Integrating Artificial Intelligence into Academic Writing and Research Methods Courses: A Teaching Model

Dgebuadze Marine [1*]

Ilia State University, Tbilisi

Kenkebashvili Ketevan [2]

Alte University, Tbilisi

https://doi.org/10.52340/idw.2025.78

Abstract. *The rise of artificial intelligence (AI) technologies, including tools like ChatGPT, has transformed higher education by offering new forms of support for academic work. These tools assist graduate students in generating ideas, improving their writing, and conducting research more efficiently. However, such benefits come with concerns regarding academic honesty, particularly when students present AI-generated work as their own.*

This paper outlines a structured teaching model that incorporates AI into graduate-level Academic Writing and Research Methods courses while encouraging ethical and responsible use. Rather than replacing student effort, the model treats AI as a companion tool that enhances learning. Students are guided to use AI in the initial stages of their work—for brainstorming, outlining, and exploring ideas—while retaining ownership of the final content. Reflective assignments are used to help students examine their process and document their interactions with AI.

A central feature of the model is AI literacy, which equips students with skills to critically evaluate the content generated by AI and validate it using academic sources. The integration of university library resources is essential to maintaining the credibility and depth of student research. By cross-referencing AI outputs with peer-reviewed materials, students strengthen their understanding of the subject and develop research competence. This pedagogical approach aims to promote thoughtful engagement with technology, preserve academic standards, and enhance key academic skills. The model supports instructors in designing learning activities that integrate AI meaningfully while fostering students' intellectual development.

Introduction

In recent years, artificial intelligence has gained a central role in reshaping academic practices. With advancements in machine learning and language generation technologies, AI tools are now capable of assisting students in tasks that range from drafting texts to synthesizing complex information (Huang, 2021; Luckin et al., 2018). This evolution brings forward both opportunities and challenges for educators and learners alike.

AI-powered platforms can streamline academic work, offering instant feedback, helping clarify arguments, and supporting organization of ideas (Mollick, 2023; Holmes, 2020). Yet, concerns arise when students depend excessively on these tools, potentially undermining the development of their own analytical and creative abilities (Bender et al., 2021). The aim of this study is to introduce a pedagogical framework that leverages AI to enhance learning without compromising academic integrity. It focuses on fostering students' reflective thinking, ethical awareness, and independent research skills.

The academic community has increasingly explored the implications of AI in education. Researchers acknowledge the potential of AI to personalize learning experiences, improve writing, and facilitate research (Luckin et al., 2018; Holmes, 2020). Platforms like ChatGPT have proven particularly helpful in idea development and writing support, especially for students

navigating language barriers or writing anxieties (Mollick, 2023; McKnight et al., 2022).

However, this assistance raises concerns. Over-dependence on AI might reduce student engagement with content and weaken their ability to produce original work (Bender et al., 2021). Ethical risks include improper attribution or the submission of entirely AI-generated texts, which compromises academic integrity (Huang, 2021).

To mitigate such risks, scholars advocate for embedding AI literacy into curricula. This includes teaching students how to assess, verify, and use AI-generated content critically (Luckin et al., 2018). Encouraging reflective practices—such as process logs or commentary on AI use—can also reinforce ethical habits.

Methodology

The research employed a mixed-methods design. A total of 100 graduate students were divided into two cohorts: an experimental group that used AI in coursework and a control group relying on standard methods. Pre- and post-course assessments were conducted to evaluate writing skills, research competency, and critical engagement.

Quantitative results were complemented by qualitative data from reflective journals, focus groups, and instructor observations. Students in the AI group engaged with tools like ChatGPT to outline papers, brainstorm, and revise drafts, while also completing reflection tasks that documented their decision-making and learning outcomes.

Results and discussion

Quantitative Insights

To assess the impact of AI use on student performance, we analyzed data from pre- and post-course evaluations focusing on academic writing quality, research capabilities, and argument development. The findings reveal distinct differences between the AI-supported group and their peers in the control group.

Students who had access to AI tools exhibited an average increase of 22% in writing performance. The evaluation criteria included grammar accuracy, sentence construction, logical coherence, and clarity of arguments. AI applications were especially helpful in improving the structural flow of ideas, correcting grammatical issues, and refining awkward phrasing. Students noted that AI offered instant feedback, enabling them to create more polished drafts efficiently.

