

Cognitive Authenticity, Academic Writing and Human–Artificial Intelligence

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ABSTRACT

This article addresses the use of artificial intelligence in academic writing, including implications for teaching and learning in higher education. The study employed a PRISMA-informed systematic literature review using thematic synthesis to identify, screen and synthesise scholarly literature published between 2020 and 2025. Searches included Scopus, Web of Science, ERIC, PubMed, and Google Scholar using predefined Boolean search strings related to generative artificial intelligence, ChatGPT, academic writing, assessment, and higher education. Studies published before 2020 informed conceptual framing, but the systematic search and primary inclusion window focused on literature from 2020 to 2025.

Following screening and eligibility procedures, 52 peer-reviewed studies were included in the final analysis. Thematic analysis identified recurring patterns, conceptual tensions, and emerging debates. Four dominant themes emerged: productivity and learning enhancement; authorship and academic integrity; epistemic reliability and knowledge validation; and bias and knowledge representation. Findings show that generative AI offers significant opportunities. The literature reveals ongoing disagreement regarding ethical governance, authorship transparency, and appropriate assessment practices in AI-mediated learning environments. The article develops the Human–AI Writing Integrity Model (HAWIM), positioning cognitive authenticity as a central concern in determining whether AI-assisted writing continues to reflect human reasoning, judgement and epistemic responsibility.

Keywords: Generative AI; Academic Writing; Cognitive Authenticity; Academic Integrity; Epistemic Agency; Higher Education.

INTRODUCTION

Generative AI has rapidly become pivotal in higher education, transforming teaching, assessment, research, and writing (OpenAI, 2023). Once an emerging technology, it now influences these areas, fuelled by tools such as ChatGPT, which have sparked both excitement and concern (Dwivedi et al., 2023; Kasneci et al., 2023; Rudolph et al., 2023). However, institutions now find it difficult to evaluate writing, as it is generated and refined with minimal input.

Interdisciplinary research shows that generative AI is a flexible framework for cognition and writing, altering how knowledge is expressed and communicated (Bender et al., 2021; Holmes & Tuomi, 2022; UNESCO, 2023). Unlike earlier digital tools focused on formatting or surface editing, generative AI supports idea development, argument organisation, and language synthesis, significantly boosting academic productivity. It draws on key skills such as reasoning, interpretation, and scholarly expression. This shift challenges the traditional view in higher education that writing reflects individual cognition and learning (Rudolph et al., 2023; Perkins, 2023).

AI systems generate outlines, refine sentences, adjust tone, summarise literature, and translate, particularly benefiting writers. Research shows that AI-assisted writing boosts fluency, reduces anxiety, and encourages participation (Del Giglio and Pereira da Costa, 2023; Cotton et al., 2024). Noy and Zhang (2023) find that generative AI increases productivity in complex writing. Overall, AI improves productivity and access, lowering barriers to academic communication (Noy & Zhang, 2023; Dwivedi et al., 2023).

An instrumental view of academic writing is insufficient. In higher education, writing involves drafting, revising, organising, and substantiating, which deepen understanding and refine thinking. If AI simplifies these steps, educational value may decline. The tension between efficiency and engagement prompts questions about whether productivity outweighs learning, especially in fields emphasizing argument, synthesis, and voice (Bearman et al., 2024; Kasneci et al., 2023).

This tension is key in literature debates. Cotton et al. (2024) stress higher education must tackle misconduct and pedagogical risks from text-generating tech. Rudolph et al. (2023) say generative AI destabilizes assessment by enabling responses lacking understanding. Tlili et al. (2023) highlight that AI's educational value relies on frameworks, not just technology. The main concern is how AI is framed, disclosed, and integrated into learning, not AI use itself.

Authorship and academic integrity are linked. Generative AI blurs lines between plagiarism, paraphrasing, assistance, and authorship (Cotton et al., 2024; Perkins, 2023). AI doesn't copy sources like traditional plagiarism but involves outsourcing intellectual effort, raising questions about ownership and responsibility. Stokel-Walker (2023) discusses whether AI contributions should be acknowledged. The consensus is AI shouldn't be an author, as authorship requires accountability. However, guidelines are inconsistent, creating uncertainty about acceptable practices.

Epistemic reliability is a concern. Despite GPT-4's advances, it can hallucinate and be factually inconsistent, questioning its use for academic knowledge (OpenAI, 2023). These systems prioritise coherence over accuracy, producing false references, misrepresenting arguments, or generating convincing but incorrect statements (Ji et al., 2023; Maynez et al., 2020). Relying on evidence for credibility is risky. Users must verify info and develop critical skills. Bias and epistemic inequality are issues; models trained on biased data (Bender et al., 2021) may reinforce norms and marginalise alternative perspectives, raising questions about whose knowledge is recognised and how academic voices are constructed.

Students using AI to refine writing challenge educators to differentiate understanding from AI-assisted work. The challenge is to develop practices that support writing's developmental role and recognize AI as part of literacy. Holmes & Tuomi (2022) advocate a human-centred AI ethics approach, and Selwyn (2019) warns against uncritical tech adoption ignoring educational goals. These views are vital with generative AI. Research often treats AI broadly and overlooks its impact on learning, assessment, and authorship.

