descriptions of participants' experiences without imposing restrictive theoretical assumptions. It is particularly suitable for exploring emergent educational phenomena, such as generative AI in teacher education, where interpretive insight into technology integration and professional identity formation remains underdeveloped.

Design of the study, data collection, and analysis

Data were generated through triangulation of semi-structured interviews, classroom observations, and document analysis of AI-supported teaching artifacts. Interviews captured participants' evaluative judgments and reflective interpretations of ChatGPT use, while observations documented AI-mediated instructional practices during pedagogical tasks. Documentary data, including AI-generated materials and interaction logs, provided evidence of content adaptation and pedagogical decision-making. Data analysis followed Braun and Clarke's six-phase thematic analysis framework, enabling systematic pattern identification across data sources in alignment with the research questions. Ethical standards were strictly observed, including informed consent, voluntary participation, anonymity, and confidentiality.

Data Collection Instruments

The instruments used in the study have been developed in such a way as to enable an understanding of the involvement of preservice English teachers with ChatGPT from multiple dimensions. Informed by the relevant literatures of artificial intelligence in education, teacher empowerment, as well as the adoption of technology, this research utilized semi-structured research instruments such as an interview guide, an observation guide, as well as documentary analysis, each of which helped facilitate an effective examination of the participants' perceptions, practices, as well as documents, respectively.

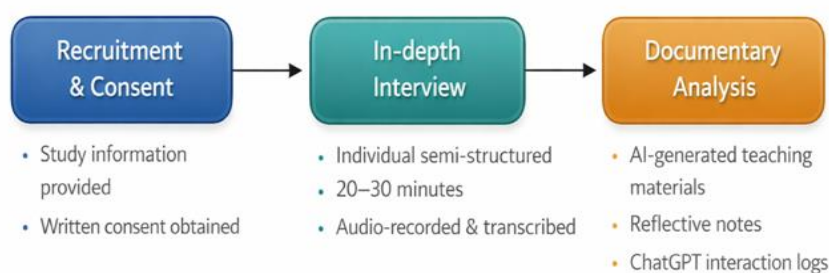


Figure 1.

Data Collection Instrument

Figure 1 illustrates the integrated data collection framework, in which semi-structured interviews served as the primary instrument for eliciting pre-service English teachers' perceptions, evaluative judgments, and reflective meaning-making regarding their use of ChatGPT for academic and pedagogical purposes, including its perceived affordances, limitations, and contribution to professional development. To complement self-reported accounts, structured classroom observations systematically documented AI-mediated engagement during instructional tasks such as lesson planning and material design, capturing behavioral patterns, cognitive processes, and indicators of professional empowerment. In addition, document analysis of AI-generated teaching materials, reflective notes, and interaction logs provided empirical evidence of how participants adapted, evaluated, and integrated ChatGPT outputs into pedagogical decision-making. The triangulation of interviews, observations, and documentary data strengthened analytical rigor and enhanced the credibility of the findings through cross-source validation.

Data Collection Procedures

Data collection for this research was implemented as a logically connected process of steps selected to maintain rigor and allow for triangulation. It involved participant recruitment and informed consent, in-depth semi-structured interviews, observation in the classroom, and document collection of relevant materials. Figure 2 gives an overview of the general data collection procedure applied in this work.

