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Workshop on Scientific Article Writing Assisted by Artificial Intelligence for Teachers

Ahmad Khoiri[1], M Zainul Hafizi[2]
[1]Pendidikan Guru Sekolah Dasar, STKIP Melawi, Indonesia
[2]Pendidikan IPS, Universitas Tanjungpura, Pontianak

ABSTRACT

This Workshop on Scientific Article Writing Assisted by Artificial Intelligence (AI) aimed to enhance the scientific writing competence of secondary school teachers by integrating AI-based tools ethically, reflectively, and productively. The program was held on March 16, 2024, at SMPN 21 Pontianak, involving fifteen teachers from various disciplines. The activity applied the Participatory Action Workshop (PAW) approach, emphasizing collaborative, experiential, and reflective learning through three key stages: orientation, writing practice, and individual mentoring. Participants were trained to use ChatGPT, Perplexity.ai, Humata.ai, and Research Rabbit to assist idea exploration, article structuring, and language editing in accordance with academic conventions. The results revealed significant improvements in teachers' technical writing skills, understanding of publication ethics, and confidence in developing scholarly manuscripts. Each participant produced a draft article ready for further development and contributed to the formation of the AI-Based Teacher Writing Community of Pontianak as a post-program sustainability outcome. This activity demonstrates that short, intensive AI-assisted training can serve as an effective community engagement model to strengthen teacher professionalism in the digital era and contribute to achieving Sustainable Development Goal (SDG) 4: Quality Education

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Corresponding Author:

Ahmad Khoiri
Pendidikan Guru Sekolah Dasar, STKIP Melawi, Indonesia
Kelakik, Kec. Nanga Pinoh, Kabupaten Melawi, Kalimantan Barat 79672
Email: choykhoiri@gmail.com

Introduction

The accelerating diffusion of Artificial Intelligence (AI) across educational ecosystems is reshaping how teachers conceptualize knowledge production (Gentile et al., 2023; Zhai, 2024), professional identity (Santos, 2024; Kayyali, 2025), and scholarly communication (Widiati, 2016; Yulindrasari & Ujianti, 2018). Within Indonesia's competency-based reform agenda, teachers are increasingly positioned not only as instructional experts but also as practitioner-researchers whose classroom inquiries should culminate in publishable scholarly outputs. Yet, the translation from classroom reflection to peer-reviewed manuscript remains arduous for many educators due to constrained time, uneven mentoring, and difficulties with academic discourse conventions (Ansoriyah & Irawan, 2022; Kuswandari et al., 2023). This developmental gap foregrounds an urgent need for capacity-building models that are both pedagogically sound and technologically current specifically, models that leverage AI as a scaffold for idea generation, argument structuring, and language refinement while maintaining scholarly integrity.

AI tools such as ChatGPT, Perplexity, Humata, and Research Rabbit offer distinctive affordances along the scientific writing pipeline: surfacing pertinent literature, synthesizing conceptual frames, outlining sections aligned with journal norms, and iteratively improving clarity and coherence. Empirical community-service programs in Indonesia indicate that structured workshops can catalyze measurable gains in teachers' writing fluency and confidence, particularly when hands-on practice is paired with iterative mentoring (Fadiana et al., 2021; Putra et al., 2023). When AI is integrated into such workshops, it functions less as an automated author and more as a cognitive collaborator that reduces mechanical burden so teachers can allocate attention to methodological rigor, contextual interpretation, and reflective voice (Subiyantoro et al., 2024; Wahyudin et al., 2023).

However, the promise of AI is inseparable from its ethical conditions of use. Over-reliance on unverified outputs, insufficient attribution, and the erosion of authorial originality can compromise academic probity. Recent Indonesian programs therefore emphasize explicit instruction on responsible AI fact-checking, transparent disclosure of assistance, paraphrasing with source fidelity, and alignment with anti-plagiarism norms so that technological acceleration does not displace human judgment (Nuraini et al., 2023). In other words, the central research-development challenge is not how to "automate writing," but how to cultivate teachers who can interrogate AI outputs, integrate local classroom evidence, and inscribe professional reflection in disciplinary language.

