



Artificial Intelligence for Academic Writing Instruction: Innovations in Feedback and Language Development

¹Dr. K.Savitha*, ²Mr. P. Kavinkumar

¹Assistant Professor (Sl.Gr)

¹E-Mail: savitha.krishnamurthy@srec.ac.in

²Assistant Professor,

Department of English, Sri Ramakrishna College of Arts & Science, Coimbatore-06.

²E-Mail: kavinkumarenglit@gmail.com

Abstract

Artificial intelligence has introduced new possibilities for academic writing instruction through immediate feedback, personalized language support, interactive revision, and assistance across different stages of the writing process. Generative artificial intelligence systems can identify linguistic and organizational weaknesses, explain academic conventions, offer revision questions, and provide examples suited to learners' proficiency levels. Nevertheless, the educational value of such systems depends on how they are incorporated into teaching. Uncritical reliance on AI may reduce independent thinking, weaken authorial voice, generate inaccurate information, and create ethical concerns involving privacy, academic integrity, authorship, and equitable access. This conceptual paper examines the role of artificial intelligence in academic writing instruction, with particular attention to innovations in formative feedback and language development. It employs an integrative review methodology to analyse recent scholarship on generative AI, automated writing evaluation, second-language writing, feedback literacy, and AI-supported teaching. The discussion identifies major applications of AI in immediate feedback, individualized language instruction, writing-process support, feedback literacy, and teacher workload management. It also considers limitations involving inconsistent feedback, disciplinary inaccuracies, linguistic homogenization, cognitive dependence, and unequal technological access. The paper proposes a human-centred instructional framework in which AI-generated feedback is critically evaluated and supplemented by student judgment, teacher guidance, peer interaction, transparent acknowledgement, and reflective revision. It concludes that AI should not replace writing teachers or student authorship but should function as a supervised pedagogical resource that increases opportunities for practice, reflection, feedback, and academic language development.

Keywords: Artificial Intelligence, Academic Writing, Generative AI, Automated Feedback, Language Development, Feedback Literacy, Second-Language Writing.

1. Introduction

Academic writing requires students to formulate arguments, evaluate sources, integrate evidence, follow disciplinary conventions, and develop an identifiable scholarly voice. Students entering higher education often experience difficulties in adapting to these expectations, particularly when they have limited experience with formal academic discourse [1].

The introduction of generative artificial intelligence has expanded the functions of educational writing technology. In addition to correcting grammar and spelling, contemporary AI tools can assist with idea generation, organization, revision, vocabulary development, and individualized feedback [2], [3].

Recent research published in the *Stanzaleaf International Journal of Multidisciplinary Studies* indicates that AI writing tools can support instant feedback, vocabulary enhancement, grammatical correction, and writing efficiency. However, excessive reliance may affect originality, independent thinking, and academic integrity [4].

Generative AI is increasingly influencing academic English writing by changing the relationship between human authorship and machine-assisted composition. Its responsible use requires learners to evaluate AI output critically while retaining intellectual ownership of their work [5].

2. Objectives of the Study

The study has the following objectives:

1. To examine the role of artificial intelligence in academic writing instruction.
2. To identify innovations in AI-assisted feedback and revision.
3. To analyse the contribution of AI tools to academic language development.
4. To investigate the pedagogical and ethical concerns associated with AI-supported writing.
5. To propose a human-centred model for integrating AI into academic writing instruction.

3. Research Questions

The paper addresses the following research questions:

1. How can artificial intelligence support feedback in academic writing instruction?
2. In what ways can AI contribute to academic language development?
3. What pedagogical and ethical challenges arise from AI-assisted academic writing?
4. How can teachers use AI without weakening student authorship, creativity, and critical thinking?

4. Review of Literature

4.1. Artificial Intelligence in Writing Instruction

Artificial intelligence can support different stages of academic writing, including brainstorming, outlining, drafting, editing, and revision. AI-based writing tools can also provide language correction, organizational suggestions, and repeated explanations based on learner needs [2], [4].

Studies of AI-assisted language education emphasize that these technologies should function as pedagogical support systems rather than replacements for teachers. Balanced implementation requires teacher training, learner awareness, clear institutional policies, and continued human supervision [6], [7].

