

## Critical Digital Literacy In AI-Assisted Academic Writing Among English Literature Students: A Mixed-Methods Study

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### Abstrak

*This study explores the reflective, ethical, and evaluative dimensions of AI-assisted writing in higher education, specifically among English Literature students. While AI tools like ChatGPT and Grammarly are commonly used to improve writing efficiency, there is limited research on their impact on critical engagement and ethical awareness. Employing a mixed-methods pre-experimental design, this study involved eleven undergraduate participants who completed pre-test and post-test assessments, interviews, and document analysis. The AI-literacy intervention focused on developing students' understanding of algorithmic bias, ethical considerations, and reflective writing practices. Quantitative results showed significant improvements in bias awareness, accuracy evaluation, and ethical judgment, with the greatest gains in ethical understanding. Qualitative findings indicated that students became more reflective in their use of AI, recognizing its benefits for linguistic tasks while critically evaluating its limitations in literary interpretation and ethical reasoning. However, barriers such as inadequate faculty training, lack of institutional AI policies, and curricular misalignment hindered the full integration of critical digital literacy. The study highlights the need for pedagogical frameworks that integrate AI literacy through TPACK and recommends that institutions develop clear policies and provide faculty training to support ethical AI use. This research contributes new insights into how AI can be used as a scaffold for critical thinking and academic integrity in writing education.*

**Keywords:** Academic writing, AI ethics, Artificial intelligence, Critical digital literacy, English literature

### INTRODUCTION

The integration of Artificial Intelligence (AI) in higher education has significantly altered academic writing practices, reshaping how students draft, edit, and refine their scholarly texts. AI tools such as ChatGPT and Grammarly offer real-time linguistic support and stylistic optimization, accelerating writing cycles and enhancing surface-level accuracy (Käver et al., 2025; Srithep, 2025). However, the widespread use of AI in writing raises significant pedagogical and ethical issues, particularly regarding authorship, originality,

and the role of machine-generated content in academic work. While AI has proven beneficial in text interpretation, vocabulary enhancement, and plagiarism detection, it also challenges traditional writing paradigms, especially in fields like English Literature and English as a Foreign Language (EFL), where deep interpretation and cultural context are essential.

The increasing reliance on AI tools by university students, 67% use AI for outlining, paraphrasing, or proofreading (Ateriya et al., 2025) signals a shift toward technologically

mediated authorship, where AI systems co-create textual meaning with the writer. Yet, this shift is not without its challenges. Many students use AI primarily for convenience, without reflecting on its potential biases, data sources, or ethical implications (Pegrum et al., 2022). This is especially problematic in English Literature, where AI, while proficient in linguistic accuracy, struggles to capture the symbolic nuances and cultural context vital to literary interpretation (Alqarni, 2025).

This gap between technical proficiency and critical engagement highlights a broader educational concern: the need for critical digital literacy. Although AI platforms are easily accessible and familiar to Gen Z learners, many students lack the understanding of how these tools operate and the ethical considerations they entail (Pegrum et al., 2022; Zakaria et al., 2025). This lack of critical awareness calls for educational frameworks that foster a deeper understanding of AI's societal, ethical, and epistemic dimensions. Despite the growing adoption of AI, few institutions have developed comprehensive policies that address its responsible use, particularly in terms of authorship disclosure, ethical guidelines, and the boundaries of AI assistance (Liu, 2024). This regulatory gap compromises academic integrity and limits students' ability to critically engage with AI-assisted learning environments.

At a conceptual level, AI's role in academic writing challenges traditional ideas of authorship, creativity, and intellectual autonomy. By mediating the writing process, AI blurs the lines between the writer as creator

and the AI as collaborator. This disruption raises important questions: How should educators teach critical engagement with AI? How can AI-assisted work be evaluated without compromising human reasoning and creativity? While some scholars argue that AI can enhance cognitive processes (Luckin & Holmes, 2016), others warn that over-reliance on these tools may diminish higher-order thinking skills (Chan, 2025; Chinta et al., 2025).

In response, recent educational research advocates for integrating critical digital literacy (CDL) into writing instruction, enabling students to assess the credibility of AI-generated content and reflect on its epistemic limitations (Mancarella et al., 2022). This approach views AI not as a mere tool but as a collaborative partner that encourages metacognitive reflection. Theories like constructivism and critical pedagogy provide a foundation for this integration, positioning AI as an extension of cognitive processes and a means of empowering students to challenge algorithmic authority (Vygotsky, 1978; Freire, 2020).