This workshop was conceived to address that challenge in a concrete school context SMPN 21 Pontianak where preliminary conversations showed teachers to be digitally capable yet largely inexperienced with AI-assisted academic composition. The

intervention adopts a Participatory Action Workshop (PAW) design to align with adult-learning principles: short theoretical catalysts, extended hands-on drafting, and individualized feedback loops that culminate in tangible manuscripts. Such participatory architectures have been shown to convert short interventions into durable professional habits when they are anchored in collegial review and shared accountability (Istiqfaroh et al., 2023; Nuraini et al., 2023).

Beyond individual skill uplift, the workshop pursues systemic value creation. First, it links teacher authorship to curriculum improvement by elevating classroom innovations into citable knowledge, thereby strengthening the evidence base for instructional decisions. Second, it builds a peer infrastructure—the AI-Based Teacher Writing Community of Pontianak—to sustain writing momentum through shared resources, rolling deadlines, and co-review. Third, it positions ethical AI literacy as a core professional competence rather than an optional add-on, aligning teacher development with Sustainable Development Goal 4 (Quality Education) through enhanced scholarly productivity and reflective practice (Ansoriyah & Irawan, 2022; Fadiana et al., 2021)).

Conceptually, the program integrates three strands into a coherent capacity-building framework. The technical strand equips teachers with tool-specific proficiencies for literature discovery, outline engineering, and academic editing (Suhartini & Pramono, 2022). The rhetorical strand strengthens genre awareness argumentation, cohesion-coherence, and voice—so manuscripts meet journal expectations without sacrificing practitioner authenticity (Kuswandari et al., 2023; Putra et al., 2023). The ethical strand formalizes norms for citation, paraphrase, and authorship transparency in AI-mediated workflows (Nuraini et al., 2023). The intersection of these strands is expected to yield higher-quality drafts, improved confidence, and more efficient revision trajectories toward submission.

Accordingly, this article reports the design and outcomes of a one-day, AI-assisted scientific writing workshop for secondary teachers. It addresses four guiding questions: (1) How do teachers' drafting behaviors change when AI scaffolds are introduced? (2) Which segments of the writing process benefit most from AI mediation? (3) How does explicit ethics instruction shape teachers' perceptions of authorship and originality? and (4) What post-workshop structures are necessary to sustain writing practice toward publication? By answering these questions, the study contributes a replicable, context-sensitive model of community engagement that couples digital acceleration with humanistic academic judgment, advancing an educator profile that is innovative, reflective, and ethically grounded in the AI era (Fadiana et al., 2021).

Methods

This community service program was designed using a qualitative participatory approach that emphasizes collaboration, reflection, and experiential learning. The methodological orientation was grounded in the belief that teachers learn best when they actively construct knowledge through shared experiences rather than through passive instruction. The workshop therefore positioned teachers as co-learners and co-creators of knowledge rather than as mere recipients of information. It was conceived not as a short-term technical training but as a transformative learning process that would strengthen teachers' ability to integrate Artificial Intelligence (AI) into scientific writing while upholding ethical and intellectual integrity. The method aimed to balance technological skill development with moral and reflective awareness so that AI would become a supportive partner in creative thinking, not a replacement for human originality.

The activity was conducted on Saturday, March 16, 2024, at SMPN 21 Pontianak, West Kalimantan, involving fifteen teachers from different subject areas such as Social Studies, Indonesian Language, Science, and Civic Education. Participants were selected purposively to represent a diverse mix of professional backgrounds and interests, ensuring rich interdisciplinary interaction during the training. The inclusion criteria were based on interest in academic writing, sufficient digital literacy, and readiness to participate collaboratively. The one-day duration was chosen to provide an intensive yet manageable format that combined conceptual input with hands-on practice. The design allowed participants to move seamlessly from understanding the principles of academic writing to immediately applying those principles through guided activities, ensuring that learning outcomes were both practical and sustainable.

