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INTEGRATING CRITICAL LITERACY INTO ACADEMIC WRITING INSTRUCTION FOR PRE-SERVICE TEACHERS: AN EXPLANATORY SEQUENTIAL MIXED-METHOD

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Abstract: Critical literacy is a core support for EFL pre-service English teachers to process complex, ideologically embedded multimodal texts. However, most current academic writing instruction in EFL teacher education programs shares a widespread common flaw: prioritizing linguistic accuracy while neglecting critical engagement. To explore the actual effect of integrating structured critical literacy tasks into academic writing courses on improving pre-service teachers' writing performance and critical awareness, this study adopts an explanatory sequential mixed-methods approach, and conducts an 8-week teaching intervention with a sample of 36 pre-service English teachers. The intervention tasks cover critical questioning, multimodal text analysis, and writing critical response papers. For quantitative analysis, a paired-samples t-test is used to process pre-test and post-test writing assessment data, while thematic analysis is used for qualitative analysis to process data from reflection forms and semi-structured interview materials. The study's results show that the mean writing score increased from 2.81 (SD=0.50) to 3.66 (SD=0.45), $t(35)=11.42$, $p<.001$, Cohen's $d=1.90$. Scores for critical awareness, argument quality, and evidence use rose by 1.04, 0.91, and 0.78 respectively. Qualitative results indicate that students gradually developed the relevant core competencies, and this set of intervention plans can provide a reusable evidence-based teaching reference for the EFL teacher education field.
Keywords: *academic writing; critical literacy; EFL teacher education; multimodal literacy; pre-service English teachers*

INTRODUCTION

The rapid expansion of multimodal communication, algorithm-driven content, and generative AI has reshaped literacy requirements in the field of language education. Beyond linguistic proficiency, contemporary literacy also requires the ability to critically assess dimensions of complex texts including their credibility and ideological underpinnings (Carcamo & Pino, 2025; Chen, 2022; Kiryakova & Kozhuharova, 2024; Purba et al., 2023). English language teachers need to cultivate their students' media literacy to engage critically with texts (Akkuş & Uysal, 2024; Bouwer & Veen, 2024; Ilyas & Arifin, 2025; Iordanou & Fotiou, 2025).

This paper proposes that critical literacy is a core goal of contemporary teacher education. It helps pre-service teachers move beyond literal interpretations of texts to analyze the underlying operational logics of language, power, and ideology; in EFL teacher education contexts, it equips future teachers to design activities that guide students to question mainstream assumptions and participate in democratic classroom discourse (Eid et al., 2025; Johnson & Keane, 2023; Latif, 2022). External cross-sectional empirical studies confirm that instruction integrating critical

questioning can improve learners' critical literacy, evidence-based argumentation skills, and confidence in expression (Kebede & Kitila, 2023; Kirsan & Aptoula, 2026; Peltzer et al., 2024). Longitudinal studies further show that long-term exposure to critical literacy can drive pre-service teachers to transition from transmitters of knowledge to critically responsive educators capable of building democratic, participatory learning environments (Akkuş & Uysal, 2024; Arikan & Zorba, 2024; Baran & AlZoubi, 2024; Ginsberg, 2023; Le et al., 2024). Critical literacy has become a widely recognized core component of English language teacher education, yet the development of this competency remains difficult to effectively implement within pre-service English teacher training systems. Recent empirical studies consistently show that a significant gap exists in this group of teachers' advanced critical literacy skills (Mahardika & Silalahi, 2025; Navila et al., 2023; Rahmanu & Molnár, 2024; Trixa & Kaspar, 2024; Yoon, 2022).

To address the relevant teaching challenges, a large body of existing research has integrated critical literacy into English as a Foreign Language (EFL) teaching through classroom interventions. Four effective strategies that have been repeatedly validated are structured critical questioning, dialogic discussion, reflective writing, and critical response tasks (Akkuş & Uysal, 2024; Arifin et al., 2023; Ijabah & Asdar, 2024; Ilyas & Arifin, 2025; Kebede & Kitila, 2023).

