

Enhancing Senior Faculty Members' Research Writing Competence Through a Seminar-Workshop on AI Tools and Ethical AI Practices

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ABSTRACT

The rapid integration of artificial intelligence (AI) into higher education has created both opportunities and challenges for academic research writing, particularly for senior faculty members at MSU-ILS with limited exposure to emerging AI tools. This action research examined the effectiveness of a seminar-workshop on AI tools and ethical AI practices in enhancing senior faculty members' research writing competence. Guided by the action research cycle of planning, action, observation, and reflection, the study involved senior faculty members from a basic education institution who participated in a structured capacity-building intervention. Data were collected using a researcher-developed, five-point Likert scale questionnaire administered before and after the seminar-workshop, focusing on baseline competence, perceived improvement, and ethical awareness in AI-assisted research writing. Descriptive statistical analysis revealed that participants initially demonstrated a moderate level of knowledge and skills in using AI tools for research writing. Following the intervention, results indicated a marked improvement in faculty members' competence, confidence, and perceptions of the usefulness and ethical application of AI tools in academic writing. Participants reported increased awareness of ethical guidelines and greater confidence in using AI responsibly without compromising academic integrity. The findings suggest that seminar-workshops integrating both technical and ethical dimensions of AI use are effective in strengthening research writing competence among senior faculty members. The study contributes to the growing discourse on responsible AI adoption in higher education and provides practical insights for designing faculty development initiatives that support ethical and effective AI-assisted scholarly writing.

Keywords: artificial intelligence, research writing, faculty development, ethical AI

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed higher education, particularly in the areas of research production, academic writing, and scholarly communication (Zawacki-Richter et al., 2020). The emergence of generative AI systems such as ChatGPT has accelerated institutional discussions regarding the opportunities and risks of AI-assisted academic writing, prompting universities worldwide to develop policies and ethical guidelines for responsible use (Dwivedi et al., 2023). Recent global analyses highlight that AI adoption in higher education is expanding rapidly, yet faculty preparedness and structured professional development remain uneven across institutions (Bozkurt et al., 2023). This imbalance is particularly evident among senior faculty members who may possess strong disciplinary expertise but have limited exposure to emerging AI technologies (Bond et al., 2024). Strengthening faculty competence in ethical AI-assisted research writing is therefore critical for sustaining research productivity, maintaining academic integrity, and ensuring equitable participation in the evolving digital research ecosystem (Dwivedi et al., 2023).

In this study, AI tools for research writing refer to generative and assistive artificial intelligence applications that support idea generation, outlining, paraphrasing, editing, referencing, and manuscript organization (Dwivedi et al., 2023). Ethical AI practices involve responsible, transparent, and integrity-based use of AI systems in accordance with institutional and scholarly standards, including disclosure, avoidance of plagiarism, and maintenance of human authorship accountability (Bozkurt et al., 2023). Research writing competence is operationalized as faculty members' knowledge, technical skills, confidence, and ethical awareness in producing

scholarly manuscripts with or without AI support (Bond et al., 2024). This study focuses specifically on senior faculty members in basic education, recognizing that professional seniority does not automatically translate into technological fluency or AI readiness (Zawacki-Richter et al., 2020). The investigation, therefore, differentiates general digital literacy from AI-assisted academic competence, emphasizing both technical proficiency and ethical judgment in scholarly practice (Bozkurt et al., 2023).

Recent scholarship indicates that AI-assisted writing tools can enhance efficiency, language clarity, and structural organization of academic manuscripts when used appropriately (Dwivedi et al., 2023). Studies also report generally positive perceptions toward AI integration in academic work, particularly for brainstorming and editing tasks, while simultaneously raising concerns about overreliance and ethical ambiguity (Bond et al., 2024). A growing body of literature emphasizes the need for institutional training and AI literacy initiatives to equip faculty and students with critical and responsible usage skills (Bozkurt et al., 2023). However, existing research reveals inconsistencies between favorable attitudes and actual competence, suggesting that awareness does not necessarily equate to effective practice (Zawacki-Richter et al., 2020). Moreover, many studies employ cross-sectional survey designs, limiting empirical evidence regarding the effectiveness of structured interventions such as seminar-workshops in improving measurable AI-related knowledge and skills (Bond et al., 2024).