The workshop implementation followed three interrelated phases: orientation, practice, and reflection. During the orientation phase, facilitators introduced the objectives of the program, the structure of scientific articles, and the importance of ethical standards in publication. This stage also included an open discussion about participants' previous experiences and perceptions of AI, which served to establish a baseline understanding before the technical practice began. In the practice phase, participants engaged directly with several AI tools such as ChatGPT, Perplexity, Humata, and Research Rabbit to explore how these platforms could assist in idea development, literature discovery, and language editing. Teachers worked individually and collaboratively to produce abstracts, outlines, and introductory sections of their articles, guided by real-time feedback from facilitators. The reflective phase concluded the activity with an open dialogue in which participants analyzed their learning experiences, identified challenges, and formulated strategies for the ethical and responsible use of AI in their future writing projects.

Data collection and validation were integrated throughout the workshop to ensure that the process captured both learning outcomes and behavioral changes. Observations, reflective journals, and written drafts were used as qualitative indicators of progress. At the end of the session, a peer-review segment encouraged participants to evaluate each other's work, providing constructive feedback and reinforcing a sense of scholarly community. Ethical principles were central to the entire process. Participants provided informed consent, and all personal data were treated confidentially. AI-assisted outputs were used transparently, and participants were encouraged to acknowledge technological support in their manuscripts. The workshop concluded with the formation of the AI-Based Teacher Writing Community of Pontianak, a collaborative platform for continued mentoring, manuscript sharing, and collective publication. Through this comprehensive approach, the method not only improved teachers' technical competence in writing but also nurtured a sustainable culture of professionalism, digital literacy, and ethical scholarship within the school community.

Result And Discussion

The Workshop on Scientific Article Writing Assisted by Artificial Intelligence (AI) produced transformative impacts across multiple dimensions of teacher development cognitive, affective, ethical, and collaborative. From the first session, the atmosphere was charged with both curiosity and apprehension. Many participants expressed that they had long regarded scientific writing as an academic privilege reserved for researchers, not classroom educators. However, as discussions unfolded, teachers began to recognize that scholarly communication is an extension of reflective teaching practice. When the facilitator introduced the concept of AI as a tool for thought rather than a threat to originality, attitudes shifted dramatically. Participants started viewing AI as an intellectual companion that could scaffold their thinking, help articulate ideas, and enhance precision in writing. This shift echoed findings that AI-assisted training can strengthen teachers' confidence and fluency in academic writing (Subiyantoro et al., 2024).

Figure 1. Resource person presenting material on AI-assisted scientific writing to teachers.

The orientation phase established a reflective and collegial learning environment that encouraged participants to share personal experiences and writing challenges. Teachers discussed the barriers that had kept them from publishing limited time, lack of guidance, and uncertainty about journal standards. The facilitator reframed these obstacles as part of the scholarly journey, emphasizing that writing is a recursive act of meaning-making rather than a linear product. This redefinition of writing aligned with the participatory approach, positioning teachers as co-learners engaged in a dialogic construction of knowledge (Nuraini et al., 2023). The exchange of stories created a strong sense of community, allowing teachers to perceive that their professional experiences were valuable sources of research insight. This realization re-anchored scientific writing within the moral commitment of educators to share innovations for the collective advancement of teaching.

The practice phase became the intellectual heart of the program. Teachers were introduced to several AI platforms ChatGPT, Perplexity.ai, Humata.ai, and Research Rabbit each serving different cognitive functions in the writing process. Through guided experimentation, participants used these tools to generate outlines, explore literature, refine grammar, and test coherence. The process was intentionally iterative: AI suggestions were never accepted wholesale but critically examined, revised, and contextualized within each teacher's classroom experience. This approach validated that the integration of AI can accelerate cognitive scaffolding while preserving human interpretation and creativity (Wahyudin et al., 2023). The facilitators emphasized that mastery lies not in automation but in discernment in knowing when to rely on AI assistance and when to assert one's scholarly voice.

Figure 2. Mentoring session during the AI-assisted writing practice

A defining feature of the workshop was its interactive mentoring process, where facilitators provided individualized support during writing sessions. Teachers were guided to paraphrase ethically, maintain argument flow, and adapt tone to scholarly conventions.