On measures of research competence, the AI group outperformed the non-AI group by 18%. Their tasks were assessed based on formulating relevant research questions, evaluating sources for academic rigor, and synthesizing multiple texts. AI tools accelerated the literature review process by suggesting relevant sources, summarizing core arguments, and generating draft outlines. This automation allowed students to dedicate more time to deeper analysis and interpretation.

AI's influence was also notable in helping students develop logical and well-organized arguments. By leveraging tools like ChatGPT, students brainstormed ideas, explored multiple perspectives, and incorporated counterarguments. These functions enriched their analytical depth. Moreover, students reported increased confidence in revising and defending their positions, as AI allowed them to efficiently test and refine their ideas.

Qualitative Insights

In addition to numerical outcomes, qualitative feedback collected via focus groups, student journals, and teacher observations provided richer context to how AI was used—and sometimes misused—throughout the course.

A significant early challenge involved students' excessive reliance on AI-generated drafts. Around 10% admitted to submitting these outputs with minimal editing, assuming that the AI's version was sufficient. This behavior was most common during the initial course phase. To correct this, students were required to compare their own versions with AI-generated suggestions and reflect on the modifications they made. This assignment increased awareness of the need for personal input and critical thinking, as students recognized areas where AI could be improved or adapted to better fit their research goals.

Although students valued the convenience of AI tools, many initially struggled to

balance external assistance with their own intellectual work. Some became overly dependent on AI, sidelining their original ideas. To mitigate this, the course incorporated reflective exercises that encouraged students to evaluate how AI influenced their thinking. These activities helped clarify AI's role as a supportive assistant, not a substitute for independent reasoning. By the course's conclusion, most participants expressed greater confidence in managing tasks autonomously.

As students developed a more mature approach to using AI, they began using it selectively—for idea generation or overcoming writing blocks—while ensuring that the final product reflected their own reasoning. This transition led to higher levels of satisfaction with their academic progress and greater appreciation for AI as a learning aid, rather than a content generator.

Key Findings

A substantial 85% of students in the AI-supported cohort reported notable improvements in the clarity and organization of their writing. They emphasized that AI-assisted feedback helped them strengthen their arguments, resulting in more coherent and logically structured academic texts.

In contrast, 60% of students who completed the course without AI tools showed only moderate progress in their writing. These students required more frequent input from instructors to achieve improvements in structure and clarity. Furthermore, their advancement in research competencies was slower, due in part to the absence of AI's real-time feedback and content generation capabilities.

Ethical Awareness:

Around 10% of students in the AI group initially admitted to excessive reliance on AI-generated drafts. However, through reflective assignments requiring them to analyze and revise AI-assisted content, these students developed a deeper understanding of academic integrity. Many noted that the reflection process underscored the importance of personal input and critical revision, reinforcing the ethical boundaries of using AI in academic work.

While AI technologies offer meaningful benefits, their effective implementation depends on well-defined guidance and deliberate reflective practice. Students demonstrated increased productivity and improved academic output when AI tools were used with intention and oversight. However, early signs of overdependence highlighted the necessity for dedicated AI literacy instruction.

To safeguard academic rigor, it is important that AI be positioned as a supplementary tool rather than a primary source. The course achieved this through structured assignments, including:

- **AI-assisted brainstorming**: Students used AI to generate preliminary ideas, which were then critically assessed, expanded, or restructured through their own reasoning.
- **Draft development using AI**: While initial drafts could be partially generated by AI, students were expected to review, analyze, and reconstruct the content in alignment with their own research findings.

This model ensured that AI served to support the intellectual process—enhancing, but never replacing, the student's original academic contribution.

Visual Analysis

This section includes graphical comparisons (see Appendix A) that illustrate the academic performance of students who utilized AI tools versus those who relied solely on traditional approaches. These visuals provide a clear overview of the progress made in various academic competencies and support the quantitative findings discussed earlier.

Academic Writing Performance

Academic writing performance was evaluated using three key metrics: writing quality, critical thinking, and organizational structure. Across all criteria, the AI-assisted group

demonstrated superior results compared to their non-AI counterparts.