In response to this gap, the present study proposes a research pathway that integrates multiliteracies and multimodal pedagogy within the field of EFL teacher education. The present study integrates this framework into academic writing instruction, which can help pre-service English teachers produce in-depth texts and develop comprehensive communication skills suited to complex communities (Andriyati et al., 2025; Drajati et al., 2023; Maamuujav, 2025; Nabhan & Habók, 2026; Trisanti et al., 2024). Prior research has verified that the combination of the two frameworks can expand the boundaries of literacy beyond print-only texts (Barr & Kirkorian, 2023; Rahmanu & Molnár, 2024; Sotirovska & Vaughn, 2022). Additional recent studies have noted that the successful on-the-ground implementation of multimodal teaching requires teachers to accumulate relevant pedagogical knowledge and self-efficacy, and the learning tasks designed under this framework can improve learners' critical interpretation skills (Li & Dell-Jones, 2023; Nabhan & Habók, 2026).

The rapid expansion of digital communication, social media, algorithm-driven information environments, and generative AI has continuously broadened the scope of critical literacy far beyond its original focus on traditional print texts and multimodal texts. Lo et al. (2024) propose that contemporary teacher education must equip pre-service English teachers with core competencies to critically evaluate digital resources, technology-mediated learning environments, and AI-generated information. Barr and Kirkorian (2023), Chen (2022), and Undrum et al. (2025) all note that digital and media literacy are core components of critical literacy, not supplementary content. Giray et al. (2026) further state that the trend of integrating generative AI into education requires the concurrent cultivation of AI literacy and critical literacy, to enable future teachers to develop the abilities to critically assess AI content, use AI responsibly, and guide learners to adapt to digital communication scenarios.

In recent years, the international academic community has completed a conceptual reconstruction of academic writing. The field has redefined academic writing not as a tool solely used to verify linguistic accuracy, but as a meaning-making practice embedded in specific social contexts, which serves as the core carrier for knowledge production, negotiation, and dissemination within academic circles. Subsequent empirical studies point out that three types of instructional interventions can foster this group's critical judgment, disciplinary reasoning ability, and professional agency, clarifying that academic writing functions as a core instructional process, rather than existing merely as a learning outcome (Gómez-Álvarez & Ferreira, 2026; Jafary et al., 2024; Josefsson et al., 2026; Olsen & Hunnes, 2024; Rodriguez-Escobar & Saldías, 2025; Zeng et al., 2025).

In recent years, new dimensions of multimodal literacy, digital literacy, and AI literacy have been added to this framework (Ginsberg, 2023; Giray et al., 2026; Jafary et al., 2024; Josefsson et al., 2026; Liu et al., 2025; Nabhan & Habók, 2026; Rodriguez-Escobar & Saldías, 2025; Zeng et al., 2025). Building on the integrated multi-perspective framework developed by prior scholars, this study establishes critical literacy as the core instructional foundation for academic writing teaching in contemporary EFL teacher education. Only a small number of well-developed

studies that employ an explanatory mixed-methods design are able to address both intervention outcomes and developmental processes (Ramírez et al., 2023; Rizqiani et al., 2024). Consequently, robust evidence supporting replicable critical literacy-oriented instructional models for EFL teacher education remains limited.

Building on the methodological limitations discussed earlier, the review carried out for this paper identifies that critical literacy research in the current EFL teacher education field still has a core pedagogical gap: most existing interventions are only used as supplementary add-ons for reading and discussion activities, rather than being integrated into academic writing instruction (Akkuş & Uysal, 2024; Giray et al., 2026; Ilyas & Arifin, 2025, Fadhly et al., 2026; Taufiqulloh et al., 2024).

However, most studies only examine each of these research perspectives in isolation, and few have explored integrating them into a coherent set of teaching practices. This gap means that most existing classroom interventions focus mainly on reading and discussion, and fail to leverage academic writing as a space to develop critical literacy.