Although research on AI in writing pedagogy has yielded promising findings, much of it remains fragmented, often neglecting the specific needs of English Literature programs where interpretive depth and stylistic authenticity are paramount. Moreover, most studies focus on short-term outcomes rather than long-term shifts in students' epistemic beliefs or academic integrity practices (Akrivou, 2015). This gap in the literature calls for a more nuanced understanding of how AI interacts with the

cognitive and aesthetic demands of literary analysis.

Therefore, this study aims to address this gap by exploring how English Literature students engage with AI tools in academic writing. It focuses specifically on the ethical, reflective, and critical dimensions of AI use, framed within the theoretical perspectives of constructivism, critical pedagogy, and Technological Pedagogical Content Knowledge (TPACK). Through a mixed-methods approach, this research will empirically examine students' evaluative practices with AI and contribute to the growing discourse on responsible AI adoption in language and literature education. Ultimately, this study seeks to inform the development of pedagogical frameworks that balance technological innovation with the cultivation of intellectual autonomy, ensuring that AI amplifies cognition without replacing it.

## METHOD

This study employed a one-group pre-test and post-test design, a common pre-experimental approach used to assess the impact of AI-literacy interventions on students' critical and ethical engagement with AI in academic writing. This design was chosen for its ability to measure changes in participants' understanding and use of AI tools following a structured intervention, while also providing baseline data for comparison (Alangari, 2025; Harahap et al., 2022). The one-group pre-test and post-test design is particularly suitable for exploratory studies in

educational settings where a randomized control group is not feasible.

The study involved 11 fourth-semester students from the English Literature program at Universitas Lancang Kuning, Indonesia. Purposive sampling was used to select participants, ensuring that all were enrolled in an Academic Writing course where AI-assisted writing was relevant. The small sample size allowed for in-depth qualitative analysis and close monitoring of individual progress, aligning with the exploratory nature of mixed-methods research (Kong et al., 2024). All participants provided informed consent, and confidentiality was maintained throughout the study.

Data were collected using three instruments: a questionnaire, semi-structured interviews, and document analysis. Questionnaire: The questionnaire consisted of 20 items, including both closed and open-ended questions, designed to assess students' AI use frequency, perceptions of AI reliability, bias, and ethical responsibility. The questionnaire was adapted from Wang & Wu (2025) and included a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree" for measuring AI literacy and ethical awareness. Semi-structured interviews: Interviews were conducted with each participant to gain deeper insights into their experiences with AI tools, their reflective reasoning when using ChatGPT and Grammarly, and their understanding of ethical AI use. Each interview lasted approximately 20-30 minutes. Document Analysis: This involved analyzing students' written outputs (drafts

and revisions) before and after the intervention, providing evidence of writing quality, revision depth, and citation behavior.s

The study followed a three-phase procedure: preparation, implementation, and evaluation. Preparation: During this phase, an AI literacy module was developed, integrating principles of critical digital literacy and constructivist pedagogy. The module covered AI's functional aspects, ethical use, and bias detection, with a focus on responsible engagement and reflective practices. The reliability of the questionnaire was tested with a Cronbach's alpha coefficient of 0.83, ensuring good internal consistency. Implementation: The intervention consisted of three sessions over two weeks. The first session included a pre-test to assess baseline knowledge on AI literacy, covering accuracy, bias recognition, and ethical awareness. The second session involved direct instruction on using ChatGPT and Grammarly within writing tasks. Students were encouraged to reflect on their AI usage and identify boundaries between tool assistance and authorship. The third session featured a post-test and a reflective writing task, assessing the application of AI literacy in practice.

The quantitative data were analyzed using SPSS software. Descriptive statistics provided frequency distributions and mean scores, while paired-sample t-tests assessed pre-post differences in students' awareness and ethical reasoning.

For qualitative analysis, thematic analysis was used to code interview responses and document analysis. The triangulation of quantitative and qualitative data followed a

convergent parallel design, where both data strands were analyzed independently and then integrated to validate findings (Kong et al., 2024; Wang & Wu, 2025).