AI-driven personalized learning can adapt instructional content, feedback, pace, and practice activities according to learners' abilities and progress. Such systems may contribute to vocabulary development, grammatical accuracy, reading comprehension, writing improvement, and learner autonomy [7].

4.2. AI-Generated Formative Feedback

Formative feedback is most useful when it is timely, understandable, connected to assessment criteria, and capable of guiding revision. Generative AI can provide immediate feedback and allow learners to request clarification or additional examples [8].

AI-generated feedback may improve access to revision support, particularly when teachers cannot provide immediate individual comments to every student. However, learners' perceptions of AI feedback depend on its clarity, usefulness, tone, and relevance to their writing needs [8].

Comparative research shows that trained human evaluators generally produce more accurate, prioritized, supportive, and actionable writing feedback than ChatGPT. AI may still provide useful criteria-based feedback and reduce response time, but it should not replace expert human judgment [9]. AI-generated and peer-generated feedback can both contribute to essay revision. Combining feedback from several sources may encourage students to compare recommendations and become more actively involved in decision-making [10].

4.3. AI and Language Development

Generative AI can assist multilingual learners with vocabulary, grammar, sentence structure, cohesion, organization, and academic tone. It may also offer explanations at different proficiency levels and generate examples that clarify complex linguistic rules [3], [4].

Mahapatra's mixed-methods study found that students who received structured ChatGPT-supported formative feedback achieved significantly higher post-test and delayed post-test writing scores than students in the comparison group [2].

Song and Song similarly report that AI-assisted language learning can improve academic writing performance and learner motivation when AI is incorporated into a planned instructional intervention [11].

AI-assisted academic writing instruction may also support discipline-specific learners. Research involving medical students found that ChatGPT-supported instruction contributed positively to several dimensions of English academic writing [12].

4.4. Teacher-Supported AI Feedback

An effective instructional approach combines AI-generated analysis with teacher judgment. Teachers can use AI to prepare preliminary comments and then modify those comments according to student needs, assignment objectives, and disciplinary conventions [13].

ChatGPT-supported teacher feedback can increase the availability of corrective and rhetorical comments while preserving the teacher's responsibility for accuracy and contextual relevance [13].

Research on AI in English Language Teaching also recommends a human-centred model in which AI supports personalized instruction, feedback, assessment, and learner engagement without replacing the teacher's pedagogical role [6].

4.5. Ethical and Institutional Concerns

Generative AI raises concerns regarding authorship, plagiarism, privacy, intellectual ownership, algorithmic bias, unequal access, and overdependence [5], [6].

UNESCO recommends a human-centred approach to generative AI that protects personal data, promotes equitable access, strengthens institutional capacity, and subjects educational AI systems to ethical and pedagogical evaluation [14].

Students should therefore disclose substantial AI assistance, verify AI-generated information, preserve records of important prompts, and remain responsible for all claims and references included in their work [5], [14].

4.6 Feedback Literacy

Receiving feedback does not automatically lead to improvement. Students must understand the feedback, judge its quality, decide how to respond, and apply it during revision. These abilities are commonly described as feedback literacy.

AI creates opportunities for feedback literacy because its suggestions can be examined and challenged. Students can compare AI comments with teacher feedback, peer observations, assessment rubrics, and their own intentions. They can classify comments as accurate, partly useful, unnecessary, unclear, or inappropriate.

This evaluative process is pedagogically more valuable than accepting an AI-generated revision. When students explain why they accepted or rejected a suggestion, they demonstrate control over the writing process.

5. Research Methodology

This paper adopts an integrative literature review and conceptual analysis. The methodology was selected because the study seeks to synthesize recent research rather than report a new experiment involving human participants.

Peer-reviewed studies on generative AI, automated writing evaluation, formative feedback, second-language writing, feedback literacy, teacher-supported AI use, and academic integrity were reviewed. Official international guidance relating to generative AI in education was also considered.

The literature was examined according to the following thematic categories:

1. AI-generated formative feedback;
2. Academic language development;
3. Support across the writing process;
4. Student agency and feedback literacy;
5. Teacher mediation;
6. Academic integrity and ethical responsibility; and
7. Risks associated with dependence and inaccurate output.

