SOCIAL INNOVATIONS Journal
Vol. 30 (2025): The Future of AI in Education: Innovations and Insights

Will AI Undermine or Support Writing and Critical Thinking?

By: Joshua Wilson, Ph.D.[1]

[1]University of Delaware

Keywords: Artificial Intelligence (AI), Writing, Critical Thinking, Automated Writing Evaluation.

Abstract

Artificial intelligence (AI) is reshaping how individuals write, think, and engage with information. While AI-powered writing tools have the potential to enhance cognitive engagement and improve accessibility to feedback, concerns persist about their impact on independent and critical thinking. This essay explores the relationship between writing and cognitive development, drawing on established writing models to assess how AI influences knowledge transformation. While generative AI can assist with lower-level writing constraints and support idea development, its widespread use may undermine critical thinking if users rely on it to generate and refine content without deeper engagement. This essay examines the risks of AI dependency and discusses the need for AI literacy in education and cross-sector collaboration to ensure that AI strengthens critical thinking rather than undermining it.

Introduction

Artificial intelligence (AI) is transforming how we write, think, and communicate. Generative AI tools enable users to generate, refine, and edit text with unprecedented ease. While some see AI as a valuable assistant that enhances writing and deepens cognitive engagement, others fear it may undermine critical thinking by reducing independent analysis and intellectual effort. This debate has far-reaching implications for education, workforce development, and civic engagement. Writing is fundamental to learning, decision-making, and professional success. If AI weakens cognitive effort in writing, it could have lasting consequences for individuals and society. The widespread adoption of AI thus raises the following essential question: Will AI undermine critical thinking?

The Role of Writing in Critical Thinking

Writing is more than a mode of communication—it is a tool for thought. Through writing, individuals clarify ideas, evaluate evidence, and refine arguments, engaging in an iterative process that strengthens problem solving and decision making. By externalizing thinking, writing makes abstract concepts concrete, allowing deeper engagement with complex ideas. This is why writing proficiency is closely linked to critical thinking, as both require the ability to organize, analyze, and synthesize information in meaningful ways.

Importantly, writing proficiency is not just an academic concern; it has profound implications for social innovation. Strong writing skills are critical for workforce readiness, policy development,

and civic discourse. Professionals across sectors must articulate complex ideas clearly, construct persuasive arguments, and engage in evidence-based decision-making. As AI tools become more integrated into writing processes, their influence—whether supportive or detrimental—will shape the future of education, business, and governance.

The Simple View of Writing, developed by Berninger and Amtmann[i], explains that writing proficiency requires developing automaticity with transcription skills (spelling, grammar, handwriting) and the strategic application of text generation skills (idea development, organization, argumentation). Thus, successful writing requires offsetting lower-level constraints to support higher-order thinking processes. If AI is used to automate transcription skills, cognitive resources may be directed toward more complex reasoning. However, such automation must be carefully managed to ensure that deeper engagement with ideas is not lost in the process.

The Knowledge Transformation Model by Bereiter and Scardamalia[ii] expands on this perspective, distinguishing between knowledge-telling and knowledge-transforming approaches to writing. Knowledge telling involves retrieving and recording existing ideas with minimal revision, while knowledge transformation requires actively reshaping and refining concepts through iterative reflection and critique. This iterative process is essential for developing analytical reasoning and novel insights. As AI becomes increasingly embedded in writing tasks, its role in supporting or undermining the knowledge transformation process will determine its impact on learning and intellectual development.

How AI is Changing Writing and Thinking

AI is transforming writing in several ways, from automating grammar checks to generating full-length essays. Early AI-powered writing tools, such as automated writing evaluation (AWE) systems, were designed to provide feedback on mechanics, coherence, and organization[iii]. These systems, including tools like *MI Write*, significantly improve the efficiency of writing assessment, allowing students to receive instant feedback without relying solely on instructor evaluation. However, feedback provided by AWE systems typically lacked depth, particularly when evaluating the organization, content, and idea development within a text.