This study is anchored in the Technological Pedagogical Content Knowledge (TPACK) framework, which posits that effective technology integration requires the intersection of technological knowledge, content expertise, and contextual understanding (Zawacki-Richter et al., 2020). Although traditionally applied to instructional contexts, TPACK provides a relevant lens for examining faculty integration of AI tools into research writing by aligning technological competence with disciplinary knowledge (Bond et al., 2024). Additionally, the concept of digital competence and responsible innovation supports the ethical dimension of AI adoption, emphasizing reflective practice, accountability, and critical engagement with emerging technologies (Bozkurt et al., 2023). By integrating competence-based and ethical perspectives, the framework guides the examination of how structured professional development may enhance both technical skill and ethical awareness in AI-assisted scholarly writing (Dwivedi et al., 2023).

Despite extensive research on AI in education, little is known about the effectiveness of targeted seminar-workshops in enhancing senior faculty members' AI-assisted research writing competence (Bond et al., 2024). Much of the current literature concentrates on student populations or early-career academics, leaving senior faculty relatively understudied in empirical intervention research (Zawacki-Richter et al., 2020). Furthermore, evidence from developing or resource-constrained institutional contexts remains limited, restricting the applicability of findings across diverse educational settings (Bozkurt et al., 2023). To date, few studies have employed action research designs with pretest–posttest comparisons to evaluate measurable improvements in AI knowledge, skills, and ethical awareness among faculty participants (Dwivedi et al., 2023). Addressing this gap is essential to inform context-responsive professional development initiatives and evidence-based institutional policy formulation.

This action research aims to determine the effectiveness of a seminar-workshop on AI tools and ethical AI practices in enhancing senior faculty members' research writing competence. Specifically, the study seeks to (1) assess the baseline knowledge and skills of senior faculty members in using AI tools for research writing, (2) determine whether there is a significant improvement in their knowledge and skills after the intervention, and (3) examine participants' perceptions regarding the usefulness and ethical implications of AI-assisted academic writing. Using a pretest–posttest action research design, the study tests the hypothesis that participation in the seminar-workshop will significantly improve faculty members' AI-related knowledge and skills.

This study contributes theoretically by extending technology integration and digital competence frameworks to the domain of AI-assisted research writing among senior academics. Methodologically, it advances the literature by employing an intervention-based action research design rather than relying solely on descriptive perception surveys. Practically, the findings may guide higher education institutions in designing structured AI literacy programs that promote both efficiency and academic integrity. At the institutional and regional levels, the study provides context-specific evidence that may strengthen research culture and faculty development initiatives. Ultimately, the research contributes to the global discourse on responsible AI adoption in academia by

demonstrating how structured capacity-building interventions can bridge competence gaps while upholding ethical standards.

Statement of the Problem

This action research aims to determine the effectiveness of a seminar-workshop on the use of AI tools and ethical AI practices in enhancing senior faculty members' research writing competence in MSU-ILS.

Specifically, it seeks to answer the following questions:

1. What is the level of knowledge and skills of senior faculty members in using AI tools for research writing before the seminar-workshop?
2. Is there a significant improvement in their knowledge and skills after participating in the seminar-workshop?
3. How do the participants perceive the usefulness and ethical implications of AI tools in academic writing after the intervention?

Objectives of the Study

This study aims to:

1. Assess the baseline knowledge and skills of senior faculty members in using AI tools for organizing and writing research manuscripts.
2. Implement a seminar-workshop focusing on AI tools and ethical AI practices in academic writing.
3. Evaluate the effectiveness of the intervention by comparing pre- and post-intervention results.
4. Describe participants' perceptions regarding the usefulness and ethical application of AI tools in research writing.

METHODOLOGY

This study employed an action research design guided by the cyclical model of Stephen Kemmis and Robin McTaggart, which consists of four recursive phases: planning, action, observation, and reflection. The planning phase involved diagnosing the problem of limited competence and ethical awareness in AI-assisted research writing among MSU-ILS senior faculty members and designing a targeted seminar-workshop as an intervention. The action phase focused on the implementation of the seminar-workshop, which introduced selected AI tools for research writing alongside institutional and discipline-based ethical guidelines. During the observation phase, changes in participants' knowledge, skills, and perceptions were systematically documented through pretest and posttest measures and reflective feedback. Finally, the reflection phase entailed analyzing the outcomes of the intervention to determine its effectiveness and to inform subsequent action plans for sustained faculty development.