The selected studies were compared to identify recurring findings, contradictions, limitations, and implications for writing pedagogy. Since this is a conceptual review, it does not present new participant data or claim statistically generalizable findings.

6. Discussion

6.1 Immediate and Dialogic Feedback

One of AI's most important contributions is the movement from delayed, one-directional comments towards immediate dialogue. A traditional written comment might tell a student that the argument is unclear. A generative AI system can be asked to identify the unclear passage, explain the problem, ask the writer questions, and compare possible revisions.

Students may request focused feedback on:

- thesis clarity;
- relevance of supporting evidence;
- paragraph unity;
- logical organization;
- transitions;
- grammar patterns;

- vocabulary use;
- academic tone;
- integration of sources; and
- consistency between claims and conclusions.

This form of interaction can make feedback accessible at the moment it is needed. However, students must understand that AI responses are suggestions rather than final decisions.

6.2 Personalized Language Development

AI systems can adapt explanations to different proficiency levels. A student who does not understand a grammatical explanation can ask for a simpler version, additional examples, or a comparison between correct and incorrect sentence patterns.

AI can support language development in several areas.

Grammar: It can identify recurring problems involving articles, tense, agreement, punctuation, fragments, and sentence boundaries.

Vocabulary: It can explain differences between general, formal, and discipline-specific words.

Cohesion: It can examine transitions, reference words, repetition, paragraph sequence, and connections between sentences.

Academic tone: It can identify unsupported generalizations, conversational expressions, excessive certainty, and informal vocabulary.

Sentence construction: It can demonstrate how ideas may be combined, clarified, emphasized, or made more concise.

The pedagogical priority must be explanation rather than replacement. When AI rewrites an entire paragraph, students may receive a polished product without understanding the underlying language choices. Teachers should require learners to describe what changed and why.

6.3 Support throughout the Writing Process

Generative AI can contribute at multiple stages of academic writing.

During prewriting, AI can assist students in exploring a topic, identifying possible research questions, and considering alternative perspectives.

During planning, it can examine whether an outline follows a logical sequence and whether each section contributes to the research objective.

During drafting, it can identify unsupported claims, unclear definitions, weak topic sentences, and missing connections.

During revision, it can compare drafts, ask questions, and help students identify global issues involving argument and organization.

During editing, it can locate grammatical, lexical, and mechanical problems.

During reflection, it can help students describe their revision decisions and identify recurring writing difficulties.

The most appropriate use of AI is therefore not unrestricted text generation but targeted assistance within a visible writing process.

AI can transform delayed feedback into an interactive revision process. Students can ask an AI system to explain why a thesis is unclear, identify unsupported claims, evaluate paragraph unity, and compare alternative revisions [2], [8].

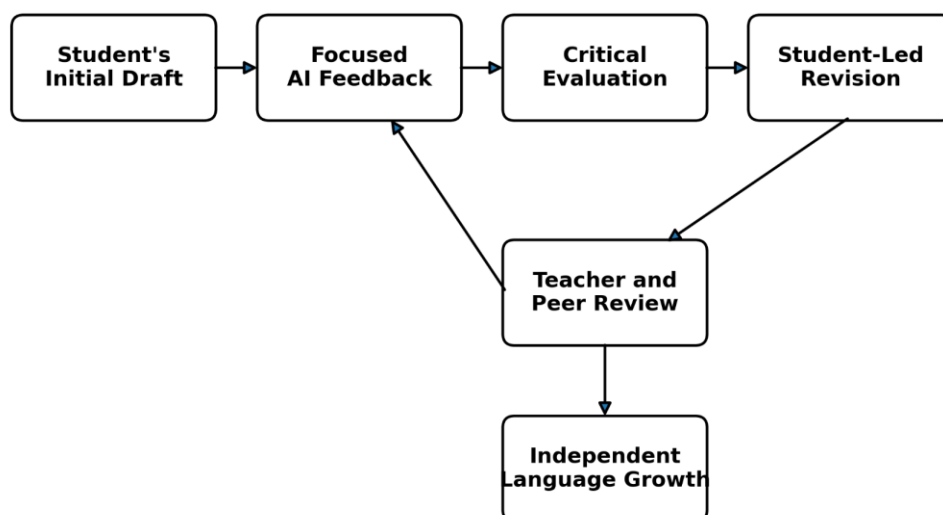
The educational benefit of AI depends on the nature of the task. When AI explains a recurring grammatical problem, it may support language learning. When it rewrites an entire assignment, it may improve the immediate text without developing the student's independent competence [4], [5].