This article presents a PRISMA-informed systematic literature review that employs thematic synthesis to examine AI-assisted academic writing and its implications for teaching and learning. It treats AI as a socio-technical intervention whose value depends on its integration into education. The review addresses four research questions:

- 1) How is generative AI being used in academic writing in higher education?
- 2) What benefits and productivity gains are associated with AI-assisted writing?
- 3) What ethical, epistemic and pedagogical risks are identified in the literature?
- 4) How should teaching, assessment, AI literacy and institutional governance respond to AI-mediated academic writing?"

Contribution of the Study

This article links productivity, academic integrity, epistemic reliability, and bias in AI-mediated academic writing. It introduces the Human–AI Writing Integrity Model (HAWIM), viewing integrity as an interaction among productivity, cognitive authenticity, epistemic reliability, and knowledge representation. HAWIM highlights cognitive authenticity, reflecting genuine human reasoning and epistemic responsibility, not just fluency or originality. It provides a socio-technical framework for assessment, pedagogy, AI literacy, and governance in higher education.

This study contributes to the emerging discourse on generative artificial intelligence in higher education by developing an integrated conceptual framework for the AI-mediated academic writing ecosystem, spanning four interconnected thematic domains:

- Productivity and academic efficiency;
- Authorship and academic integrity;
- Epistemic reliability and knowledge validation;
- Bias, representation, and knowledge equity.

The study's originality lies in its multidimensional synthesis, viewing generative AI as a transformative socio-technical force shaping pedagogy, governance, assessment, institutions, and knowledge. It presents a conceptual ecosystem mapping relationships among AI capabilities, practices, governance, and outcomes. Cognitive authenticity, a new dimension of academic integrity, questions if AI-assisted writing reflects genuine human reasoning, judgement, and epistemic responsibility. The study shifts the debate from the originality of AI-generated text to whether AI-assisted writing remains cognitively authentic, and accountable to human judgement.

LITERATURE REVIEW AND THEMATIC FOUNDATIONS

2.1 Academic Writing and Generative AI

Academic writing demands critical thinking, originality, argumentation, and evidence (Hyland, 2015). Digital tools like grammar checkers and reference managers improve efficiency but haven't changed the author–text–knowledge relationship. Generative AI offers deeper support, aiding idea generation, argument structuring, summarisation, and stylistic refinement (Hyland, 2015; Lea & Street, 1998; Dwivedi et al., 2023; van Dis et al., 2023). Research on AI in higher education focuses on tutoring systems, assessment, profiling, prediction, and adaptive learning (Zawacki-Richter et al., 2019).

This shift makes AI a socio-cognitive system influencing knowledge and communication. Risks include overreliance and reduced engagement, affecting learning (Weidinger et al., 2021). Academic writing now balances human cognition with machine assistance, raising questions about authorship and responsibility. Major publishers say AI can't be an author due to lack of responsibility, emphasising human accountability (Nature Editorial, 2023). The review identifies four recurring thematic domains: productivity versus learning; authorship and academic integrity; epistemic reliability and knowledge validation; and bias and knowledge representation (Braun & Clarke, 2006; Bearman et al., 2024; Perkins, 2023).

2.2 Theme 1: Productivity and academic efficiency (Learning)

The literature reveals a tension between productivity and learning. Generative AI tools support brainstorming, drafting, paraphrasing, and editing, helping students and researchers produce text more quickly (Kasneci et al., 2023; Dwivedi et al., 2023). Imran and Almusharraf's (2023) review highlights ChatGPT as a writing aid in higher education but warns that reliance raises concerns about reliability, academic integrity, and overdependence. For multilingual and novice writers, these tools reduce linguistic barriers and provide scaffolding for academic engagement. Because large language models generate text probabilistically, they may produce fluent prose that appears to demonstrate understanding but lacks epistemic validity.

Writing develops and internalises ideas, not just sharing knowledge. AI for ideation and drafting reduces cognitive effort for deep learning (Bearman et al., 2020). This creates a paradox: efficiency tools might undermine writing's developmental role. The key question is whether AI supports or replaces essential thinking for meaningful learning.

2.3 Theme 2: Authorship and Academic Integrity

The second theme explores authorship and integrity in AI-assisted writing, challenging traditional views. Academic authorship ties to responsibility (Hyland, 2015; Lea & Street, 1998), but AI complicates this by generating seemingly original content without clear human input (Bender et al., 2021; van Dis et al., 2023). Institutions state AI cannot be an author due to lack of accountability, reaffirming humans' responsibility for all content (UNESCO, 2023). There is rising demand for transparency and ongoing issues of ownership and engagement. AI blurs lines between assistance, paraphrasing, and authorship, raising authenticity questions. Research shows varied human-AI interactions: some involve reflective idea refinement, others straightforward output, affecting perceptions of authorship and integrity (Nguyen et al., 2024). Ultimately, authorship in AI writing requires careful consideration of how responsibility and accountability are shared between humans and machines.

2.4 Theme 3: Epistemic Reliability and Knowledge Validation

The third theme emphasizes epistemic reliability, vital for academic credibility. While generative AI produces fluent text, it doesn't ensure accuracy and may generate plausible but false information (Ji et al., 2023; Maynez et al., 2020). The challenge is separating linguistic plausibility from epistemic validity. AI content can seem authoritative but include fabricated references or unsupported claims. Verification is the human author's responsibility. Though cognition can be distributed across human-AI systems (Hutchins, 1995), authorship remains tied to individual accountability. Humans must supervise and evaluate AI outputs, cross-check sources, and ensure arguments are evidence-based to maintain knowledge integrity.