Building on the methodological and pedagogical gaps identified in previous research, this study investigates the effects of integrating structured critical literacy tasks into academic writing instruction on the writing proficiency and critical literacy development of pre-service English teachers. The specific research questions are presented in the following section. RQ1. To what extent does the integration of structured critical literacy tasks improve the academic writing performance of pre-service English teachers? RQ2. How do pre-service English teachers perceive the integration of critical literacy tasks in developing their critical awareness and academic writing practices?

This study delivers both theoretical and practical contributions to the field of EFL teacher education. On the theoretical level, it expands the cognitive boundaries of critical literacy, integrates four core elements—critical literacy, multimodal literacy, digital literacy, and academic writing pedagogy—to support a more integrated approach to academic writing instruction. On the practical level, this study introduces an empirically supported instructional model that includes a structured task sequence and a flexible assessment framework.

METHOD

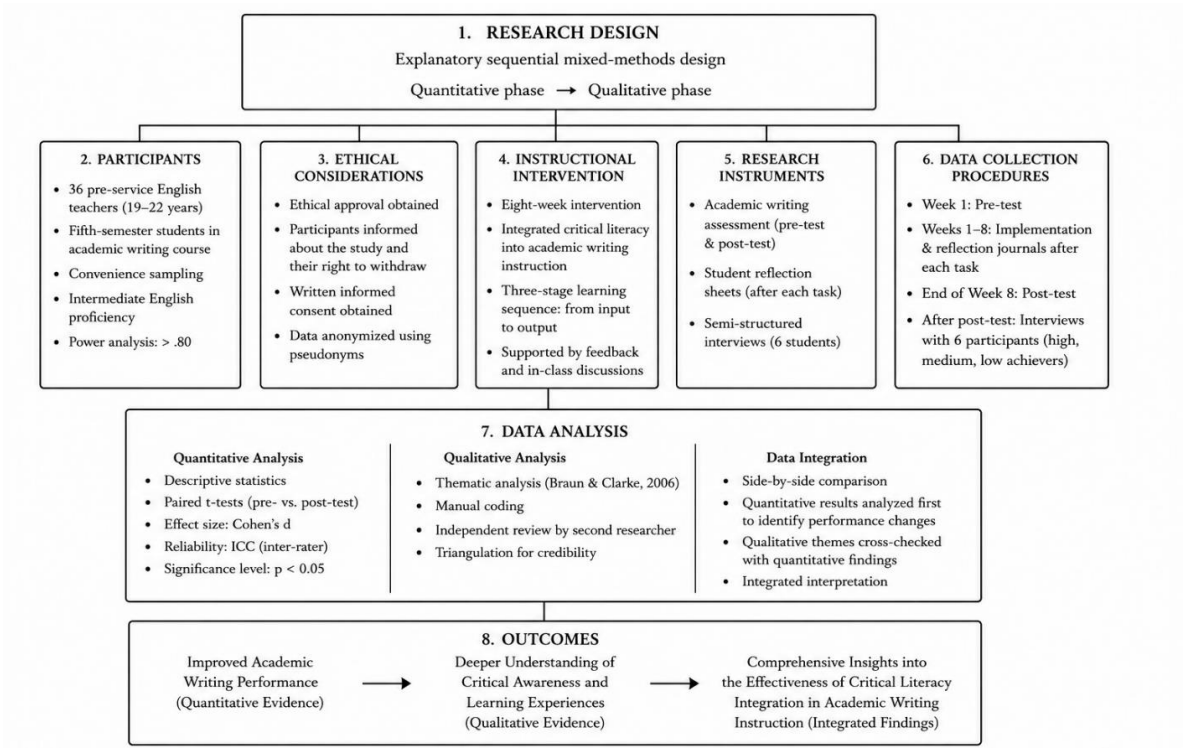

Figure 1. *Research design and methodology*

This study employed an explanatory sequential mixed-methods design, beginning with quantitative data collection and analysis, followed by qualitative data collection to elaborate on the quantitative findings (Creswell & Plano Clark, 2018). Quantitative data measured changes in

students' academic writing performance after critical literacy tasks were integrated into instruction, while qualitative data explored participants' critical awareness, writing practices, and learning experiences. The study was conducted during the 2024/2025 academic year within a mandatory academic writing course at a private normal university in Indonesia. The course, designed for fifth-semester pre-service English teachers, aimed to develop argumentative writing, evidence-based reasoning, and critical engagement with academic texts.