The AI group showed a 22% increase in writing quality, reflecting stronger articulation of ideas and improved text clarity. This progress highlights AI's role in helping students refine their language, correct stylistic issues, and enhance overall coherence. In contrast, the non-AI group achieved a maximum performance level of 62% in this area.

Students using AI also exhibited a 12% gain in critical thinking, suggesting that AI helped them delve deeper into content, formulate more nuanced arguments, and organize ideas with greater precision. The control group demonstrated only a 6% improvement—rising from 66% to 72%—indicating a slower development pace in higher-order thinking skills.

In terms of structural organization, the AI group improved by 12%, successfully producing more cohesive and logically structured texts. Meanwhile, the non-AI group reached an average of 70%, showing less advancement in organizing their written work.

Overall, the results clearly indicate that AI tools contributed to measurable improvements in students' writing performance, not only in linguistic refinement but also in cognitive engagement and logical composition. The AI-supported group consistently outperformed the traditional group across all dimensions.

Fig.1: Academic Writing Performance

Comparison of academic writing performance between AI-supported and non-AI student groups.

Research Methods Performance

Student performance in research methodology was evaluated using three core indicators: research ability, analytical thinking, and verification accuracy. The results underscore the substantial advantages of integrating AI tools into the research process.

Students in the AI-assisted group showed a 22% improvement in their research competencies. This progress is largely attributed to the use of AI for rapid data retrieval and effective navigation through large volumes of information. In contrast, the control group—working without AI—achieved a more modest 12% gain, indicating slower progress and greater reliance on manual research methods.

The AI-supported group improved their analytical abilities by 16%, benefiting from AI-generated frameworks for organizing and interpreting data. Meanwhile, the non-AI group demonstrated a 10% improvement, suggesting that while traditional methods foster analytical growth, AI significantly enhances the speed and depth of analysis.

Fact-checking and source validation improved by 10% among students using AI, who leveraged these tools to cross-reference data efficiently. Students in the control group, however, improved by only 6%, revealing a continued challenge in independently verifying information without technological assistance.

In sum, these findings indicate that AI significantly strengthens key research capacities—including sourcing, analysis, and verification—ultimately leading to more efficient and effective academic research practices.
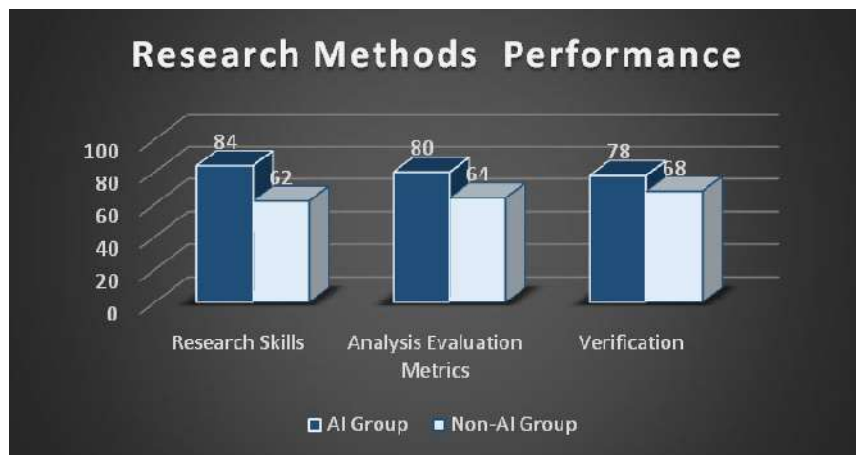
Fig.2: Research Methods Performance

Comparative analysis of research methods performance in AI-supported and non-AI student groups.

Conclusion

The integration of artificial intelligence into Academic Writing and Research Methods courses presents valuable opportunities for enhancing student learning. However, its effective implementation depends on a thoughtful and ethically grounded approach. The teaching model outlined in this study encourages the responsible use of AI, with a strong focus on developing students' AI literacy, fostering critical thinking, and upholding academic integrity.