Generative AI (GenAI) represents a significant shift in writing technology. Unlike AWE, which provides rubric-based scores and predefined, rule-based feedback, GenAI tools such as ChatGPT, Claude, and Gemini generate novel text by predicting word patterns from extensive training data. These tools can assist writers in various ways, from creating outlines and drafting content to refining clarity and offering extensive feedback on idea development. Unlike AWE, which focuses primarily on revision support, GenAI fundamentally alters the entire writing process by enabling writers to engage with AI at every stage.

From the perspective of the Simple View of Writing, GenAI could help writers overcome lower-level constraints such as grammar and structure, allowing them to focus more on higher-order reasoning. Furthermore, when used thoughtfully, GenAI may encourage the kind of dialogic thinking essential for knowledge transformation. Indeed, AI tools have the potential to enhance critical thinking and self-regulation when used strategically[iv]. Rather than serving as an authorial

replacement, AI tools can function as a cognitive partner that encourages iterative revision and deeper engagement with ideas.

Yet, while AI has the potential to enhance writing and learning, its widespread use also raises concerns about its impact on critical thinking. If AI becomes the default tool for generating and refining text, there is a risk that individuals will engage less deeply in the cognitive processes and critical thinking skills that writing is meant to develop. The following risks highlight the challenges that must be addressed to ensure AI strengthens rather than weakens critical thinking.

Risks

One of the most significant concerns is that AI may discourage independent, critical thinking by making it easier to produce well-structured text without grappling with the underlying ideas. Writing is a cognitively demanding, iterative process that forces individuals to refine their reasoning, challenge assumptions, and clarify their thinking[v]. If users rely on AI to generate ideas, structure arguments, and even craft entire essays, they may bypass the cognitive struggle that drives learning, increasing the risk of becoming passive consumers rather than active creators of knowledge. Societal pressures to prioritize efficiency and productivity can further erode the deliberate reflective thinking required to critically evaluate complex issues. When the opportunity to easily generate AI text is readily available, individuals may be tempted to accept generated content at face value rather than analyzing, questioning, and refining that content. Productivity and efficiency may take precedence over critical thinking and reflection, diminishing not only individual cognitive development but also the broader societal value placed on original thought and rigorous discourse.

This situation also raises ethical concerns, particularly regarding bias in AI models and disparities in access to AI tools. AI systems are trained on large datasets that may contain inherent biases, which are propagated through AI-generated text in ways that may reinforce stereotypes or misinformation. Indeed, the topic of algorithmic bias is garnering significant attention now for just this reason[vi]. This bias also extends to the adoption and promulgation by AI of dominant language forms[vii]. If users trust AI-generated content uncritically, they may unknowingly propagate these biased perspectives and unwittingly contribute to a narrowing of language forms.

Education, Policy, and Social Innovation: A Path Forward

For AI to support rather than undermine writing and critical thinking, educational institutions must prioritize AI literacy, equipping individuals with the skills to engage critically with AI-generated content. Furthermore, clear guidelines for AI integration in education and professional settings are essential to ensuring these technologies enhance, rather than replace, human cognition.

AI literacy must become a core component of education, much like digital literacy and media literacy. Schools and universities should integrate AI-powered writing tools into curricula in ways that encourage critical engagement rather than passive reliance. This includes:

- Teaching students how to evaluate AI-generated content for accuracy, bias, and relevance.

- Encouraging active revision and critical reflection when using AI for brainstorming or drafting.
- Embedding metacognitive strategies to help students assess when and how AI should be used to enhance learning.

By treating AI literacy as a high-impact social innovation, educational institutions can ensure that students develop AI-augmented thinking skills rather than simply outsourcing cognitive work to machines. Educational institutions should, therefore, prioritize AI-related professional development for writing instructors and other educators to ensure they have a strong grasp of the concepts and competencies comprising the domain of AI literacy[viii].