A total of 36 pre-service English teachers enrolled in the academic writing course participated in this study. Convenience sampling was employed as the intervention was embedded in regular whole-class instruction. Participants were aged 19–22, had completed two prerequisite writing courses, and possessed intermediate English proficiency. Post hoc power analysis confirmed statistical power above .80.

Ethical approval was obtained from the host institution. All participants were informed of the study's goals, procedures, and their right to withdraw without consequence. Written informed consent was obtained, and all data were anonymized using pseudonyms.

An eight-week intervention systematically integrated critical literacy into academic writing instruction through a three-stage learning sequence progressing from input to output. Each stage featured clearly aligned tasks and objectives, supported by formative feedback and guided in-class discussions, aiming to enhance both critical literacy and academic writing competence.

*Academic writing assessment***:** A self-developed analytical writing test was administered as pre-test and post-test. Students wrote critical response essays on contemporary educational issues, with equivalent complexity across tasks. A scoring rubric covering four dimensions—quality of arguments, critical awareness, evidence and reasoning, and academic writing conventions—was developed and validated by two senior lecturers. Inter-rater reliability was established (ICC = 0.87) through independent scoring of 30% of writing samples.

*Student reflection sheets***:** Participants submitted reflection journals after each task, covering learning challenges, strategies used, insights gained, and instructional impact on literacy practices.

Semi-structured interviews: Six participants were purposively selected through maximum variation sampling based on post-test writing scores (high, medium, low achievement groups). Interviews explored four core topics related to their learning experiences.

The eight-week intervention began with a pre-test in Week 1. Reflection journals were collected after each task throughout the intervention. A post-test matching the pre-test complexity was administered after the intervention. Subsequently, six participants with varying improvement levels were invited for semi-structured interviews.

*Quantitative Analysis***:** Descriptive statistics summarized pre- and post-test performance. Paired t-tests were conducted to examine significant differences, with Cohen's d for effect size and ICC for reliability. Significance was set at $p < 0.05$.

*Qualitative analysis***:** Reflective journals and interview transcripts were analyzed using Braun and Clarke's (2006) six-phase thematic analysis. Manual coding preserved original context, with independent review by a second researcher and triangulation to enhance credibility.

*Data integration***:** Side-by-side comparison was employed, first analyzing quantitative results to identify performance changes, then cross-checking qualitative themes against these findings.

RESULTS AND DISCUSSION

Quantitative findings: Pre-test and post-test writing performance

The descriptive statistics presented in Table 1 reveal consistent improvements across all four dimensions of the academic writing rubric following the eight-week critical literacy intervention. As shown in Table 1, prior to the intervention, students demonstrated moderate performance across all dimensions, with mean scores ranging from 2.64 (Critical Awareness) to 3.02 (Academic Writing Conventions). This relatively narrow range suggests that students entered the course with comparable proficiency levels across writing competencies.

Table 1. *Pre-test and post-test mean scores across writing dimensions*

Dimension	Pre-Test M (SD)	Post-Test M (SD)	Mean Gain
Argumentation Quality	2.81 (0.56)	3.72 (0.49)	+0.91
Critical Awareness	2.64 (0.63)	3.68 (0.52)	+1.04

Use of Evidence	2.77 (0.58)	3.55 (0.57)	+0.78
Academic Writing Conventions	3.02 (0.51)	3.67 (0.46)	+0.65
Overall Score	2.81 (0.50)	3.66 (0.45)	+0.85

Following the intervention, substantial gains were observed across all dimensions. The most pronounced improvement occurred in Critical Awareness, with a mean increase of +1.04 (from 2.64 to 3.68). This substantial gain indicates that students became significantly more capable of questioning textual authority, identifying underlying assumptions, and recognizing ideological positioning embedded within academic texts. The second largest improvement was in Argumentation Quality (+0.91, from 2.81 to 3.72), suggesting that students developed stronger abilities to construct coherent, well-supported arguments with clearer logical progression. Use of Evidence also demonstrated meaningful improvement (+0.78, from 2.77 to 3.55), reflecting students' enhanced capacity to integrate textual evidence and external sources to support their claims. The smallest yet still notable gain occurred in Academic Writing Conventions (+0.65, from 3.02 to 3.67), which may be explained by the fact that students already possessed relatively stronger foundational writing skills at the outset.