2.5 Theme 4: Bias and Knowledge Representation

The fourth theme discusses bias and knowledge representation. Generative AI learns from extensive datasets reflecting existing knowledge patterns, including biases (Bommasani et al., 2021; UNESCO, 2023). This can reinforce dominant epistemologies, standardised language, and marginalise alternative views, especially where epistemic diversity and decolonisation are promoted. AI influences what is seen as legitimate knowledge and is not neutral. Overreliance risks reinforcing hierarchies and reducing diversity. Scholars call for critical AI literacy, understanding data biases, and recognizing their impact on discourse. This shifts focus from individual misuse to structural issues, highlighting the need for critical engagement with AI-generated knowledge (Lund & Wang, 2023).

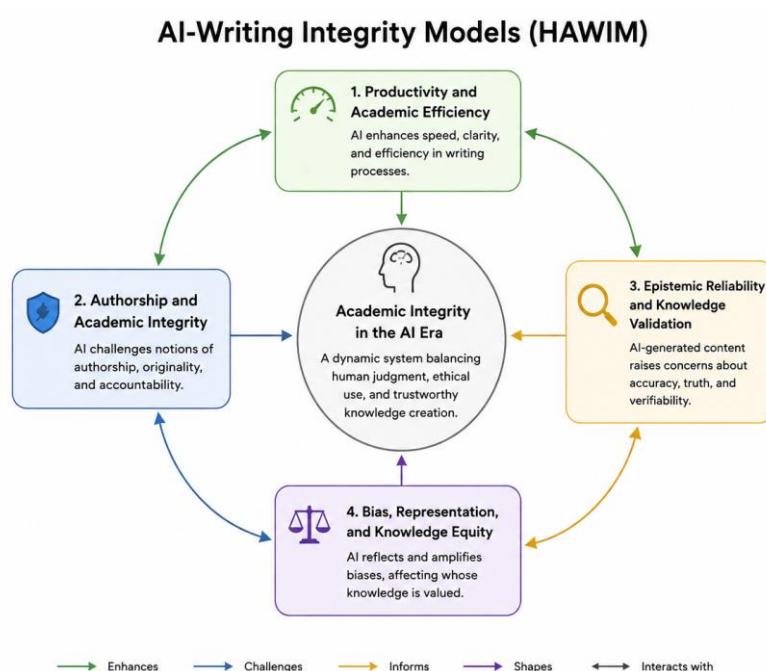


Figure 1: AI- Writing Integrity Model (HAWIM)

2.6 Thematic Integration

These themes show AI's impact on academic writing extends beyond efficiency. 'Productivity versus learning' highlights speed versus growth; 'authorship and academic integrity' emphasizes responsibility; 'epistemic reliability' stresses validation; and 'bias and knowledge representation' uncovers structural inequalities. AI's effects aren't isolated: productivity affects engagement; less engagement hampers validation; epistemic flaws increase bias risk. This is the Human–AI Writing Integrity Model (HAWIM). The themes connect: productivity may hinder learning; authorship issues weaken integrity; biases worsen validation failure. Together, they form a framework for AI's academic impact.

Interconnectedness appears in university AI policies, linking integrity, pedagogy, transparency, and governance. Universities adopt integrated policies, build capacity, and innovate pedagogy (Wang et al., 2024). This shows why AI-assisted academic writing is an integrated pedagogical, ethical, and governance concern. The rise of generative AI in academic writing reflects broader trends in digital pedagogy, transforming educational technology and learning in higher education. AI tools are part of a wider shift in how knowledge is constructed, mediated, assessed, and communicated within digital learning environments. Today's educational settings increasingly integrate AI, adaptive technologies, analytics, collaboration platforms, and personalised systems, thereby reshaping traditional assumptions about teaching (Bond et al., 2021; Selwyn, 2022).

Digital pedagogy uses technology to support active, collaborative, accessible, student-centred learning (Koehler & Mishra, 2009). Generative AI provides benefits like personalised feedback, scaffolded learning, multilingual support, and increased engagement through quick knowledge access (Luckin & Cukurova, 2019). However, it challenges traditional views on authorship, originality, assessment, and trust in higher education (Williamson & Eynon, 2020).

The rapid spread of generative AI has sparked debates on technology-enhanced learning (TEL), especially the evolving relationship between human cognition and machine-supported knowledge. It now includes content co-creation, cognitive enhancement, algorithmic reasoning, and AI-assisted academic communication (Holmes et al., 2022). Consequently, higher education must balance technological innovation with maintaining critical thinking, reflective learning, and academic independence.

AI literacy is essential in digital education, covering output evaluation, understanding limits, recognising bias, assessing reliability, and ethics (Ng et al., 2021). Scholars advocate the inclusion of AI literacy in digital literacy curricula to prepare for the future (Long & Magerko, 2020). As AI writing tools emerge, curricula are being updated to emphasise ethics, verification, critical thinking, and responsible digital behaviour.

The literature suggests generative AI could revolutionise teaching, assessment, and support by enhancing student needs, accessibility, and personalised learning. However, issues like access, the digital divide, and marginalised groups remain, making AI a socio-technical challenge with pedagogical, ethical, and governance implications. AI in academic writing reflects a broader education tech shift affecting pedagogy, governance, curricula, relevance, epistemic authority, digital equity, and human agency. The review highlight's themes like productivity, integrity, reliability, governance, and pedagogy, with Table 1 summarising opportunities, risks, and implications.