AI tools can support personalized language development by adapting explanations and exercises to individual learner needs. They may assist with vocabulary, grammar, writing fluency, academic tone, and differentiated classroom instruction [7].

Nevertheless, AI feedback may be inconsistent or inappropriate for a particular discipline. Fluent output should not automatically be treated as accurate, and students must verify factual claims, source details, and disciplinary recommendations [9], [14].

The strongest instructional model is therefore an AI-plus-teacher approach. AI can increase the speed and availability of feedback, while teachers provide contextual interpretation, disciplinary expertise, ethical guidance, and emotional support [6], [9], [13].

Human-Centred AI-Assisted Academic Writing Cycle



AI supports feedback; students and teachers retain authorship, judgment, and responsibility.

Figure 1. Human-Centred AI-Assisted Academic Writing Cycle

The figure presents a cyclical model beginning with the student's independent draft. The draft receives focused AI feedback, which the student critically evaluates before completing a student-led revision. Teacher and peer review then refine the text and guide future independent language development. The revision process may return to focused AI feedback when additional practice is required.

Caption: Figure 1. Human-centred AI-assisted academic writing cycle showing the relationship among independent drafting, focused AI feedback, critical evaluation, student-led revision, human review, and language development. Designed by the author.

6.4 Critical Feedback Literacy

AI can be used to develop critical feedback literacy rather than simple obedience to automated recommendations. Students can evaluate AI comments using categories such as:

- accurate and useful;
- accurate but unnecessary;
- partly relevant;
- unclear;
- factually questionable;
- inconsistent with the assignment; or
- inconsistent with the writer's intended meaning.

This activity turns AI output into an object of analysis. Students learn that feedback must be interpreted rather than automatically followed.

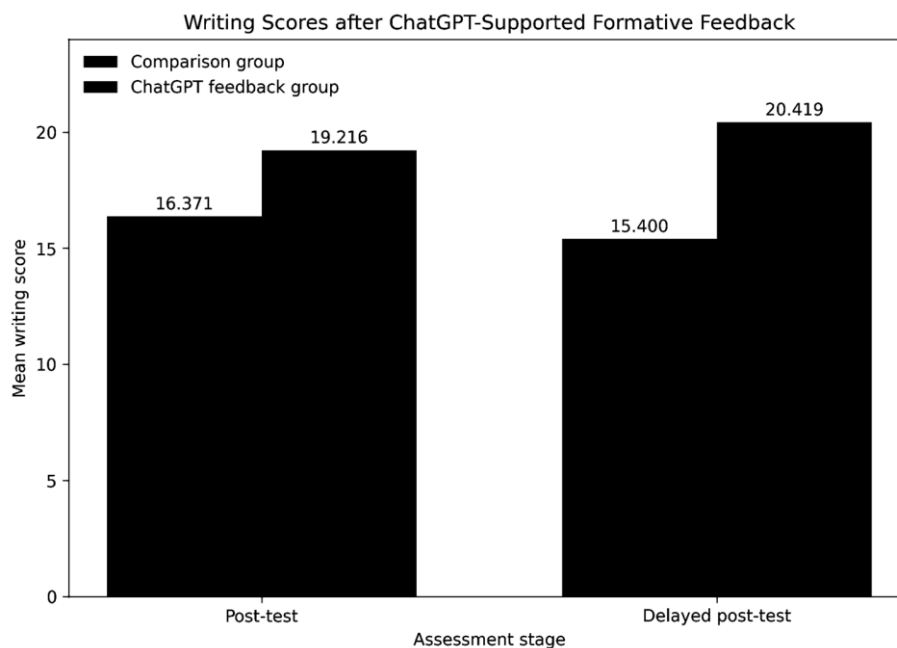
6.5 Teacher Workload and Instructional Efficiency

AI can reduce routine teacher workload by identifying recurring grammar problems, organizing comments under rubric categories, producing revision checklists, and generating preliminary feedback. However, teachers should review AI-generated comments before they are used in high-stakes instruction.