To ensure the validity of the study, triangulation across the three data sources was employed. Member checking was conducted by sharing summarized findings with participants to verify accuracy. Reliability of the instruments was confirmed through pilot testing and expert review. The study also examined process data, such as citation patterns and AI-disclosure behaviors, to strengthen ecological validity.

In summary, this mixed-methods design offers a comprehensive examination of AI integration in academic writing. It combines pre-experimental quantitative measures with qualitative reflections, providing a holistic view of how AI literacy impacts students' ethical engagement and writing practices.

## RESULTS AND DISCUSSION

### Frequency and Purposes of AI Use

#### 1. Quantitative Findings

The integration of AI tools like ChatGPT and Grammarly was found to be a significant aspect of students' academic writing behavior. About 90% of students in this study reported using AI for various writing tasks. The most common purposes were generating ideas, revising drafts, and proofreading final texts. This frequency of use reflects trends seen in previous studies, where AI tools are primarily used to enhance drafting and editing processes (Chen et al., 2025).

**Table 1.** Frequency of AI Use by Students

Usage Frequency	Number of Students	Percentage
Daily	3	27.3%
3-5 times/week	7	63.6%
1-2 times/week	1	9.1%

These findings indicate that the majority of students (63.6%) used AI tools 3–5 times per week, with only a small proportion using them on a daily basis or less frequently. This aligns with patterns in writing-intensive courses, where AI tools are used frequently for iterative feedback. The data indicates that AI tools are primarily used for mechanical tasks like grammar correction and drafting. Students tend to use AI to streamline the writing process rather than engage deeply with content or interpretive analysis.

## 2. Qualitative Findings

Students' reflections on AI use reinforced these quantitative results. One student noted:

"AI helps me generate initial ideas, but I must revise the text to match the literary tone."

This statement highlights a growing awareness among students that AI accelerates surface-level composition but may not align with deeper literary conventions and interpretive depth. Other students shared similar sentiments about the limitations of AI in reflective or interpretive tasks, such as literary analysis. As another participant stated:

"I use AI for structure, but I need to add the deeper meaning myself."

This reflects a clear understanding that AI cannot substitute for the intellectual effort required in analyzing and constructing literary arguments.

## Pre-Test and Post-Test Comparison

### 1. Quantitative Findings

A significant improvement was observed in students' evaluative and ethical awareness after the AI-literacy intervention. The mean pre-test score was 2.6, while the post-test score increased to 3.5, with a significance level of  $p < 0.05$ . The improvement was most notable in ethical use, where the mean score increased from 2.4 to 3.7.

**Table 2.** Comparison of Pre-Test and Post-Test Scores

Indicator	Pre-Test (1–5)	Post-Test (1–5)	Improvement
Accuracy Evaluation	2.8	3.5	+0.7
Bias Awareness	2.6	3.3	+0.7
Ethical Use	2.4	3.7	+1.3
Average Score	2.6	3.5	+0.9

The significant improvement in the ethical use score supports previous findings that AI literacy programs incorporating ethical discussions can effectively enhance students' awareness of responsible AI use (Saddhono et al., 2024; Daher, 2025). The substantial gain in ethical understanding demonstrates the efficacy of the AI-literacy intervention.

### 2. Qualitative Findings

Post-test interviews highlighted a deeper reflection on AI's limitations in literary interpretation. One participant commented:

"I realize now that AI can misinterpret cultural symbols in poems."

Another student remarked:

"AI gives structure, but I must think beyond it."

These reflections show that the intervention prompted students to critically

evaluate AI's role in academic writing and understand its limitations in interpreting literary content.

### Barriers to Critical Digital Literacy Integration

#### 1. Quantitative Findings

Despite the positive impact of the AI-literacy training, students identified several barriers to the full integration of critical digital literacy into academic writing curricula. The average score for perceived institutional and pedagogical barriers was 3.04, indicating moderate concern.

**Table 3.** Barriers to Integrating Critical Digital Literacy

Barrier Factor	Mean Score (1–5)	Interpretation
Lack of Lecturer Training	3.0	Moderately relevant
Curriculum Misalignment	3.0	Moderately relevant
Absence of Ethics Guidelines	3.2	Significant
Overreliance on AI Tools	3.5	Significant
Limited Technological Resources	2.5	Less relevant
<b>Average</b>	<b>3.04</b>	<b>Moderate barrier</b>

The results suggest that institutional factors, such as inadequate lecturer training and a lack of ethics guidelines, are significant barriers to the widespread adoption of AI literacy. These findings are consistent with global studies that highlight institutional readiness and curricular alignment as key factors in successful AI integration (ul Haq et al., 2025; Jones & Hafner, 2021).

