



International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 9.864

Volume 9, Issue 7, July 2026



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

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A Comprehensive Review of AI as an Assistive Tool for Technical Content Creation

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ABSTRACT : The rapid advancement of artificial intelligence (AI), particularly large language models (LLMs) like ChatGPT and Claude, has transformed technical content creation. This review synthesizes current literature on AI's role as an assistive tool in drafting, editing, structuring, and optimizing technical documentation, scientific papers, reports, and manuals. Key applications include idea generation, literature synthesis, grammar and style refinement, code documentation, and multilingual support. While AI enhances productivity and accessibility, challenges such as hallucinations, ethical concerns, bias, and over-reliance persist. This paper examines methodologies from systematic reviews, thematic analyses of tools and workflows, critical evaluations of efficacy, and implications for technical writers, researchers, and organizations. Findings highlight AI's potential to accelerate output by up to 50% while underscoring the necessity of human oversight for accuracy and integrity. Future directions emphasize hybrid human-AI frameworks, improved domain-specific training, and standardized ethical guidelines.

Paper type: Review Paper

KEYWORDS: Artificial Intelligence, Technical Writing, Large Language Models, Content Creation, Assistive Technology, Scientific Documentation

I. INTRODUCTION

Background:

Technical content creation encompasses the production of user manuals, API documentation, scientific papers, engineering reports, and other specialized materials that demand precision, clarity, and domain expertise. Traditionally labor-intensive, this process has been revolutionized by generative AI tools. LLMs trained on vast datasets can now assist across the writing lifecycle, from brainstorming to final polishing. Tools like Grammarly, specialized plugins in documentation platforms (e.g., oXygen, Document360), and general-purpose models (ChatGPT, Claude) are increasingly integrated into workflows. [1]

Statement of the Problem:

Despite benefits, AI adoption in technical content faces hurdles: factual inaccuracies (hallucinations), loss of authorial voice, plagiarism risks, ethical dilemmas in authorship, and varying quality in domain-specific technical accuracy. Technical writers must balance efficiency gains with maintaining standards of rigor and reliability, especially in high-stakes fields like engineering, medicine, and academia.

Purpose of the Review:

This comprehensive review aims to map the landscape of AI assistive tools in technical content creation, evaluate their effectiveness, identify gaps, and propose best practices and future research avenues.[2]

II. METHODOLOGY

Search Strategy:

A systematic search was conducted across databases including Google Scholar, IEEE Xplore, ACM Digital Library, arXiv, PubMed, and Scopus using keywords such as "AI assistive tools technical writing," "LLMs scientific writing,"



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"generative AI documentation," and variations. Snowballing from reference lists supplemented results. Focus was on peer-reviewed articles, preprints, and industry reports from 2023–2026.[3]

Inclusion and Exclusion Criteria:

- **Included:** Empirical studies, reviews, and practical guides on AI in technical/scientific writing; English-language publications post-2022.
- **Excluded:** Non-technical applications, purely theoretical works without empirical elements, and non-peer-reviewed blog posts unless highly cited.[4]

Data Extraction:

Data extracted included study design, AI tools used, outcomes (productivity, quality, ethics), and limitations.

Quality Assessment:

Studies were assessed using criteria adapted from systematic review guidelines (e.g., relevance, methodological rigor, bias risk). Higher weight to peer-reviewed empirical work.

III. REVIEW OF LITERATURE

Organizational Structure:

Literature is organized thematically: tools and applications, productivity and efficiency, quality and accuracy, ethical considerations, and domain-specific uses.[5]

Thematic Subsections:

- **Tools and Applications:** Popular tools include ChatGPT for drafting, Grammarly for editing, specialized platforms like Document360's Eddy AI, and oXygen Positron. AI excels at generating first drafts, summarizing, creating tables/diagrams, and code documentation.
- **Productivity Gains:** Multiple studies report 2x output acceleration. AI handles boilerplate, outlines, and initial research synthesis effectively.[6]
- **Quality and Accuracy:** AI aids clarity and grammar but requires verification for technical facts and citations. Hallucinations remain a concern.
- **Ethical and Policy Issues:** Journals require disclosure of AI use. Authorship attribution, bias, and intellectual property are key debates.