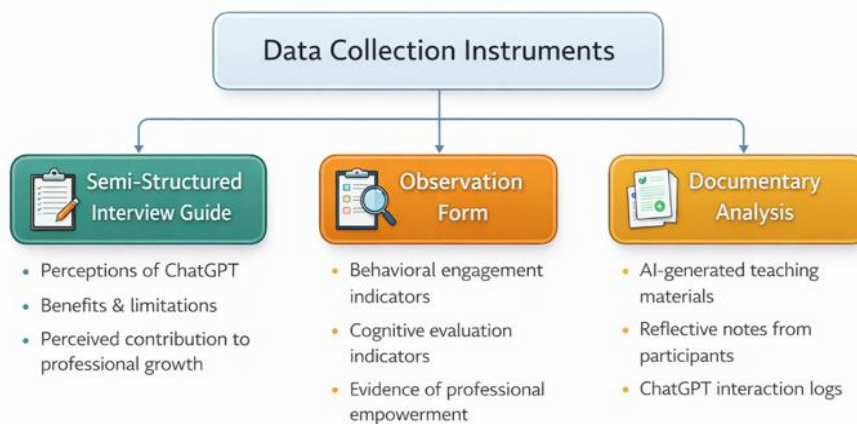


Figure 2. Data Collection Procedures

Prior to data collection, participants were informed of the study's aims, procedures, and ethical safeguards, including voluntary participation, confidentiality, and written informed consent. Data were generated through individual semi-structured interviews exploring pre-service English teachers' perceptions and meaning-making regarding the use of ChatGPT as an assistive teaching tool; interviews lasted approximately 20–30 minutes, were audio-recorded with consent, and transcribed verbatim. To enhance methodological triangulation, non-participant observations were conducted during academic tasks involving ChatGPT to capture authentic AI-mediated instructional engagement, complemented by the collection of relevant documents, including AI-generated teaching materials and interaction logs, which provided naturally occurring evidence of pedagogical decision-making processes.

RESULTS AND DISCUSSION

This chapter offers an in-depth analysis of how pre-service English teachers conceptualize, negotiate, and integrate ChatGPT within their pedagogical practices, drawing on data from semi-structured interviews, classroom observations, and document analysis of lesson plans and AI interaction logs. Guided by Braun and Clarke's six-phase thematic analysis, the findings are synthesized into six interrelated themes: cognitive–linguistic scaffolding, motivational and emotional regulation, iterative prompting and AI-critical literacy, multidimensional professional empowerment, the negotiation of human–AI balance in pedagogical reasoning, and critical awareness of challenges and limitations. Together, these themes illuminate not only the functional uses of ChatGPT but also the reflective, evaluative, and ethical considerations shaping its integration, thereby foregrounding the complex ways in which AI-mediated.

Cognitive-Linguistic Scaffolding: Clarifying Concepts, Language, and Structures

Interview findings revealed that participants consistently perceived ChatGPT as a cognitive support tool that assisted them in organizing ideas, clarifying concepts, and

improving linguistic structures during academic writing and teaching preparation activities. Rather than positioning ChatGPT as an authoritative source of information, participants described using the tool as an initial thinking partner that helped them navigate conceptual and language-related challenges while maintaining independent control over meaning-making and decision-making processes throughout their academic work. Classroom observations further demonstrated that participants primarily engaged with ChatGPT during the early stages of academic tasks, particularly for generating preliminary ideas, refining sentence structures, and clarifying conceptual understanding. During these interactions, participants actively modified AI-generated responses by adjusting vocabulary choices, reorganizing sentence structures, and adapting content to better reflect their own academic voice and intended instructional objectives.

The analysis of AI interaction logs showed a consistent pattern in which participants first generated AI-assisted drafts and subsequently engaged in independent revision, editing, and restructuring processes. Participants frequently reviewed AI-generated suggestions, selectively accepted responses they considered useful, and rejected outputs they perceived as overly generic, overly formal, or inconsistent with their intended argument structure. Interview and observation data further indicated that participants consistently approached ChatGPT as a cognitive aid rather than as a source of definitive answers. Throughout the writing process, participants independently controlled the development of ideas, authorial stance, coherence, and content organization while using AI-generated responses only as preliminary support during drafting activities.

Several participants explained that although ChatGPT accelerated the initial writing process and reduced the effort required during idea generation, they remained cautious about directly adopting generated content without personal revision. Participants emphasized that final decisions regarding argument structure, academic tone, coherence, and content appropriateness remained under their own control. Across observed academic tasks, participants repeatedly demonstrated a pattern of generating AI-assisted content followed by human-led evaluation, selective modification, and independent revision. The findings consistently showed that participants actively engaged in reviewing, refining, and restructuring AI-generated responses before incorporating them into their academic writing and teaching preparation activities.