#### 2. Qualitative Findings

Students' qualitative responses shed light on specific barriers. One student noted:

"Our lecturers still use traditional methods; AI is not discussed except when students bring it up."

This comment reflects the gap in faculty awareness and training, confirming the need for professional development in AI-integrated pedagogy. Another student shared:

"We still have rigid syllabi that don't allow for reflection on AI use."

This reflects curricular misalignment, where the focus remains on grammar and structure rather than ethical and reflective engagement with AI tools. Moreover, the overreliance on AI tools was evident in some students' responses, with one stating:

"I trust AI feedback too much sometimes, especially for grammar corrections."

After the intervention, however, students showed increased caution and began to revise AI-generated text to better reflect their personal voice and disciplinary context.

### AI as Scaffolding

The findings of this study reinforce the role of AI tools, such as ChatGPT and Grammarly, as scaffolding mechanisms that assist students in achieving writing efficiency but do not inherently foster higher-order thinking or reflective analysis. This supports Vygotsky's (1978) Zone of Proximal Development (ZPD) and Luckin and Holmes' (2016) conceptualization of scaffolding, which highlight the necessity of mediated learning interactions for cognitive growth. In this context, AI tools served as temporary aids that helped facilitate drafting, revision, and editing processes. However, the intellectual agency required for tasks such as

argumentation, interpretation, and evaluation remained largely within students' internal regulatory control. This finding aligns with Akrivou's (2015) concept of ephemeral scaffolding, where AI provides a temporary boost but requires guided reflection and gradual internalization for sustained metacognitive development.

### 1. Comparison with Prior Research

This result is consistent with previous studies (Srithep, 2025; Käver et al., 2025) that observed students using AI tools primarily for procedural tasks. While AI supports the mechanical aspects of writing, it does not automatically foster conceptual understanding unless students are prompted to engage in critical inquiry and dialogic reflection. Therefore, AI must be positioned not as a substitute for cognitive effort but as a tool that aids the development of intellectual autonomy, which is central to constructivist learning theory (Vygotsky, 1978).

#### **Ethical Reasoning Gains**

The improvement observed in students' ethical awareness and evaluative thinking following the AI-literacy intervention demonstrates the potential of targeted pedagogy to bridge the gap between functional digital literacy and critical digital literacy. The results align with Pegrum et al. (2018) and Mancarella et al. (2022), who argued that ethical reflection and bias evaluation can significantly enhance students' ability to critically engage with AI-generated content. The intervention successfully increased students' awareness of algorithmic bias and their ability to question the authority of machine-generated outputs.

### 2. Implications for Pedagogy

This outcome suggests that AI-literacy training should be integrated within a reflective pedagogical framework that emphasizes ethical reasoning and metacognitive reflection. Educators must design assignments and discussions that prompt students to interrogate AI outputs, questioning their reliability, bias, and socio-political implications. By adopting Freirean principles of conscientization, this study demonstrates that AI tools can be leveraged to cultivate epistemic vigilance and ethical accountability (Freire, 2020). However, the results also highlight the need for structured reflection to ensure that AI usage remains critically engaged rather than purely instrumental.

#### **Institutional Challenges**

While the intervention improved students' ethical reasoning and writing performance, institutional barriers remain a significant challenge. Students reported moderate concern regarding the lack of formal AI-use policies, insufficient lecturer training, and curricular misalignment (Table 5.3). These institutional factors have been identified as major obstacles in the effective integration of AI literacy within higher education (ul Haq et al., 2025; Jones & Hafner, 2021). Without clear policies and adequate professional development, both students and faculty remain uncertain about the ethical boundaries of AI use in academic contexts.

### 1. Comparison with Prior Research

The findings echo broader trends observed by Chan (2025) and Liu (2024),

who highlighted the absence of standardized AI ethics frameworks in many academic institutions. The lack of clear guidelines for disclosure, attribution, and responsible AI use not only creates an ethical gray area but also prevents students from developing the self-regulation required for responsible AI engagement. This underscores the need for higher education institutions to develop comprehensive policies that promote ethical transparency and accountability in AI-assisted writing.