Theme	Opportunities Identified in Literature	Risks and Challenges Identified	Pedagogical Implications	Governance and Policy Implications
Theme 1: Productivity versus Learning	Generative AI enhances drafting speed, language refinement, summarisation, idea generation, and academic productivity.	Over-reliance on AI may reduce critical engagement and weaken independent writing capability.	Assessment practices may need redesign toward higher-order thinking and authentic demonstration of understanding.	Institutions require clear policies regarding acceptable AI use and disclosure practices.

Theme 2: Authorship and Academic Integrity	AI may support collaborative learning and formative feedback.	Concerns emerge regarding authorship legitimacy, plagiarism, and transparency.	Teaching approaches should incorporate AI literacy and ethical reasoning.	Universities - institutional AI governance frameworks addressing attribution and accountability.
Theme 3: Epistemic Reliability and Knowledge Validation	AI systems can accelerate literature discovery and conceptual mapping.	Generative AI may produce hallucinated references and inaccurate interpretations.	Students require advanced evaluative competencies and source verification skills.	Institutions may need formal verification protocols and safeguards for research quality.
Theme 4: Bias and Knowledge Representation	AI has the potential to broaden educational access and personalise learning.	Biases embedded in training data may reinforce inequalities and underrepresentation.	Pedagogical models should promote awareness of algorithmic bias and inclusivity.	Governance frameworks should address fairness, transparency, and accountability.

Table 1: Thematic Alignment of Literature Findings

Despite optimistic views of generative AI in academia, opinions are divided. Some see AI tools like ChatGPT as transformative, enhancing productivity, communication, and personalized learning, and making access easier for non-native speakers and beginners. Others warn reliance on AI may weaken critical thinking, engagement, and writing skills. While AI demonstrates impressive linguistic fluency, it lacks human understanding, risking fabricated content, false confidence, and epistemic distortion. Perspectives on academic integrity differ: some favour detection and revision, while others find detection unreliable and unfair to multilingual students. Debates on authorship, transparency, and trust remain, with advocates for disclosure and regulation, and critics worried about originality, accountability, and ownership. These issues call for thematic analysis to clarify perspectives and areas of agreement and disagreement.

METHODOLOGY

3.1 Research Design and Conceptual Orientation

This study employs a PRISMA-informed systematic review with thematic synthesis to analyse the impact of generative AI on academic writing in higher education. It synthesises interdisciplinary research on AI-assisted writing, integrity, assessment, authorship, and teaching (Snyder, 2019; Page et al., 2021). Since 2020, the rapid growth of AI research has fragmented scholarship, necessitating systematic synthesis. Using search procedures and thematic analysis based on Braun and Clarke (2006), the review examines recent literature on generative AI and higher education (Kasneci et al., 2023; Perkins, 2023). Early reviews of ChatGPT in education highlight opportunities for support and feedback but also raise concerns about accuracy, integrity, and dependence (Lo, 2023).

This study is more than descriptive; it's centred on the idea that AI-assisted academic writing marks a socio-cognitive shift, not merely a technical upgrade. Its methodology examines what AI adds to writing and how it reshapes learning, authorship, and knowledge creation. This aligns with recent literature urging a shift from tool-based analysis to research focused on practice and pedagogy (Bearman et al., 2024; Kasneci et al., 2023).

The review sees academic writing as socially embedded and evolving with discipline norms, expectations, and technology. AI is a socio-technical partner that influences output, learning, identity, and engagement.

3.2 Review Protocol and PRISMA Alignment

This PRISMA-informed systematic review with thematic synthesis considered search results from 2020-2025 across five databases: Scopus, Web of Science, ERIC, PubMed, and Google Scholar, covering education, AI, information systems, and higher education research.

The review followed four PRISMA-aligned stages:

1. Identification: Records were identified through structured database searches using predefined search strings.
2. Screening: Titles and abstracts were screened to remove irrelevant studies and publications outside the study scope.
3. Eligibility: Full-text articles were reviewed against predefined inclusion and exclusion criteria.
4. Inclusion: Studies meeting all criteria were retained for thematic synthesis.

This process yielded a final corpus of 52 studies, which served as the basis for the thematic analysis.

3.3 Data Sources and Search Strategy

The search strategy aimed to find literature on generative AI, academic writing, higher education, academic integrity, writing pedagogy, epistemic reliability, and AI literacy, using Boolean operators and keywords with minor syntax adjustments for each database. The final database searches were conducted in May, 2026, with minor syntax adjustments to accommodate each database's search requirements.

Search String Number	Search String
S1	“artificial intelligence” AND “academic writing”
S2	“generative AI” AND “academic writing”
S3	“ChatGPT” AND “academic writing”
S4	“large language models” AND “higher education”
S5	“generative AI” AND “higher education”
S6	“AI” AND “academic integrity” AND “higher education”
S7	“ChatGPT” AND “education” AND “assessment”
S8	“AI-assisted writing” AND “higher education”
S9	“AI literacy” AND “higher education”
S10	“generative AI” AND “writing pedagogy”
S11	“large language models” AND “academic integrity”
S12	“AI” AND “epistemic risk” AND “education”

The search strings were applied across Scopus, Web of Science, ERIC, PubMed and Google Scholar.

Table 2: Data Sources and Search Strategy

The literature search from 2020 to 2025 aimed to capture the rise of generative AI tools in higher education, especially after ChatGPT's release. While earlier studies informed the framework, the systematic search was limited to 2020-2025. The selection followed PRISMA 2020 standards, as shown in Figure 2.