Emotional Regulation, Reducing Writing Anxiety, and Identity Tension

Further complementing the study results are observations which suggest that there are important psychological function uses of ChatGPT in lessening fears about writing in the sense that it assisted in the regulation of emotions that occur when participating in writing activities in academia. Several researchers discussed how they feel safe when utilizing writing in academia because the available ChatGPT assisted in

providing explanations that seemed less judgmental. This assisted in developing reduced levels of affective barriers which can work against prospective teachers who happen to fear writing when they construct an article in academia. However, in tandem with these affective gains, there emerged a set of tensions regarding authorship that participants commenced in their discussions. Although their constructive feedback was AI-generated and thus encouraged confidence in their work, there was a palpable concern about their own writing style sounding “too perfect,” rather than a reflection of their individual voice in academia. This can be seen as a reflection of a high degree of reflexivity in their educational practices. Rather than a reliance on their tools, this marks a pertinent point in the forming of a professional identity in which there exists a gradation between reliance on tools and ownership of meaning.

“I feel calmer using ChatGPT because it explains mistakes clearly and doesn’t judge me.” — S1

“Sometimes the suggestions sound too perfect and not like my voice.” — S15

“I feel more confident because I can check my ideas before submitting.” — S9

These findings indicate that emotional regulation in AI-supported writing is a dynamic, negotiated process in which pre-service teachers balance the affective reassurance offered by AI-generated texts with critical evaluation to preserve authorship, authenticity, and academic voice. While participants acknowledged the emotional comfort and anxiety-reducing affordances of AI echoing prior evidence that AI writing tools function as low-risk environments for experimentation in L2 contexts (Dwivedi et al., 2023; Holmes et al., 2023; Kasneci et al., 2023), they simultaneously demonstrated heightened awareness of the risks associated with over-polished or stylistically incongruent outputs, thereby resisting uncritical emotional reliance reported elsewhere (Lund et al., 2025). This tension appears to stem from AI’s dual function of reducing cognitive load while introducing lexical and stylistic complexity that may exceed learners perceived proficiency, prompting deeper reflection on ownership, disciplinary voice, and authorial responsibility. Pedagogically, these results underscore the need to situate emotional regulation within a broader framework of critical AI literacy, where affective support is accompanied by reflective practices such as style comparison, justification of revisions, and voice-preservation tasks. Such an approach enables learners to leverage AI for confidence and emotional stability while maintaining epistemic control, fostering resilient, reflective, and ethically grounded academic writers who engage with AI as a collaborative partner rather than a substitute for professional identity.

The Emergence of AI-Critical Literacy via Iterative Prompting

A key indication of the maturity of professional practice by participants is evident in their complex application of iterative prompting as a targeted cognition and metacognition activity. Contrary to direct engagement with ChatGPT through individual

and static queries, participants noted engagement with ChatGPT through a recursive cycle of several rounds of prompt refinement, detection of errors in prompts, and adjustments in instructions. Such a cycle of give-and-take dialogue is indicative of a deliberate attempt at reconciling outcomes from AI with targeted academic purposes, thus indicating a transition from simple inquiry engagement with ChatGPT to a reflective and self-regulated practice of meaning-making. Another key aspect mentioned by participants is that refinement of prompts helped in identifying errors, removing 'hallucinated' information, and arriving at a clear understanding of expectations.

"I revise the prompt three to five times until the output fits what I need." — S18

"Sometimes the answers are hallucinated, so I must check them again." — S11

"If the answer isn't clear, I revise the instructions until the AI understands better." — S22

The findings demonstrate that iterative prompting constitutes a central cognitive and metacognitive practice among pre-service English teachers, who engaged with AI not as passive recipients but through cycles of refinement, deletion, and reformulation grounded in logical reasoning and academic judgment. This dialogic use of prompting reflects metacognitive regulation, as participants continuously evaluated, verified, and reconstructed AI outputs in relation to disciplinary standards. Consistent with prior research highlighting iterative prompting as a catalyst for learner agency and control over AI-generated content, the present study further advances the literature by foregrounding the development of AI-critical literacy, evidenced by heightened sensitivity to hallucinations, inaccuracies, and contextually inappropriate responses. In contrast to studies reporting uncritical reliance on AI outputs (Dwivedi et al., 2023; Lund et al., 2025), participants adopted a reflective stance characterized by systematic verification, selective rejection, and ethical awareness of epistemic responsibility. This pattern appears to emerge from sustained engagement with both the affordances and limitations of AI: while the efficiency and immediacy of ChatGPT facilitate iterative revision, exposure to ambiguous or flawed outputs compels increasingly precise query construction. Pedagogically, these results underscore the necessity of framing prompting as an epistemological activity rather than a technical routine, and of embedding structured reflection, justification of revisions, and evaluation of AI outputs within teacher education to cultivate autonomous, critically literate, and self-regulated academic writers.