Steiss et al. demonstrate that AI feedback may save time, but human evaluators remain better at prioritizing important writing problems and providing accurate directions. Li and Han's research similarly supports a collaborative model in which teachers adapt AI-generated feedback rather than surrendering responsibility to the system.

6.6 Empirical Evidence of Writing Improvement

Mahapatra's intervention provides useful evidence concerning AI-assisted formative feedback. The experimental group received training and used ChatGPT for self- and peer-feedback activities. Both the immediate and delayed post-test results favoured the experimental group.



Source: Mahapatra (2024). Values reproduce reported group means; no new data were generated.

Figure 2. Writing Scores after ChatGPT-Supported Formative Feedback

The graph compares the reported post-test and delayed post-test mean scores of the comparison and experimental groups. The experimental group scored 19.216 in the post-test and 20.419 in the delayed post-test. The comparison group scored 16.371 and 15.400 respectively (Mahapatra).

Caption: Figure 2. Mean writing scores of the comparison group and ChatGPT-supported experimental group in the post-test and delayed post-test. Data reproduced from Mahapatra's published study.

The figure must be interpreted carefully. It does not prove that unrestricted AI use always improves writing. The intervention involved planned instruction, student training, classroom activities, self-assessment, peer assessment, and teacher supervision. The results therefore support pedagogically structured AI use rather than independent AI text generation.

6.7 Linguistic Homogenization and Authorial Voice

Generative AI often favours polished, conventional, and predictable academic language. Frequent reliance may produce writing that is grammatically smooth but stylistically uniform.

This concern is particularly relevant for multilingual writers. Academic instruction should not imply that only one standardized variety of English is intellectually acceptable. Teachers should distinguish among errors that interfere with meaning, disciplinary conventions that support communication, and legitimate stylistic differences.

AI should help students express their ideas more clearly rather than replace their individual voices with generic academic prose.

6.8 Inaccuracies and Disciplinary Limitations

AI can generate convincing but incorrect information, fabricated references, inappropriate interpretations, and unsuitable disciplinary advice. A recommendation that works for a general argumentative essay may be inappropriate for a scientific report, literary analysis, legal memorandum, or qualitative research paper.

Evmenova et al. found that generative AI could follow rubrics and provide feedback across several writing dimensions, but the quality of its responses depended on the model, prompt, and information supplied about the learner. Research evaluating large language models for automatic assessment feedback similarly indicates that reliability varies according to model performance and task design ("Assessing the Proficiency").

Students must therefore verify factual claims, consult original sources, and compare AI advice with disciplinary expectations.

6.9 Cognitive Dependence

AI can reduce productive struggle when students ask it to generate complete essays, arguments, interpretations, or literature reviews. Productive struggle is essential because students develop writing ability through selecting evidence, organizing ideas, solving linguistic problems, and revising unsuccessful drafts.

A distinction must be maintained between assistance and substitution:

Assistance helps students understand and perform the task.

Substitution allows the system to perform the intellectual task instead of the student.

Academic writing instruction should permit assistance while restricting substitution. Students should remain responsible for the argument, interpretation, evidence, organization, and final wording.

6.10 Ethical and Institutional Responsibility

Generative AI raises concerns involving academic integrity, ownership, privacy, transparency, and unequal access. Students may upload unpublished writing, personal information, or research data without understanding how the platform processes that material.

UNESCO recommends a human-centred approach that protects privacy, promotes equitable access, builds institutional capacity, and subjects AI tools to ethical and pedagogical validation (Miao and Holmes). Educational institutions should therefore create policies that explain acceptable and unacceptable AI practices rather than relying on vague prohibitions.

Students should disclose significant AI assistance according to institutional or journal requirements. They should also maintain records of prompts, generated feedback, accepted suggestions, rejected recommendations, and independent revisions.

7. The GUIDE Framework for Responsible AI-Assisted Writing

This paper proposes the GUIDE Framework for responsible integration of artificial intelligence into academic writing instruction.