The paired-sample t-test results confirmed that the overall improvement in writing performance was statistically significant, $t(35) = 11.42$, $p < .001$, with a very large effect size (Cohen's $d = 1.90$). This effect size considerably exceeds Cohen's (1988) convention for a large effect ($d = 0.80$), indicating that the critical literacy intervention had a substantial and practically meaningful impact on students' academic writing abilities. Furthermore, the high inter-rater reliability (ICC = .87) confirms the consistency and trustworthiness of the scoring process, strengthening confidence in the validity of these findings.

These quantitative results collectively demonstrate that the integration of critical literacy into academic writing instruction yielded comprehensive benefits across all measured dimensions, with particularly strong effects on students' critical thinking and argumentation capacities. The findings suggest that the intervention successfully addressed the fundamental mechanisms underlying effective academic writing, moving beyond surface-level improvements in linguistic accuracy to foster deeper critical engagement with texts and ideas.

Qualitative findings on critical literacy development

A thematic analysis of the qualitative data uncovered three related themes found within the students' essays, reflection sheets, and semi-structured interviews. The associated sub-findings and supporting evidence are detailed in Table 2.

Table 2. *Qualitative findings on critical literacy development*

Main Theme	Sub-Finding	Evidence of Development	Representative Evidence
1. Enhanced Ability to Identify Ideology and Hidden Messages	1. Transition from Summary to Interpretive Reading	Students moved beyond simple description and began examining how texts construct particular representations of social groups.	Pre-test (S03): “Social media is bad, and we should use social media appropriately as students.” Post-test (S03): “The text presents youth as the primary problem in digital culture, characterizing them as irresponsible while not addressing the role of platform algorithms and corporate interests.”
	2. Acknowledgment of Class-Based Assumptions	Students became more aware of socioeconomic assumptions embedded in texts and recognized perspectives that privilege particular groups.	Post-test (S21): “The author presupposes that all families are able to monitor online learning, which is a privileged perspective that fails to take into account the parent who has been up since 4 and left at catch-up school from before sunrise until dinner time out of economic necessity or any lack of technological literacy.”
	3. Awareness of Linguistic	Students demonstrated greater awareness of how word choices can	Post-test (S10): “The term ‘oh, it’s just because they naturally are hardworking students’ romanticizes