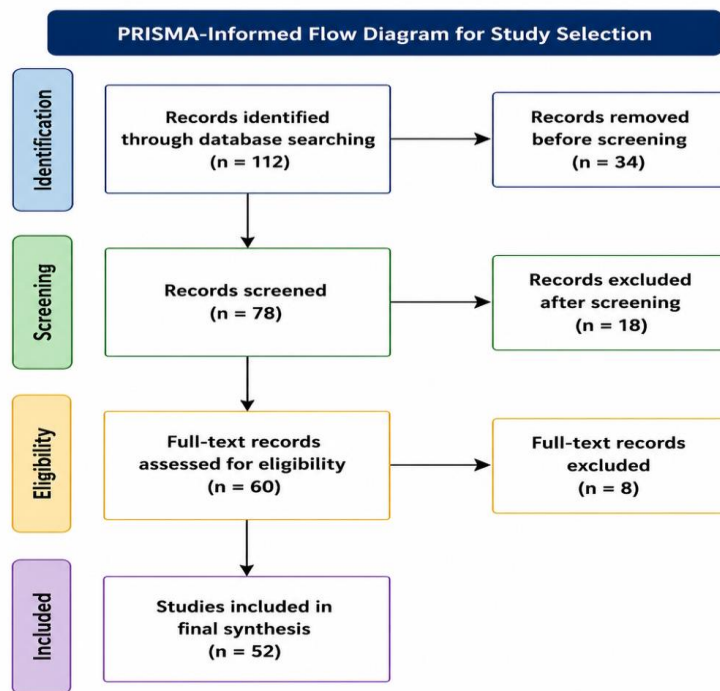


Figure 2: PRISMA 2020

3.4 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established before final screening to ensure consistency and reduce selection bias.

3.5 Study Selection Process

The search identified 112 records across databases. After removing duplicates, records were screened by title and abstract, excluding those unrelated to higher education, academic writing, teaching, learning, or solely technical AI development. Seventy-eight records underwent full review, with some excluded for insufficient relevance or superficial AI commentary. In total, 52 studies met all criteria and were included in the thematic synthesis.

The final inclusion logic was based on three considerations:

1. Topical relevance: the study had to address AI, generative AI, ChatGPT, or large language models in relation to academic writing, higher education, or teaching and learning.
2. Analytical contribution: the study had to contribute evidence, conceptual insight, or policy-relevant analysis.
3. Thematic relevance: the study had to inform at least one of the four analytical themes: productivity versus learning, authorship and academic integrity, epistemic reliability and knowledge validation, or bias and knowledge representation.

3.6 Exclusion Rationale

The main reasons for exclusion were:

Policy documents, publisher statements, books, and foundational conceptual sources were excluded from the 52-study review corpus unless they met the inclusion criteria. Where used, these sources informed conceptual framing, policy context or background discussion rather than the systematic review corpus.

3.7 Data Extraction and Coding Strategy

A structured data extraction framework was used to ensure consistent treatment of each included study. The following information was extracted:

Extraction Category	Description
Bibliographic details	Author, year, title, journal, and publication type
Study type	Empirical, conceptual, review-based, policy-oriented, or theoretical
Educational context	Higher education setting, academic writing context, assessment context, or institutional context
AI focus	ChatGPT, generative AI, large language models, AI-assisted writing, or AI literacy
Reported opportunities	Productivity, fluency, accessibility, multilingual support, feedback, or learning support
Reported risks	Hallucination, bias, over-reliance, academic integrity, authorship ambiguity, or epistemic reliability
Teaching and learning implications	Pedagogy, assessment redesign, writing support, curriculum, or AI literacy
Governance implications	Institutional policy, disclosure, ethics, quality assurance, and responsible use

An audit table of the 52 included studies was developed to record bibliographic details, study type, database source, inclusion rationale and thematic contribution. This audit trail supported transparency and consistency in the thematic synthesis.

Table 3: Data Extraction

The extracted data were analysed using a hybrid coding approach. Initial deductive codes were informed by the study's research questions and recurring concerns in the literature, such as academic integrity, assessment, authorship, and AI literacy. Inductive coding was then applied to identify additional patterns emerging across the literature.

Through iterative comparison and refinement, the codes were consolidated into four higher-order themes:

1. Productivity versus learning
2. Authorship and academic integrity
3. Epistemic reliability and knowledge validation
4. Bias and knowledge representation

These themes were not treated as isolated categories but as interrelated dimensions of AI-mediated academic writing.

3.8 Methodological Trustworthiness

The review followed a transparent, staged process: identification, screening, eligibility, and synthesis. Predefined criteria reduced arbitrary selection, and a structured data-extraction framework ensured consistency.

Thematic analysis involved coding, comparing, refining, and synthesizing themes, which were checked against literature to reflect recurring patterns. Emphasis was on studies covering multiple themes, highlighting connections among productivity, learning, authorship, reliability, bias, and governance.

As with many interpretive reviews, coding relied on researcher judgement. To reduce bias, the study used predefined criteria, structured data extraction, and iterative comparison of themes. Given the fast-evolving, interdisciplinary field of generative AI, it employed systematic searching and interpretive synthesis, which are suitable for describing the literature and developing a conceptual understanding of AI's impact on academic writing in teaching and learning.