G – Generate Independently

Students begin with their own ideas, notes, outline, evidence, or initial draft before consulting AI. This preserves intellectual ownership and provides evidence of independent thinking.

U – Use AI for Focused Feedback

Students request feedback on a specific feature, such as thesis clarity, paragraph unity, evidence integration, cohesion, grammar, or academic tone. Prompts requesting complete rewrites should be avoided.

I – Interrogate the Response

Students examine the accuracy, relevance, assumptions, limitations, and disciplinary appropriateness of the AI response. Factual and bibliographical claims must be verified independently.

D – Decide and Document

Students decide which suggestions to accept, reject, or modify. They maintain a revision record explaining significant changes and disclose AI use where required.

E – Evaluate through Human Guidance

Teachers, peers, supervisors, or writing specialists review the revised work. Human judgment remains central to discipline-specific guidance and high-stakes assessment.

The GUIDE Framework treats AI as one component of a wider learning environment. It protects student agency, human evaluation, peer interaction, ethical transparency, and responsibility for academic claims.

8. Pedagogical Recommendations

Academic writing teachers should establish clear boundaries for permitted and prohibited AI use. Policies should distinguish among brainstorming, feedback, translation, language correction, paraphrasing, source discovery, and complete text generation.

Process-based assessment should include outlines, annotated sources, early drafts, revision histories, reflective notes, and oral explanations. These components make learning visible and reduce overemphasis on the polished final product.

Students should receive instruction in prompt design. Effective prompts should identify the genre, audience, assessment criteria, type of feedback required, and limits on rewriting.

AI literacy should be taught together with information literacy. Students must understand that fluent language does not guarantee factual accuracy.

Teachers can also design activities requiring students to:

- critique an AI-generated paragraph;
- locate fabricated references;
- compare AI and human feedback;
- identify unnecessary AI revisions;
- restore authorial voice to an over-standardized passage; and
- explain why a suggested revision was accepted or rejected.

Institutions must ensure equitable access and protect student data. Learners should not be required to upload sensitive, confidential, or unpublished material to external platforms without informed consent and appropriate safeguards.

9. Research Gap and Future Directions

Although recent studies report promising outcomes, significant gaps remain. Much of the existing research concentrates on higher education, English-language learning, and short-term interventions. More evidence is needed from schools, regional universities, multilingual classrooms, under-resourced institutions, and diverse academic disciplines.

Longitudinal studies should determine whether students retain language knowledge when AI support is removed. Researchers must distinguish between immediate improvement in the submitted text and genuine development in independent writing competence.

Future studies should examine:

1. the long-term effects of AI on authorial voice;
2. transfer of learned skills to new writing tasks;
3. discipline-specific feedback reliability;
4. AI support for learners with disabilities;
5. differences across language proficiency levels;
6. students' emotional responses to automated feedback;
7. teacher professional development;
8. privacy-preserving educational AI;
9. transparent AI disclosure practices; and
10. methods for assessing feedback literacy.

Future research should also investigate whether students can explain and independently reproduce the language improvements recommended by AI. Transfer to new tasks is a stronger indicator of learning than the quality of a single AI-assisted assignment.

10. Conclusion

Artificial intelligence can increase opportunities for academic writing practice, language development, individualized feedback, and revision. Its benefits are strongest when students receive structured guidance and remain intellectually responsible for their writing [2], [7].

AI should therefore be treated as a supervised feedback and language-learning resource rather than an autonomous author. Human teachers remain essential for disciplinary judgment, contextual accuracy, ethical guidance, and the development of student voice [5], [6], [9], [13].



The most educationally responsible approach is neither complete prohibition nor unrestricted adoption. Artificial intelligence should be incorporated through supervised, transparent, and reflective practices. Teachers should remain responsible for disciplinary guidance, ethical judgment, emotional support, and final evaluation. Students should retain ownership of their arguments, evidence, interpretations, and revisions.

When employed as a dialogic feedback partner rather than a substitute author, AI can expand access to academic writing support. Its success should not be measured by how effectively it produces polished prose, but by how successfully it helps learners become more critical, confident, ethical, linguistically capable, and independent academic writers.

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