	Manipulation and Framing	romanticize social conditions and reproduce dominant narratives.	the idea of struggle and hides the structural pressures that arise from large school workloads."
	4. Uncovering Silenced or Marginalized Voices	Students began questioning whose perspectives were represented and whose voices were absent from texts.	Post-test (S18): "The piece is on school policy but there are no teachers or student's voice is used in the context of being at all critical. The policy just seems like something that it would be unthinkable to oppose and which is neutral."
	5. Uncovering Hidden Agenda or Policy Bias	Students identified ideological agendas beneath apparently neutral sustainability discourse and examined how textual framing may favor particular interests.	Post-test (S27): "Even though the text stages sustainability discourse, it lends industry-friendly answers a sneaky hand by focusing on consumption-based 'eco-products' rather than a denouncement of industrial waste."
2. Stronger Use of Evidence and Multi-Perspective Analysis	1. Transition from Claims to Evidence-Based Claims	Students shifted from unsupported opinions toward claims supported by textual evidence and closer analysis of language.	Pre-test (S12): "The writer exaggerates the issue." Post-test (S12): "The hyperbolic nature of the claim is even more obvious in, say, 'Nobody ever has discipline,' a sweeping judgment for which no evidence exists in the text."
	2. Seamless Integration of Direct Quotations for Precision	Students used direct quotations to identify generalizations and evaluate weaknesses in textual reasoning.	Post-test (S30): "The author has said 'online learning is a burden for all teachers,' but this sweeping statement also assumes everyone experiences the same and I don't think that's true across contexts."
	3. Comparative Text Analysis	Students compared how different texts constructed the same issue from different perspectives.	Post-test (S04): "Text A presents poverty as a 'moral failing, if not a personal one,' while Text B discusses it as related to policy decisions at the structural level. This distinction is vital to grasping how responsibility is constructed."
	4. Use of Data and Examples as Evidence in Supporting Claims	Students increasingly drew on external evidence to complicate, challenge, or dispute claims presented in texts.	Post-test (S26): "The author's declaration that rural students 'do not value education' is denied by more recent survey data about high levels of aspiration coupled with small access to higher education."
	5. Balanced Assessment Including Diverse Points of View	Students developed more balanced critiques by acknowledging valid aspects of an argument while identifying its limitations.	Post-test (S01): "The text is right to note that teachers struggle with technology, but it neglects institutional culpability by centering on human attitudes."
3. Increased Engagement and Confidence in Expressing Critical Views	1. Increased Willingness to Push Back on the Author	Students became more willing to challenge textual authority and question the adequacy of authors' arguments.	Post-test (S33): "The text's argument is clear yet insufficient, as it approaches emotional appeal and does not account for larger political pressures."
	2. Growth in Authorial Voice and Identity	Students increasingly viewed academic writing as a space for expressing their own perspectives rather than simply	Reflection (S11): "I understand my writing reveals my point of view, not just echo the text." Post-test (S11): "My perspective is that you can't

		reproducing information from texts.	decouple the problem from the institutional priorities."
	3. Increased Focus on Social and Ethical Concerns	Students increasingly connected textual issues with broader questions of inequality and social justice.	Post-test (S19): "This is an issue, because unequal access to digital tools impact students' human rights to education."
	4. Higher Reflectiveness and Metacognition	Students became more conscious of the strategies they used when reading and writing critically.	Reflection (S08): "Now I always ask myself, 'Whose voice is talking? Whose voice is missing?' before I write."
	5. More Confidence in Academic Writing	Students reported greater confidence in expressing and defending their critical positions after acquiring concrete analytical strategies.	Post-test (S25): "I'm comfortable challenging the assumptions of the author and I don't mind doing so because I can defend my position using evidence."

Table 2 highlights three interrelated outcomes resulting from the intervention. First, students demonstrated enhanced ideological awareness in reading and writing. Instead of simply summarizing content, they started recognizing biases, ideological positions, linguistic choices, socioeconomic implications, and viewpoints. This change indicates a growing recognition among students that texts are socially constructed entities rather than entirely objective accounts of reality.

Second, the students developed more robust, evidence-based argumentation and the ability to analyze multiple perspectives. The findings reveal a shift from making unverified claims to utilizing textual evidence, direct quotations, comparative evaluations, external data, and well-rounded assessments. Rather than just taking a stance of agreement or disagreement with an author, students examined the construction of arguments and supported their own interpretations with solid proof. This development is particularly valuable for academic writing, as it shows how critical literacy skills evolve into sophisticated analytical argumentation.

Third, the intervention fostered greater authorial engagement, self-reflection, and confidence in sharing critical perspectives. Students grew more adept at challenging textual authority, communicating their personal viewpoints, connecting academic subjects to wider ethical and societal matters, and evaluating their own reading and writing strategies. This development of an authorial voice and metacognitive awareness suggests that students started treating academic writing as a space to articulate and justify their thoughts, rather than merely echoing their source materials.

Overall, these three themes demonstrate a developmental path from critical interpretation to substantiated argumentation, culminating in a stronger authorial presence. Consequently, the qualitative results reinforce the quantitative data, illustrating that enhanced writing proficiency corresponds with substantive shifts in how students evaluate texts, construct arguments, and develop their identities as academic writers.