3.9 PRISMA Flow Summary

The PRISMA process may be summarised as follows:

PRISMA Stage	Number of Records	Description
Records identified	112	Records identified through Scopus, Web of Science, ERIC, PubMed and Google Scholar
Records removed before screening	34	Duplicate and clearly irrelevant records removed
Records screened	78	Titles and abstracts
Records excluded after screening	18	Records excluded for lack of relevance to higher education, writing, or AI-assisted learning
Full-text records assessed for eligibility	60	Full-text articles reviewed
Full-text records excluded	8	Excluded for insufficient relevance, non-peer-reviewed status, or lack of analytical contribution
Studies included in final synthesis	52	Final corpus included in thematic synthesis

Table 4: The PRISMA Selection Summary

FINDINGS

Thematic findings can be interpreted through the Human–AI Writing Integrity Model (HAWIM), which conceptualises AI-mediated academic writing as comprising four interdependent dimensions: productivity enhancement, cognitive authenticity, epistemic reliability, and knowledge representation:

4.1 Productivity Gains

Generative AI boosts writing productivity by speeding up drafting, editing, and structuring. It improves efficiency but may weaken cognitive and developmental skills involving complex thinking and argument refinement. AI's focus on speed can reduce iterative drafting and engagement (Lee et al., 2025). This creates a divide between output speed and learning depth: faster production doesn't always mean better understanding. Productivity should balance with learning impact.

4.2 Language Support, Access, and Risk

Generative AI aids multilingual and non-native English speakers in improving academic writing, democratizing scholarship (Del Giglio & Pereira da Costa, 2023; Chen & Gong, 2025). It acts as a language equalizer, allowing

writers to prioritize ideas over linguistic precision, especially in global higher education. Students appreciate AI for personalized learning, writing, brainstorming, research, and analysis, but also worry about accuracy, privacy, ethics, and long-term impacts.

AI training reflects dominant linguistic norms, leading to homogenisation that reduces voice diversity and favours mainstream styles. This paradoxically broadens participation but may limit epistemic diversity, requiring awareness of how knowledge is represented.

4.3 Cognitive Authenticity and Delegated Cognition

Cognitive authenticity in AI-assisted academic writing means staying true to the author's engagement and reasoning. While the literature focuses on plagiarism, generative AI challenges this by producing original yet potentially non-reflective texts. This study defines cognitive authenticity as genuine human engagement in academic writing, even with AI help.

The literature discusses academic integrity in AI writing beyond plagiarism. AI-generated text can be original but involves 'delegated cognition,' where AI handles idea creation (Perkins, 2023; Stokel-Walker and Van Noorden, 2023). The concern isn't copying but if the work shows the author's reasoning. Studies show AI-assisted writing varies, influencing whether AI supports or replaces thinking (Nguyen et al., 2024). This shifts integrity from originality to cognitive authenticity, emphasizing intellectual processes over the final product.

4.4 Hallucination and Reliability

A key concern is the epistemic limitation of generative AI, which, unlike retrieval systems that reproduce verified data, generates responses based on patterns, often producing coherent but inaccurate outputs (

4.5 Bias and Representation

Generative AI reproduces biases in its training data (Bender et al., 2021; Bommasani et al., 2021), affecting content, arguments, and what is considered legitimate knowledge. This can mean AI may favour dominant epistemologies, reinforce standard reasoning, and marginalise alternative views. AI is not neutral; it influences knowledge production and representation patterns. Addressing this requires treating bias as an epistemological concern and promoting critical AI literacy and contextual awareness.

4.6 Assessment Disruption and the Need for Redesign

Generative AI disrupts assessments by enabling AI to produce coherent academic writing (Rudolph et al., 2023; Cotton et al., 2024; van Dis et al., 2023). This shifts the focus from product to process evaluation, emphasising knowledge construction over the final output. Crawford, Cowling, and Allen (2023) argue that ethical responses to ChatGPT require educational leadership, character development, and redesigned assessments, not merely the detection of misconduct. The literature supports assessment designs that make knowledge construction more visible, including:

- staged submissions
- reflective commentaries
- oral assessments
- annotated evidence trails
- portfolio-based evaluation

These methods aim to make writing visible and prevent outsourcing of intellectual work. Supported by evidence, a controlled educational intervention required students to use generative AI to produce academic text and critically evaluate it. Results show these approaches improve evaluative judgement while remaining transparent

about AI use (van Niekerk et al., 2025). This demonstrates that assessment redesign is both necessary and feasible. Instead of banning AI, institutions can incorporate it into assessments to reinforce learning.

4.7 Institutional Response and AI Literacy

Institutions view effective responses to generative AI as more than reactive policies. UNESCO (2023) promotes human-centred governance of AI in education, while Tlili et al. (2023) Emphasise AI literacy, ethical awareness, and pedagogical alignment. AI literacy involves assessing outputs, understanding limitations, making ethical decisions, and responsible AI use. Universities prefer nuanced guidance and resources over bans, linking AI literacy and governance (Wang et al., 2024). This shift integrates policy, education, and capability into a unified framework.

4.8 Synthesis: A Transformative Tension

Across findings, a pattern emerges: Generative AI improves writing efficiency but disrupts learning, authorship, and accountability. It's an evolving force, not merely a neutral tool, and requires deliberate pedagogical and institutional responses. The challenge isn't whether to use AI but how to structure its use to preserve the developmental and epistemic functions of academic writing.