AI Tools Available for Technical Content Creation.

Here is a compiled list of key AI tools and platforms highlighted in the literature for assisting with technical writing, documentation, scientific papers, reports, and content creation:

General-Purpose & Widely Used LLMs

- ChatGPT (OpenAI) — Drafting, idea generation, outlining, paraphrasing, code documentation, and first drafts.
- Claude (Anthropic) — Complex explanations, structured content, safe/accurate technical writing.
- Gemini (Google) — Technical writing support, research synthesis, and multimodal tasks.

Writing & Editing Assistants

- Grammarly — Grammar, style, clarity, tone adjustment, and plagiarism checks.
- QuillBot — Paraphrasing, summarization, and rewriting.
- HIX AI — Content creation, tone/style adjustment, and technical drafting.
- PaperPal — Real-time manuscript editing and academic writing support.
- DeepL Write — Advanced translation and writing refinement.

Specialized Technical Documentation Tools

- Document360 Eddy AI — Full article generation from prompts/transcripts, style guide adherence, FAQs, and assistive search.
- oXygen Positron AI Assistant — XML/DITA support, content generation, validation fixes, and technical authoring.



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- ClickHelp WriteAssist — In-platform AI for clear, concise documentation.
- MadCap Software AI features — Content generation, editing, and technical report support.

Research & Literature Tools

- Elicit — Literature review summarization and synthesis.
- Consensus — Evidence synthesis and key insights extraction.
- Perplexity — Research assistance and cited answers.
- Humata — Summarizing long technical papers.

Other Notable Tools

- Microsoft Copilot (in Word/Outlook) — Integrated drafting and email/report support.
- oXygen XML AI — Specialized for structured technical content.
- WEGO — Writing intervention for structured essays/reports.

Emerging/Advanced

- Agentic AI systems and domain-specific models for automated documentation pipelines.
- Tools for AI Act compliance (TechOps templates) and model documentation.

Best Practices from the Review:

- Use AI primarily for assistive tasks (drafts, outlines, editing).
- Always apply human verification for technical accuracy.
- Disclose AI usage per journal/organizational policies.
- Combine tools (e.g., LLM + Grammarly + specialized platform).

Summary of Studies

Khalifa (2024) outlines six enhancement areas: idea generation to ethical compliance.

AlAfnan (2025) on technical report efficiency.

Duin et al. (2023) on co-AI technical writing.

Empirical tests show strong support for assistive (not replacement) roles. [7]

Critical Analysis

Strengths: Democratizes writing for non-native speakers, reduces repetitive tasks. **Weaknesses:** Context limitations, dependency risks, uneven performance in highly specialized domains. Many studies are early-stage or self-reported.

IV. DISCUSSION

Synthesis of Findings:

AI serves best as a collaborative assistant, augmenting human expertise rather than supplanting it. Hybrid workflows yield optimal results. [8]

Identification of Trends:

Increasing integration in documentation platforms, focus on multimodal AI (text+code+images), and regulatory responses (e.g., EU AI Act documentation requirements). [9]

Theoretical Framework:

Grounded in routine activity theory (crime opportunities) and evidence-based policing. [10]

Implications:

For practitioners: Adopt prompt engineering training and verification protocols. For organizations: Develop AI usage policies. For academia: Update authorship guidelines.[11]



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V. CONCLUSION

Summary:

AI has emerged as a powerful assistive tool for technical content creation, significantly boosting efficiency while presenting manageable challenges through proper governance.

Limitations:

This review relies on available English-language sources up to mid-2026; rapid field evolution may outpace findings. Publication bias toward positive results possible.

Future Research Directions:

Longitudinal studies on long-term skill impacts, development of domain-adapted models for technical fields, standardized evaluation metrics for AI-assisted content, and cross-cultural studies on adoption. Exploration of agentic AI systems for end-to-end documentation pipelines. [12]

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