By positioning AI as a supportive resource rather than a substitute for student effort, the model enables learners to strengthen their academic capabilities while remaining intellectually engaged. For educators, the approach provides a practical framework that combines AI-driven support with reflective assignments. This balance ensures that students are not only benefiting from technological assistance but are also learning to apply it with discernment and responsibility.

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ხელოვნური ინტელექტის ინტეგრირება აკადემიური წერისა და კვლევის მეთოდების კურსებზე: სწავლების მოდელი

დგებუაძე მარინე[1]*

ილიას სახელმწიფო უნივერსიტეტი, თბილისი

კენკებაშვილი ქეთევან[2]

ალტე უნივერსიტეტი, თბილისი

აბსტრაქტი

ხელოვნური ინტელექტის (AI) ინსტრუმენტების, როგორიცაა ChatGPT, სწრაფმა განვითარებამ მნიშვნელოვანი გავლენა მოახდინა მაგისტრატურის საფეხურზე არსებული სალექციო კურსების მიმდინარეობაზე. ეს ინსტრუმენტები ეხმარება სტუდენტებს იდეების გენერირებაში, წერის გაუმჯობესებასა და კვლევის ჩატარებაში. თუმცა, ხელოვნური ინტელექტის გამოყენებამ შესაძლოა კითხვის ქვეშ დააყენოს აკადემიური კეთილსინდისიერების საკითხი, რადგან სტუდენტები არ არიან შეზღუდულები ხელოვნური ინტელექტის მიერ გენერირებული კონტენტის გამოყენებაში.

ნაშრომი წარმოგვიდგენს სწავლების მოდელს, რომელიც მოიცავს ხელოვნური ინტელექტს ინტეგრირების გზებს აკადემიური წერისა და კვლევის მეთოდების კურსებში და ფოკუსირებულია აკადემიური პასუხისმგებლობის და კეთილსინდისიერების პრინციპების დაცვაზე.

მოდელი ხელს უწყობს ხელოვნური ინტელექტის გამოყენებას წერის ადრეულ ეტაპებზე - როგორიცაა იდეების გენერირება ან მონახაზების შექმნა - და ამავდროულად ხაზს უსვამს კრიტიკული აზროვნებისა და ინტელექტუალური საკუთრების მნიშვნელობას. დავალებები მოიცავს რეფლექსიურ კომპონენტებს, რომლებშიც სტუდენტები ადასტურებენ, თუ როგორ გამოიყენებოდა ხელოვნური ინტელექტი, რაც ხელს უწყობს ეთიკური პრაქტიკის შესახებ ცნობიერების ამაღლებას.

მოდელის ძირითადი ელემენტია ხელოვნური ინტელექტის წიგნიერების განვითარება. სტუდენტებმა უნდა ისწავლონ ხელოვნური ინტელექტის მიერ წარმოდგენილი შედეგების კრიტიკულად შეფასება, მათი შეზღუდვების ამოცნობა და მათი სანდო აკადემიურ წყაროებთან გადამოწმება - რაც აღნიშნულ პროცესში უნივერსიტეტის ბიბლიოთეკების ინტეგრაციის მნიშვნელოვნებაზე მიგვითითებს. სტუდენტებს მოეთხოვებათ გამოიყენონ რეცენზირებული რესურსები თავიანთი არგუმენტების გასაძლიერებლად და კვლევის ხარისხის უზრუნველსაყოფად.

ხელოვნური ინტელექტის ინსტრუმენტებისა და ტრადიციული აკადემიური პრაქტიკის შერწყმით, მოდელი ხელს უწყობს დაბალანსებულ, ეთიკურ სწავლებას. ის ხელს უწყობს კვლევის, წერისა და ანალიტიკური უნარების განვითარებას, ამავდროულად ინარჩუნებს აკადემიურ სტანდარტებს. საბოლოო ჯამში, ეს მოდელი აძლევს სტუდენტებს საშუალებას, ეფექტურად და პასუხისმგებლობით გამოიყენონ ხელოვნური ინტელექტი, რაც გააძლიერებს და არ ჩაანაცვლებს მათ სასწავლო კომპეტენციას.

საკვანძო სიტყვები: ხელოვნური ინტელექტი, სამაგისტრო ნაშრომი, კვლევა, აკადემიური წერა, ბიბლიოთეკა.