The findings support the Human–AI Writing Integrity Model (HAWIM), which says integrity depends on four areas: productivity, authenticity, reliability, and representation. Weaknesses in any can harm AI-assisted work. Concerns go beyond plagiarism, especially whether students remain cognitively engaged when AI handles reasoning, drafting, and arguing. This study emphasizes cognitive authenticity, focusing on genuine intellectual engagement over just creating original text.

Findings suggest future academic integrity debates should extend beyond plagiarism and authorship, as generative AI challenges whether work shows learner effort. Cognitive authenticity highlights genuine reasoning, judgement, synthesis, and reflection, shifting focus from AI aid to whether real human thinking persists.

IMPLICATIONS FOR PRACTICE

5.1 Implications for Educators: Writing Instruction & Cognitive Apprenticeship

Integrating generative AI into academic writing requires a shift in teaching. Traditional methods focus on structure, grammar, referencing, and norms, but these are now insufficient, as AI can generate well-structured texts with minimal human input. Writing instruction should emphasise judgement, reasoning, and accountability, aligning with cognitive apprenticeship to help students produce, evaluate, examine evidence, and make rhetorical choices (Kasneci et al., 2023; Tlili et al., 2023).

A key implication is to make the writing process transparent. Educators must distinguish between **Assistive use** (e.g., language and structural support) and **Substitutive use** (e.g., generating arguments without engagement). Without this, students may confuse efficiency with learning. AI should be engaged with critically, not used covertly. Students must critique and improve AI outputs to develop judgement. Research shows that critiquing AI enhances understanding (van Niekerk et al., 2025). Educators should promote constructive engagement with complexity, as removing it hampers writing. The goal isn't to eliminate AI but to use it to support effort and learning.

5.2 Implications for Assessment: From Output Validation to Process Traceability

Generative AI disrupts traditional assessments, especially those relying on written output as evidence of understanding. When students use AI to produce fluent academic text, the credibility of written assignments as proof of learning diminishes (Rudolph et al., 2023; Perkins, 2023). This shift from **product-based** to **process-oriented assessment** emphasizes how knowledge is built, not just the final output. Johnston et al. (2025) support this, showing that students use AI during planning and research, not only in final drafts. This highlights the need for assessment designs that reveal ideation, sourcing, reasoning, and revision.

Key design implications include:

- staged submissions (e.g., outlines, drafts, revisions)
- reflective commentaries explaining reasoning processes
- oral or viva-style components
- annotated evidence trails
- portfolio-based assessment structures

These methods improve intellectual traceability, making outsourced thinking harder and encouraging deeper learning. Evidence shows human–AI interaction affects learning. AI-assisted writing research finds that iterative, reflective approaches lead to different cognitive outcomes than linear, output-focused ones, highlighting the need for assessment that evaluates process and AI engagement, not just final results (Nguyen et al., 2024). This doesn't mean abandoning written assessments but integrating writing into a system that combines outputs, process documentation, and reflection, viewing writing as dynamic inquiry. Transparency is crucial: students should disclose how, why, and to what extent they use AI tools. While disclosure doesn't guarantee integrity, it promotes accountability and responsible AI use (UNESCO, 2023; Stokel-Walker and Van Noorden, 2023).

5.3 Implications for Writing Support: From Remediation to Critical Mediation

Academic writing support units must shift from basic remediation like grammar and structure to **critical mediation in AI-driven environments**. As AI reduces the need for linguistic support, demand for higher-order skills increases. Students need guidance in:

- evaluating AI-generated content
- verifying sources and claims
- maintaining authorial voice
- making ethical decisions about AI use

This aligns with the academic literacies perspective, which views writing as a social practice shaped by norms and contexts (Lea & Street, 1998). Writing centres can serve as hubs for AI literacy, offering training and resources for students and educators. Their interdisciplinary role helps identify patterns of AI use, associated risks, and needs. These units promote equity; AI can democratise academic writing but may also create inequalities in access and literacy. Writing support must ensure that AI promotes inclusion rather than widening disparities.

5.4 Implications for Students: AI Literacy as Academic Literacy

The findings highlight the need to reconceptualise AI literacy as a core competency, in which students must learn to use, critically evaluate, contextualise, and govern AI tools (Tlili et al., 2023; UNESCO, 2023).

AI literacy includes:

- Understanding how AI systems generate text
- Identifying inaccuracies and hallucinations
- Verifying sources and claims
- Applying ethical judgement

-
- Disclosing AI use transparently

A key distinction must therefore be emphasised:

- **AI as augmentation** → supports and enhances thinking
- **AI as substitution** → replaces cognitive effort

This distinction is key to preserving academic writing's developmental role. Students need support to maintain their authorial identity.

5.5 Implications for Institutional Governance: From Control to Coherence

Findings indicate that effective institutional responses to AI require more than isolated policies; a system-wide approach is essential, given AI's role across teaching, assessment, research, and quality assurance. Institutions should develop clear policy frameworks that:

Define acceptable and unacceptable uses of AI

- Establish disclosure requirements
- Align expectations with assessment design
- Differentiate between contexts (e.g., formative vs summative assessment)

Research emphasizes the importance of coherent governance, with institutions relying on students' understanding of AI rather than bans. Universities prefer guidance over bans. AI affects integrity via student actions, needing clear rules, assessment updates, and ethical standards, not just detection. **Cautious** warnings are present. Governance should empower educators to redesign assessments, teach AI integration, and support students, with policies regularly reviewed to stay relevant.