Multidimensional Professional Empowerment: Pedagogical, Technological, and Reflective Growth

The preservice English teachers showed a complex use of iterative prompting as a deliberate cognitive and metacognitive process when engaging with ChatGPT. Contrary to using isolated and static queries, the participants explained the recursive process in

terms of multiple cycles of prompt amendment, error detection, and instructional correction. This dialogical procedure can be viewed in terms of a move away from mere surface-level engagement with AI towards a reflective and self-regulated process of meaning-construction in which the individual engages in a recursive process of adjusting the corresponding AI-sourced outputs to personal academic and instructional objectives. The iterative amendment of queries allowed the participants to identify errors or remove the hallucinated parts and steadily improve the cognitive accuracy and linguistic clarification to gain more control over the knowledge-production procedure.

"ChatGPT helps me design examples of activities, but I still adjust them to classroom needs." — S25 "I became better at making effective prompts." — S6 "I use ChatGPT to test whether my understanding is correct." — S14

Hurman-AI Balance in Pedagogical Reasoning: Keeping Teacher as the North Star

The research reflects a strongly reasoned and defined position within the future group of English teachers: a direct integration of human leadership within a context of helpful but non-directive usage of AI. The students established a clear framework defining and circumscribing where and how AI is to be utilized: honing language, facilitating task management, and assisting with original ideas but separate from discerning meaning, detecting context, and deciding what applies within a particular context within a school setting. The necessary tension and integration indicate a high level of professionalism and awareness of ethical implications a necessary acknowledgment of successful teaching containing a rich respect for context and cultural meaning and application and interpretation beyond actual mechanical capability. This is borne out in observing how participants engaged with outputs from the AI a critical editing function to eliminate incorrect cultural examples and to distill explanations to maintain a clear teaching nexus is reflective of a utilization of AI capabilities within a framework of human-centered expertise a developing trend within utilizing AI within education.

"I choose what to use because not everything is relevant." — S10

"Sometimes the examples do not match the context, so I reorganize them." — S17

"AI can help with language, but the main ideas must come from me." — S21

The findings indicate that preservice English teachers are enthusiastically integrating ChatGPT into their research activities, but simultaneously and consistently emphasize that a crucial part of teaching decision-making will remain human-centered. The participants clearly distinguish between what is the beneficial application of AI (tuning language, developing ideas, and organizing information) and what is the application of critical interpretation and adaptation to context and culture a crucial teacher task. This differential and selective incorporation and adaptation of technology

refinement, modification, or elimination based on what will and will not fit a particular culture and context betrays increasing autonomy and sensitivity to teacher and teaching morality and ethics. The findings strongly resonate with previous studies about how human judgment possesses a non-replaceable place within context-bound and relationship-driven and value-driven teaching practices (Holmes et al., 2023; Zhou & Du Preez, 2025), and confirm previous findings about how such supplementary uses of technology (Dwivedi et al., 2023; Kasneci et al., 2023), serve to emphasize a superior and substitutable character of pedagogy and of teaching and teacher practice and need.

Unlike predecessor studies about how newcomers to a profession or field will employ technology to cover confidence gaps and lack of preparation or expertise to independently handle a particular skill or practice (Lund et al., 2025), here preservice English teachers adopt a more mature view of how and when technology will serve to under-pin content and capability development and application across a skill or practice area like teaching and teacher development as applying to both enthusiasm and uptake of new technology and across teacher development and preparation studies past and present. The findings therefore indicate a particular trend concerning teacher preparation and development to incorporate technology and more particularly such technology examples and instantiations like ChatGPT within teacher preparation and development to emphasize ongoing critical mediations of such technology examples and instantiations to underscore human-centered crucial teaching decisions and practices.

Challenges, Limitations, and Ethical Considerations

The researchers sensed both the teaching and learning potential of AI, and, concurrently, the gradual development of their informed and informed skepticism about how the AI could be used. They were sensitive throughout to the risk of relying too heavily on AI production shortcuts, given the possible AI hallucinations, fact errors, and discrepancies between what AI produces and what the curriculum wants accomplished. Thus, they learned through these experiences to consider AI research not as infallible, objective truth, but instead as a provisional research method which is subject to informed analysis. On the ethical side, they aligned their strategies with traditional values of teaching education: honesty, originality, truth, and integrity and responsible usage of technology, and were thus made more aware of authorship and integrity of work completed through AI usage. Instead of moving away from AI, these participants chose to adopt a more cautious, reflective approach which seeks, through careful attention and reflection, its productive power while keeping itself informed of possible risks involved in teaching and learning.