## 2. Implications for Institutions

To address these barriers, institutions must invest in developing clear AI ethics policies, particularly regarding AI disclosure and authorship attribution. Professional development for lecturers should not only focus on technical proficiency but also on fostering ethical awareness and epistemic reflection. This would align with the TPACK model (Harris & Hofer, 2011), which emphasizes the integration of technology, pedagogy, and content knowledge in a way that supports critical and ethical engagement with AI tools in academic writing.

### AI and the Future of Literary Education

The findings also raise important questions about the role of AI in English Literature education, where interpretive depth and cultural nuance are paramount. AI's limitations in understanding metaphorical meaning and cultural context suggest that AI tools must be used with caution in fields that require epistemological sensitivity. As one student noted, AI "misinterprets cultural symbols in poems," indicating that algorithmic mediation cannot replace human

interpretation in literary analysis. This highlights the epistemic limits of AI and the necessity for critical-dialogic practices that allow students to contextualize AI outputs within broader disciplinary and cultural frameworks.

### Implications for Pedagogy

For English Literature educators, this study suggests the need for a dialogic approach to AI integration, where students are encouraged to engage critically with AI-generated outputs and contextualize them within literary traditions and cultural interpretations. AI can serve as a cognitive scaffold for drafting and editing, but the interpretive and analytical dimensions of writing must remain firmly in the hands of the students. This approach supports a constructivist pedagogy that emphasizes learning as a social process of knowledge co-construction, where AI is a tool for collaborative meaning-making rather than a substitute for human insight.

### Broader Implications for AI in Higher Education

The results from this study contribute to the broader discourse on AI ethics and its integration into higher education. The dual nature of AI as both a tool for efficiency and a site of ethical negotiation presents a challenge to academic integrity. While AI tools democratize access to linguistic support and reduce cognitive load, they also risk homogenizing intellectual expression and undermining the reflective processes essential to scholarly identity formation. To ensure that AI serves as a tool for intellectual empowerment, institutions must balance

technological innovation with ethical accountability, ensuring that students are equipped to navigate the ethical implications of AI tools in academic writing.

## CONCLUSION

This study demonstrates that AI tools, such as ChatGPT and Grammarly, have become integral to academic writing among English Literature students, yet their use remains primarily functional, focusing on drafting, revising, and proofreading rather than fostering critical or interpretive reasoning. The targeted AI-literacy intervention significantly improved students' evaluative skills, bias awareness, and ethical judgment, with quantitative results showing measurable gains in recognizing algorithmic limitations and maintaining academic integrity. Qualitative data further illustrated students' increasing critical engagement and self-regulation in their use of AI.

Despite these positive outcomes, significant pedagogical and institutional barriers persist. The lack of formal AI-use policies, limited lecturer training, and misalignment of curricula with AI literacy needs remain challenges to fully integrating critical digital literacy into higher education. To address these gaps, universities should implement comprehensive AI-literacy frameworks, focusing on curricular reforms, professional development for lecturers, and institutional AI ethics policies. TPACK (Technological Pedagogical Content Knowledge) should guide faculty training to integrate AI into writing courses effectively. Future research should focus on longitudinal

studies to assess the long-term effects of AI-literacy training and explore how institutional policy changes can sustain ethical AI use across disciplines.