Beyond education, AI's impact on writing and critical thinking extends to broader social and professional contexts, requiring innovation in how organizations, governments, and industries integrate AI into decision-making and communication. Social innovation in this space should focus on equitable access to AI tools, ensuring that underfunded schools, marginalized communities, and small businesses can benefit from AI-enhanced writing support. Investment in AI literacy programs and professional learning opportunities, public-private partnerships, and targeted grant funding can help address disparities in access and skill development. Additionally, fostering cross-sector collaboration between educators, AI developers, and policymakers can lead to (a) the creation of AI-driven solutions that support knowledge generation rather than automate cognitive shortcuts, and (b) ethical guardrails for the use of AI in education, business, and government to prevent bias and misuse, ensuring AI remains a tool for intellectual growth.

As AI becomes more integrated into education and the workforce, ensuring that it supports rather than undermines critical thinking will ultimately depend on how institutions shape its role in learning and communication. By embedding AI literacy into education, providing educators with effective AI-related professional development and learning, establishing ethical guidelines, and fostering cross-sector collaboration, we can promote innovation while safeguarding intellectual engagement.

Conclusion

The impact of AI on writing and critical thinking hinges on how it is integrated into education, professional settings, and broader societal structures. When used strategically, AI has the potential to enhance writing by supporting cognitive engagement, fostering iterative revision, and expanding access to feedback. However, if treated as a shortcut that replaces intellectual effort, AI may weaken the very skills that writing is meant to develop. Educators, policymakers, and industry leaders must work together to develop frameworks that position AI as a resource for deeper learning, not as a substitute for human reasoning and critical thinking.

Acknowledgements

During the preparation of this work the author used ChatGPT 4-o in order to to generate an initial draft of certain paragraphs based on a supplied outline that included citations and references. After using this tool/service, the author(s) reviewed and edited the content as needed and takes full responsibility for the content of the publication.

[i] Berninger, Virginia W., and Dagmar Amtmann. 2003. "Preventing Written Expression Disabilities Through Early and Continuing Assessment and Intervention for Handwriting and/or Spelling Problems: Research Into Practice." In *Handbook of Learning Disabilities*, edited by H. Lee Swanson, Karen R. Harris, and Steve Graham, 345–363. The Guilford Press.

[ii] Bereiter, Carl, and Marlene Scardamalia. 1987. *The Psychology of Written Composition.* Routledge.

[iii] Shermis, Mark D., and Joshua Wilson. 2024. "Introduction to Automated Essay Evaluation." In *The Routledge International Handbook of Automated Essay Evaluation*, edited by Mark D. Shermis and Joshua Wilson, 3–22. Routledge.

[iv] Wilson, Joshua, and Charles A. MacArthur. 2024. "Exploring the Role of Automated Writing Evaluation as a Formative Assessment Tool Supporting Self-Regulated Learning in Writing." In *The Routledge International Handbook of Automated Essay Evaluation*, edited by Mark D. Shermis and Joshua Wilson, 197–220. Routledge.

[v] Hayes, John R. 1996. "A New Framework for Understanding Cognition and Affect in Writing." In *The Science of Writing: Theories, Methods, Individual Differences and Applications*, edited by C. Michael Levy and Sarah Ransdell, 1–27. Erlbaum.

[vi] Baker, Ryan, and Aaron Hawn. 2021. "Algorithmic Bias in Education." *International Journal of Artificial Intelligence in Education, 32*: 1052–1092. https://doi.org/10.1007/s40593-021-00285-9

[vii] Goldshtein, Maria, Amin G. Alhashim, and Rod D. Roscoe. 2024. "Automating Bias in Writing Evaluation: Sources, Barriers, and Recommendations." In *The Routledge International Handbook of Automated Essay Evaluation*, edited by Mark D. Shermis and Joshua Wilson, 421–444. Routledge.

[viii] Southworth, Jane, Kati Migliaccio, Joe Glover, David Reed, Christopher McCarty, Joel Brendemuhl, and Aaron Thomas. 2023. "Developing a Model for *AI Across the Curriculum*: Transforming the Higher Education Landscape Via Innovation in AI Literacy." *Computers and Education: Artificial Intelligence, 4*: 100127. https://doi.org/10.1016/j.caeai.2023.100127