This study uses a mixed research method, integrating structured critical reading and writing tasks into an academic writing teaching intervention for pre-service English teachers. Its core finding is that this intervention can improve both participants' academic writing performance and their critical reading and writing abilities: quantitative data shows significant gains across all dimensions of the writing assessment, while qualitative data indicates that participants are able to question assumptions in texts and incorporate multiple perspectives. As a qualitative study focused on critical literacy instruction for pre-service English teachers, the core conclusions of this research carry three well-defined layers of academic value.

This study tracked the complete developmental trajectory of the critical awareness of its participant group, from its germination and internalization to eventual practical implementation. It ultimately anchors its findings to existing critical literacy theories in academia that are rooted in the sociocultural perspective, verifies the dual functions of academic writing, and reinforces the academic validity of this study's original conclusions by drawing on a mature, established framework (Eid et al., 2025; Johnson & Keane, 2023; Novianti, 2021). The developmental model proposed in this study is consistent with

conclusions from previous classroom research (Akkuş & Uysal, 2024; Arikan & Zorba, 2024; Ginsberg, 2023; Le et al., 2024). However, past studies mostly examined critical literacy only within reading instruction or class discussions (Jafary et al., 2024; McGrath & Donaghue, 2025; Rodriguez-Escobar & Saldías, 2025). This study finds that academic writing itself can serve as a pedagogical space that supports learners in negotiating diverse perspectives, evaluating evidence, and expressing socially conscious stances. This reorients academic writing from an instructional output to a core mechanism for constructing critical consciousness, expanding the academic community's understanding of its role.