5.6 Implications for Curriculum: Preparing for AI-Mediated Knowledge Work

Integrating AI into academic writing impacts curriculum design, pushing universities to prepare students for academic and AI-driven environments by embedding AI in curricula to promote:

- critical engagement
- ethical awareness
- disciplinary contextualisation
- reflective practice

Students should critically study AI to understand its strengths, limitations, and implications, and graduates should responsibly use AI, maintaining judgement, accountability, and integrity.

5.7 Synthesis: Reframing Academic Writing in the Age of AI

Redesign education to emphasize writing as a learning tool, balancing learning over output, judgment over fluency, process over product, and transparency over concealment. AI prompts institutions to reconsider writing's purpose; seen as performance, AI is helpful but needs deliberate integration as a learning process. The study supports viewing AI as a learning aid, highlighting its impact on writing and learning. Higher education must ethically adapt, guided by the Human–AI Writing Integrity Model (HAWIM), which addresses productivity, authenticity, reliability, and knowledge representation—shaping impact assessment, pedagogy, AI literacy, and governance.

Assessment Redesign

Traditional assessments assume writing reflects students' knowledge, but generative AI challenges this by allowing students to delegate tasks to AI. The HAWIM framework recommends assessing cognitive authenticity and process evidence, like drafts, reflections, and presentations. This shifts focus from output to how students think, evaluate, and justify their work.

Writing Pedagogy

The framework guides academic writing on structure, arguments, citation, and communication. In AI contexts, educators should promote cognitive authenticity by engaging students in writing. Instruction should teach AI tools' roles in brainstorming, editing, and refining, without replacing critical thinking or original reasoning. The goal shifts from enhancing text to developing better thinkers.

AI Literacy Development

The findings show AI literacy goes beyond technical skills, encompassing prompt design, output evaluation, source verification, bias recognition, epistemic judgment, and ethics through the HAWIM framework. Students should create content and assess its accuracy, credibility, limitations, and assumptions to build epistemic reliability and use AI responsibly.

Governance and Institutional Policy

The framework guides governance of plagiarism and disclosure policies. The HAWIM model recommends extending to AI-assisted writing, covering acceptable AI use, transparency, staff training, and cognitive authenticity. Institutions should also address integrity issues, including epistemic reliability and knowledge representation.

Toward a New Integrity Paradigm

These implications suggest higher education must go beyond traditional plagiarism detection, focusing on work that demonstrates human reasoning, critical thinking, and responsibility. The Human–AI Writing Integrity Model offers a broader framework for AI-mediated education.

LIMITATIONS

This review covers existing generative AI and academic writing work, not new data. It might not reflect rapid changes in AI practice, policy, and governance in higher education, potentially affecting some findings. AI advances quickly, so some results may become outdated. The literature search was limited to 2020-2025, with some pre-2020 sources used for framing.

The focus on higher education and digital learning may limit its relevance to primary education, vocational training, informal learning, or under-resourced settings with limited access to technology. Policy differences and digital readiness also impact global applicability. Although the interdisciplinary approach covers technology, pedagogy, ethics, and epistemic issues, it offers limited depth on topics like algorithmic bias or AI architecture. Future research should explore specific aspects of AI-driven academic writing in greater detail.

Future research should focus on empirical, long-term, and cross-cultural studies of AI's educational effects, including learning, performance, and critical thinking. Exploring assessment models that promote authentic learning, ethical AI, governance, AI literacy, and discipline strategies will foster sustainable AI education.

The study provides a theoretical framework for AI-mediated academic writing, not yet validated empirically. Future research with interviews, case studies, longitudinal data, and cross-institutional comparisons could enhance its practicality. Despite limitations, it offers a timely perspective on generative AI's evolving role, academic writing, educational change, and higher education governance.

CONCLUSION

This study reviews recent literature on generative AI and academic writing, introducing the Human–AI Writing Integrity Model (HAWIM) to understand AI-mediated academic writing. The model shows that writing integrity relies on originality, productivity, cognitive authenticity, epistemic reliability, and knowledge representation.

Authorship and integrity must be reconsidered as AI blurs the line between originality and assistance, emphasising **cognitive authenticity** over the final product. Transparency isn't enough; we need to understand human-machine collaboration. The study emphasises the growing **epistemic responsibility in AI**. Generative AI produces fluent yet potentially false content, requiring users to verify and critically evaluate sources, making active engagement vital.

A fourth conclusion concerns **bias and knowledge representation**. AI systems mirror their training data's epistemic structures, often favouring dominant norms, affecting diversity and inclusivity in academic expression. Without awareness, AI-assisted writing may reinforce inequalities. These issues extend to **institutions**, prompting universities to adopt integrated strategies combining policy, pedagogy, and AI literacy, beyond prohibition or detection. The challenge is **coherence across teaching, assessment, and governance, not just control**.

These findings indicate a shift in education focus: educators should emphasize judgment, reasoning, and reflection in writing. Assessment should prioritize learning over final products, with institutions adopting adaptive governance aligned with teaching. AI literacy—covering technical skills and ethics—is vital for students. AI transforms academic writing from static to dynamic, process-based knowledge. The main challenge isn't AI use but its integration to preserve writing's epistemic and developmental roles.

Future research should examine real-world AI use, assess models, and study how human–AI interactions influence learning. Non-Western and multilingual contexts need more attention, as AI writing impacts may differ. Generative AI offers opportunities and disruptions, enhancing access but challenging learning and authorship. The main concern in higher education is not AI use in writing but how to govern it to preserve cognitive authenticity, epistemic responsibility, and human agency in knowledge creation.

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