## REFERENCES

- Akrivou, K. (2015). Towards (more) integrity in academia, encouraging long-term knowledge creation and academic freedom. *Ethics in science and environmental politics*, 15(1), 49-54.
- Alqarni, A. (2025). Artificial Intelligence-Critical Pedagogic: Design and Psychologic Validation of a Teacher-Specific Scale for Enhancing Critical Thinking in Classrooms. *Journal of Computer Assisted Learning*, 41(3), e70039.
- Alangari, T. S. (2025). The Effect of AI-Assisted Learning on EFL Writing Proficiency: Quasi-Experimental and Cluster Analysis. *Educational Process: International Journal*, 17, e2025345.
- Ateriya, N., Sonwani, N. S., Thakur, K. S., Kumar, A., & Verma, S. K. (2025). Exploring the ethical landscape of AI in academic writing. *Egyptian Journal of Forensic Sciences*, 15(1), 36.
- Chan, C. K. Y. (2025). Students' perceptions of 'AI-giarism': Investigating changes in understandings of academic misconduct. *Education and Information Technologies*, 30(6), 8087-8108.
- Chen, S. Y., Chen, W. C., & Lai, C. F. (2025). Generative AI as a reflective scaffold in a UAV-based STEM project: A mixed-methods study on students' higher-order thinking and cognitive transformation. *Education and Information Technologies*, 1-28.
- Chinta, S. V., Wang, Z., Yin, Z., Hoang, N., Gonzalez, M., Quy, T. L., & Zhang, W. (2024). FairAIED: Navigating fairness, bias, and ethics in educational AI applications. *arXiv preprint arXiv:2407.18745*.
- Daher, R. (2025). Integrating AI literacy into teacher education: a critical perspective

- paper. *Discover Artificial Intelligence*, 5(1), 217.
- Freire, P. (2020). *Pedagogy of the oppressed* (50th Anniversary ed.). Bloomsbury Academic.
- Harahap, D. A., Faizin, M., Erydani, V. A. C., Lestari, S., Dewi, D. S., & Ardhi, M. A. (2025). Project-Based Learning with AI-Integration to Foster Critical Thinking Skills and Self-Efficacy of Pre-Service Teachers. *Jurnal Eduscience*, 12(5), 1453-1463.
- Harris, J. B., & Hofer, M. J. (2011). *Technological pedagogical content knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based technology-related instructional planning*. *Journal of Research on Technology in Education*, 43(3), 211–229. <https://doi.org/10.1080/15391523.2011.10782570>
- Jones, R. H., & Hafner, C. A. (2021). *Understanding digital literacies: A practical introduction* (2nd ed.). Routledge.
- Käver, A., Leoste, J., Marmor, K., & Tolmos, P. (2025, October). Integration of AI Code-Writing Assistants in IT Higher Education. In *Proceedings of the Future Technologies Conference* (pp. 61-79). Cham: Springer Nature Switzerland.
- Kong, S. C., Cheung, M. Y. W., & Tsang, O. (2024). Developing an artificial intelligence literacy framework: Evaluation of a literacy course for senior secondary students using a project-based learning approach. *Computers and Education: Artificial Intelligence*, 6, 100214.
- Liu, G. L., Darvin, R., & Ma, C. (2024). Exploring AI-mediated informal digital learning of English (AI-IDLE): A mixed-method investigation of Chinese EFL learners' AI adoption and experiences. *Computer Assisted Language Learning*, 1-29.
- Luckin, R., & Holmes, W. (2016). Intelligence unleashed: An argument for AI in education.
- Mancarella, M., Antzaka, A., Bertoni, S., Facchetti, A., & Lallier, M. (2022). Enhanced disengagement of auditory attention and phonological skills in action video gamers. *Computers in Human Behavior*, 135, 107344.
- Pegrum, M., Hockly, N., & Dudeney, G. (2022). *Digital literacies*. Routledge.
- Saddhono, K., Suhita, R., Rakhmawati, A., Rohmadi, M., & Sukmono, I. K. (2024, November). AI and Literacy: Developing Critical Thinking and Analytical Skills in the Digital Era. In *2024 International Conference on IoT, Communication and Automation Technology (ICICAT)* (pp. 360-365). IEEE.
- Srithep, S. (2025). The Integration of ChatGPT in EFL Writing Instruction: Pedagogical Merits and Potential Concerns. 40, 82-98.
- ul Haq, F., Asim, M., Suki, N. M., Zakaria, N., & Hussain, S. (2025). AI Adoption and Educational Effectiveness in Emerging Higher Education Institutions: The Moderating Role of Digital Literacy and Institutional Support. *Journal of Information & Knowledge Management*, 2550090.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wang, A., & Wu, X. (2025). Building a triadic model of technology, motivation, and engagement: a mixed-methods study of AI teaching assistants in design theory education. *Frontiers in Psychology*, 16, 1624182.
- Zakaria, N. Y. K., Hashim, H., & Jamaludin, K. J. (2025). Exploring the impact of AI on critical thinking development in ESL: A systematic literature review. *Arab World English Journal (AWEJ) Special Issue on Artificial Intelligence*, 330-347.