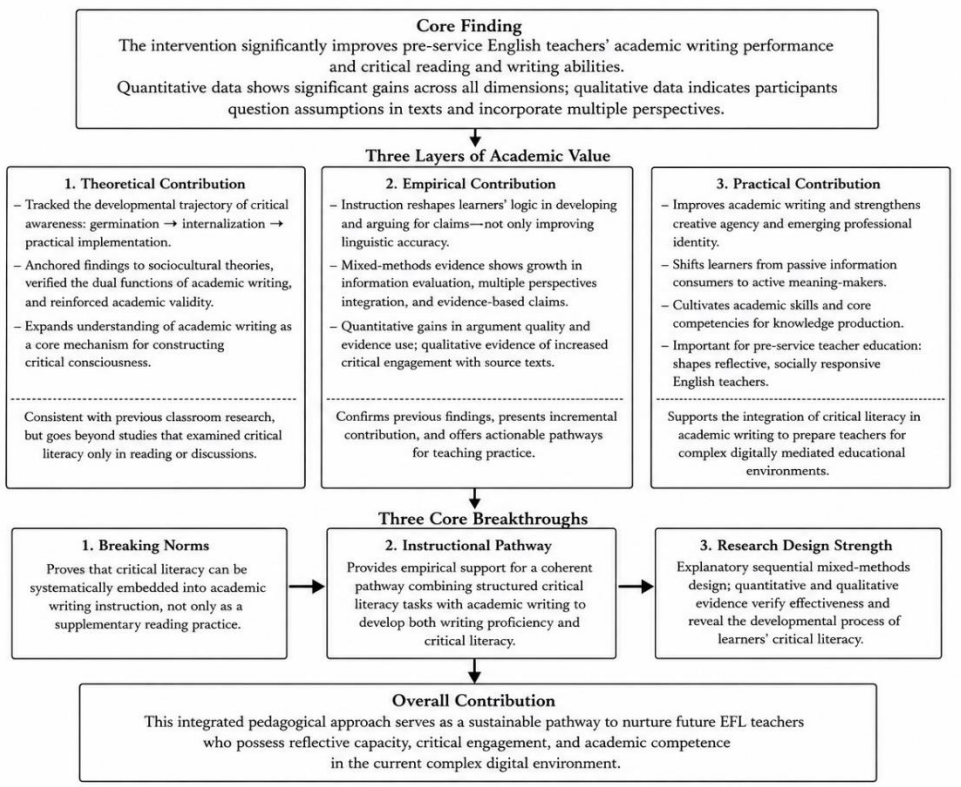

Figure 2. *Core findings and academic contributions of the study*

This intervention research integrated critical literacy into writing instruction for pre-service English teachers and found significant improvement in participants' academic writing proficiency. The underlying mechanism driving this improvement was the instructional model's ability to reshape how learners developed and argued their claims, extending beyond the linguistic accuracy focus typical of conventional writing instruction (Akkuş & Uysal, 2024; Ilyas & Arifin, 2025; Mills, 2024). Employing a mixed-methods design, the study confirmed that participants gradually developed competencies in evaluating information, integrating multiple perspectives, and constructing evidence-based arguments (Jafary et al., 2024). Quantitative data revealed gains in argument quality and evidence use, while qualitative evidence showed increased critical engagement with source texts (Josefsson et al., 2026). These findings align with previous classroom intervention studies while offering incremental contributions that distinguish this research from existing outcomes and provide actionable pathways for teaching practice (Latif, 2022).

Within the context of pre-service English teacher training, qualitative data from reflective journals and interviews revealed that the intervention not only enhanced academic writing performance but also strengthened participants' creative agency and emerging professional identity, facilitating their transition from passive information consumers to active meaning-makers. This dual value—cultivating academic skills while shaping competencies for knowledge production—carries particular significance for pre-service teacher education, a field requiring practitioners to master subject knowledge alongside critical capacity to examine sociocultural issues tied to education. Studies by Baran and AlZoubi (2024), Le et al. (2024), and Tseng (2024) confirm that sustained critical literacy practice can shape pre-

service teachers' professional identities and socially responsive teaching orientations. Accordingly, we advocate integrating critical literacy into academic writing instruction to cultivate reflective English teachers prepared for complex digitally mediated educational environments.

The study's core findings extend existing understandings of critical literacy pedagogy in EFL teacher education across three dimensions. First, it demonstrates that critical literacy can be systematically embedded into academic writing instruction, rather than confined to supplementary reading practice. Second, the intervention provides empirical support for an instructional pathway combining structured critical literacy tasks with academic writing activities, simultaneously cultivating writing proficiency and critical literacy. Third, the explanatory sequential mixed-methods design yielded complementary quantitative and qualitative evidence, verifying intervention effectiveness while illuminating the developmental process of learners' critical literacy. This integrated pedagogical approach offers a sustainable pathway for nurturing future EFL teachers equipped with reflective capacity, critical engagement, and academic competence in today's complex digital environment.

CONCLUSION

This research's empirical study of instructional interventions for pre-service English teachers shows that integrating structured critical literacy tasks into academic writing instruction, with four core tasks embedded in a scaffolding framework, can enhance the study participants' writing proficiency, critical awareness, and reflective professional identity. This work expands the existing understanding of critical literacy pedagogy and verifies that academic writing holds dual attributes: it functions both as an instructional outcome and an instructional mechanism that cultivates critical engagement.

The findings of this study can guide the optimization of English teacher education practice. This study explicitly states that teacher educators must embed four types of structured critical literacy activities, including critical questioning, into all stages of academic writing courses, and must never design these activities as standalone reading modules. This approach is intended to cultivate qualified future English teachers who are able to adapt to complex digital environments.

This study has four core limitations: it was implemented at only a single teacher education institution, used convenience sampling, had a small sample size, and had an intervention period of only one semester. Caution is required when extrapolating the study's conclusions to other contexts. Four lines of future research are needed: to assess the long-term sustainability of the intervention, to recruit large, diverse samples across multiple institutions, to test the framework's applicability in different EFL contexts, and to explore the impacts of integrating critical literacy into AI-supported writing scenarios.

DISCLOSURE OF AI USE

The authors acknowledge the use of generative AI tools, including ChatGPT and DeepSeek, for language refinement, grammar checking, and formatting assistance. All AI-assisted outputs were critically reviewed and revised by the authors. The intellectual contributions, research design, data analysis, interpretations, and conclusions remain entirely the authors' own work. The authors take full responsibility for the final content and academic integrity of this manuscript. No AI tools were used in data collection, statistical analysis, or finding generation.

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