"Sometimes I depend too much on it, especially when I am stressed." — S29

"The references are sometimes incorrect or nonexistent." — S4

"Using ChatGPT requires honesty; I must still double-check the answers." — S23

The findings indicate that although pre-service English teachers clearly recognize the substantial academic and pedagogical affordances of AI tools, they adopt a distinctly cautious and ethically informed stance toward their use. Participants consistently warned against overdependence, particularly under academic pressure and time constraints, where AI risks functioning as a shortcut rather than a learning scaffold, and they reported frequent encounters with hallucinated content such as inaccurate explanations, fabricated references, and contextually inappropriate materials that necessitated continual verification. Consequently, AI was not treated as an unquestioned epistemic authority but as a resource subject to critical scrutiny, judgment, and cross-checking, alongside sustained concerns for academic honesty and integrity.

These patterns align with prior research showing that learners value AI efficiency while remaining apprehensive about inaccuracies, citational errors, and cognitive offloading under stress (Holmes et al., 2023; Kasneci et al., 2023), and with scholarship emphasizing that AI literacy entails critical evaluation, error detection, and regulation of dependence rather than technical fluency alone (Dwivedi et al., 2023). However, the present findings contrast with studies reporting uncritical reliance on AI outputs (Lund et al., 2025), as participants demonstrated a more mature ethical orientation marked by source verification, awareness of dependency risks, and prioritization of professional integrity. This stance appears to stem from preservice teachers' dual identity as learners and future educators, which heightens sensitivity to accuracy, authenticity, and modeling ethical practice. Pedagogically, the results underscore the need to embed ethics-oriented AI literacy in teacher education, emphasizing verification practices, identification of hallucinations, and reflective regulation of AI use, so that AI is neither rejected nor uncritically embraced but mediated through informed professional judgment.

DISCUSSION

The findings demonstrate that pre-service English teachers engaged with ChatGPT in a highly controlled and selective manner, positioning the technology primarily as a cognitive-linguistic support tool rather than as an authoritative source of knowledge. Participants consistently relied on ChatGPT to facilitate idea generation, clarify conceptual understanding, and refine linguistic structures during academic writing and teaching preparation activities. Importantly, higher-order cognitive processes, including meaning construction, instructional reasoning, and authorial decision-making, remained under the participants' own control. This pattern suggests that participants approached AI-assisted learning as a supportive mechanism that complemented, rather than replaced, independent cognitive engagement. Such findings align with sociocognitive perspectives emphasizing that digital technologies function as mediating tools that extend human cognitive processes while preserving human agency in knowledge construction (Mo & Crosthwaite, 2025; Yan & Zhang, 2024; Zhang, 2025).

A particularly significant finding emerging from this study is the development of AI-critical literacy as an important professional competence among pre-service teachers. The participants demonstrated repeated engagement in iterative prompting practices, where AI-generated outputs were continuously refined, evaluated, and modified according to specific academic and pedagogical needs. Rather than passively accepting AI-generated responses, participants actively examined the accuracy, relevance, and contextual appropriateness of the information produced by ChatGPT before incorporating it into their academic tasks. This finding suggests that interaction with generative AI can foster epistemic autonomy and reflective judgment, both of which are increasingly essential in contemporary teacher education contexts. These findings diverge from concerns raised in studies emphasizing learner dependence on AI technologies and instead support emerging perspectives on AI literacy that prioritize error detection, contextual evaluation, and responsible dependency management (Dwivedi et al., 2023; Kasneci et al., 2023; Lund et al., 2025).

The findings also reveal that emotional engagement constitutes an important dimension of AI-supported academic work. Consistent with previous studies, participants reported that ChatGPT reduced writing anxiety by providing immediate, accessible, and non-judgmental feedback during challenging academic tasks (Banihashem et al., 2024). At the same time, participants demonstrated strong awareness regarding issues of authorship and authenticity. When AI-generated responses appeared overly polished or inconsistent with their own writing style, participants actively revised and reconstructed the content to preserve their individual academic voice. This finding indicates that the integration of AI within academic writing is not solely a technical process but also involves continuous negotiation between cognitive support, emotional reassurance, and the preservation of academic identity.