They were also encouraged to identify their own biases and to question the assumptions embedded within AI-generated text. This recursive practice fostered what Khalifa and Albadawy (2024) calls critical digital literacy, which integrates technological competence with moral judgment. Participants expressed that the real transformation came not from learning how to use AI, but from realizing how to think more critically about their own intellectual choices. By the end of this phase, teachers no longer viewed AI as an external authority but as a dialogic partner that provoked reflection, critique, and refinement of thought.

Figure 3. Participants engaging in group consultation and feedback discus Participants engaging in group consultation and feedback discussionssion.

The reflection stage marked a visible leap in both self-efficacy and scholarly maturity. Teachers who initially struggled to draft even a single paragraph were now producing full abstracts and cohesive sections with logical argumentation. During the plenary reflection, participants described how AI had reduced the cognitive friction of writing by simplifying linguistic tasks, thereby freeing them to focus on conceptual depth and analytical rigor. This mirrors the outcomes of participatory literacy workshops that emphasize discovery learning and peer collaboration (Alber et al., 2022). Teachers agreed that the true value of AI lies not in efficiency but in empowerment its ability to restore confidence and autonomy in the writing process. The reflection dialogue also underscored the emotional dimension of scholarly work: joy, pride, and solidarity replaced the fear that had previously surrounded the idea of publication.

The workshop's tangible outcomes were impressive and multilayered. All fifteen participants successfully produced draft manuscripts derived from their classroom innovations, lesson-study experiences, or community-based projects. Each manuscript displayed clear improvement in structure, coherence, and academic tone compared with pre-workshop samples. Teachers also demonstrated stronger citation skills, more consistent argumentation, and a deeper appreciation of publication ethics. Facilitators

observed that teachers had internalized the principle that writing is an act of service a way to contribute knowledge back to the educational ecosystem. These achievements confirm that carefully designed, AI-supported training can shorten the distance between pedagogical practice and scholarly dissemination (Putra et al., 2023). Furthermore, the workshop encouraged teachers to envision writing as a long-term professional identity, not a one-time requirement.

Perhaps the most enduring impact of the activity was the formation of the AI-Based Teacher Writing Community of Pontianak. This peer network emerged organically from the participants' shared enthusiasm and mutual accountability. Through this community, teachers continue to exchange manuscripts, co-review drafts, and explore new digital tools together. The group now serves as a sustainable platform for collective learning, echoing the literacy-culture model that links writing with community building (Istiqfaroh et al., 2023). Beyond technical competence, this initiative cultivated a sense of ethical stewardship and social responsibility. Teachers recognized that technological fluency must be balanced with humility, integrity, and collaboration. The legacy of the workshop thus lies not only in improved writing skills but in the creation of an enduring intellectual movement — one that embodies the principle that education in the AI era flourishes when technology and humanity evolve together in the service of knowledge, creativity, and moral purpose.

Conclusion

This workshop demonstrated that thoughtfully designed, AI-assisted scientific writing can catalyze durable professional transformation for secondary school teachers by simultaneously advancing technical fluency, ethical maturity, and scholarly confidence. In one intensive day, participants moved from apprehension to authorship: they mapped classroom problems into researchable questions, converted lived pedagogical experience into structured arguments, and produced complete draft manuscripts while learning to interrogate, refine, and responsibly disclose AI support. The process reframed writing as an iterative, dialogic practice—less a gatekept ritual and more a reflective craft in which human judgment remains sovereign and technology serves as a scaffold for clarity, cohesion, and economy of effort. Equally significant, the workshop seeded a peer-driven infrastructure—the AI-Based Teacher Writing Community of Pontianak—that extends impact beyond the event through shared review cycles, rolling submission plans, and collective norms for integrity, attribution, and transparency. By aligning digital literacy with moral literacy, the program offers a replicable model of community engagement in which teachers are not passive adopters of tools but active stewards of scholarly discourse, contributing locally grounded knowledge to the wider educational conversation. In doing so, it advances the spirit of high-quality education: classrooms informed by evidence, educators empowered to publish, and a professional culture where

creativity, conscience, and intelligent technologies co-evolve in service of student learning and societal good.

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