Taken together, the findings suggest that professional empowerment emerging from AI-supported learning is multidimensional and develops when learners engage with AI technologies through reflective, selective, and critically mediated processes. The educational benefits of generative AI do not appear to emerge from passive technological dependence, but rather from learners' capacity to exercise independent judgment while strategically integrating AI-generated support within their own learning processes. In this context, AI functions most effectively when positioned as an augmentative cognitive resource that strengthens human reasoning rather than replacing human expertise. This finding reinforces the argument that technological advancement in education should be understood as a process of cognitive augmentation, where professional agency remains fundamentally human-centered.

From a pedagogical perspective, these findings carry significant implications for teacher education programs. First, teacher education institutions should move beyond introducing AI merely as a functional technological tool and instead prioritize the systematic development of critical AI literacy among pre-service teachers. Future educators need explicit training in evaluating AI-generated information, identifying

inaccuracies or hallucinated content, questioning the reliability of generated outputs, and making informed decisions regarding the responsible use of AI-assisted academic support.

Second, teacher preparation curricula should incorporate structured learning experiences that allow pre-service teachers to practice reflective interaction with generative AI systems in authentic educational contexts. This includes iterative prompting strategies, independent source verification practices, adaptive revision of AI-generated content, and opportunities to critically evaluate whether AI-generated responses align with pedagogical goals, learner needs, and contextual classroom realities. Such training is necessary to ensure that future teachers do not become passive consumers of algorithmically generated knowledge.

Third, the findings emphasize the urgent need to integrate ethical awareness as a core component of AI-supported teacher education. As generative AI becomes increasingly embedded within academic and instructional practice, future teachers must be prepared to navigate issues related to authorship, academic integrity, professional accountability, responsible technology use, and the preservation of independent pedagogical judgment. Developing these competencies is essential if AI integration is to strengthen, rather than weaken, professional teacher autonomy within increasingly technology-mediated educational environments.

Overall, the successful integration of generative AI within teacher education depends not simply on technological adoption, but on the cultivation of reflective judgment, ethical responsibility, and human-centered pedagogical agency among future educators. The findings suggest that AI should not be positioned as a substitute for teacher expertise, but rather as an augmentative cognitive partner that supports learning while preserving human autonomy in pedagogical decision-making. Preparing future teachers for AI-mediated educational environments therefore requires institutions to balance technological innovation with the continued development of critical thinking, ethical awareness, professional responsibility, and independent pedagogical reasoning. Ultimately, the long-term success of AI integration in education will depend not on the sophistication of technology itself, but on the capacity of teachers to engage with AI critically, responsibly, and with sustained professional autonomy.

CONCLUSION

A strong argument exists for pre-service English educators employing ChatGPT in an appropriate and mediated manner. They tend to conceptualize it as a cognitive-linguistic aid. Primarily, it serves to facilitate and support one-way thinking about ideas, explaining those ideas in terms of concepts and words, with those superior tasks of sense-making and voice reserved for human beings. This is in line with sociocognitive views of digital technology that refrain from thinking of technology as a mediator which enhances human thinking but is also capable of replacing it. One of the most important

observations is the emergence of AI-critical literacy as a technical competence. The participants are introduced to iterative prompting as a metacognitive practice to hone, check, and negotiate AI responses in a particular setting. The participants are merely checking responses rather than accepting them as is they check them for appropriateness regarding academics as well as education, reflecting epistemic autonomy and reflexivity.

The emotional side of using ChatGPT adds depth to the concept of AI-assisted labor. As postulated, the anxiety relief process comes in the form of fast, judgment-free responses. However, this has a flip side, in which the students self-edit, reviewing their content if it seems almost too good or not reflective of who they are. Regulation, in this way, is done through intervention, not blind trust in the technology. In sum, professional empowerment is a multilevel process and only achievable when use of AI benefits reflection and agency in teaching. Recommendations emerged from these findings regarding ethical and philosophical debates critical for implementing and institutionalizing AI in teacher education programs.

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