The study was conducted in MSU-ILS, where research productivity is a key performance indicator for faculty members. The participants comprised senior faculty members, defined as academic staff with at least fifteen years of teaching and research experience. A purposive sampling technique was used to select participants who were actively engaged or expected to engage in research manuscript preparation and who voluntarily consented to participate in the seminar workshop. Inclusion criteria required that participants hold a permanent or regular teaching position and have minimal prior formal training in AI-assisted academic writing. Ethical considerations were strictly observed, including securing informed consent, ensuring voluntary participation, maintaining confidentiality and anonymity of responses, and using the collected data solely for research and professional development purposes.

Data were collected using a researcher-developed and expert-validated questionnaire designed to assess faculty members' competence in AI-assisted research writing across three domains: baseline knowledge and skills, improvement after the intervention, and perceived usefulness and ethical implications of AI tools. The instrument employed a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Content validity was established through expert review by colleagues with expertise in educational research, research ethics, and educational technology, who evaluated the clarity, relevance, and alignment of items with the study objectives. Minor revisions were incorporated based on their feedback before the instrument was administered. The questionnaire was administered twice: before the seminar workshop (pretest) and after its completion (post-test).

Data analysis used descriptive statistics to compute the mean and standard deviation for each item and domain, providing a clear picture of participants' competence levels and perceived improvements. Mean scores were interpreted using predetermined scale ranges to classify levels of competence and perception. Comparative analysis of pretest and posttest results was conducted to examine observable changes attributable to the intervention. Qualitative insights from participants' informal reflections and comments during the reflection phase were analyzed thematically to complement the quantitative findings and to provide contextual understanding of how and why changes occurred. The integration of quantitative and qualitative evidence ensured coherence between the study objectives, the intervention, and the evaluation of outcomes, consistent with the principles of action research.

RESULTS

The findings in Table 1 indicate that before the seminar-workshop, senior faculty members demonstrated a moderate level of competence in AI-assisted research writing, as reflected in mean scores ranging from 2.88 to 3.38 across knowledge and skills indicators (Items 1–5; $M = 2.88\text{--}3.38$, $SD = 0.835\text{--}1.246$). Following the intervention, a marked improvement was observed, with participants reporting a high level of knowledge and skill enhancement in using AI tools for research writing, evidenced by consistently higher mean scores ($*M = 3.63\text{--}3.88$, $SD = 0.641\text{--}0.916$) across post-seminar items (Items 6–10). Furthermore, participants expressed high perceptions of usefulness and ethical awareness regarding AI-assisted academic writing after the intervention, with mean values ranging from 3.88 to 4.00 and relatively low standard deviations ($SD = 0.535\text{--}0.756$), indicating strong agreement and response consistency (Items 11–15). Collectively, these findings suggest that the seminar-workshop was an effective intervention in enhancing senior faculty members' technical competence, confidence, and ethical understanding of AI tools in research writing.

Table 1. Level of Senior Faculty Members' Competence in AI-Assisted Research Writing

Item No.	Statement	Mean	SD	Interpretation
A. Knowledge and Skills in Using AI Tools for Research Writing (Before the Seminar-Workshop)				
1	I am familiar with various AI tools that can be used for academic research writing.	3.13	.991	Moderate
2	I know how to use AI tools to generate ideas or outlines for research manuscripts.	2.88	.835	Moderate
3	I am confident in using AI tools to improve grammar, clarity, and coherence in academic writing.	3.38	1.188	Moderate
4	I understand how AI tools can assist in organizing and structuring research papers.	3.13	1.246	Moderate
5	I have adequate skills to integrate AI tools into my research writing process independently.	3.00	1.069	Moderate
B. Improvement in Knowledge and Skills After the Seminar Workshop				

6	My knowledge of AI tools for research writing improved after participating in the seminar-workshop.	3.88	.641	High
7	I am now more confident in using AI tools to support my research writing tasks.	3.63	.916	High
8	The seminar-workshop enhanced my ability to use AI tools effectively in organizing research manuscripts.	3.88	.641	High
9	I can now apply AI tools more appropriately in revising and refining academic papers.	3.88	.641	High
10	The seminar-workshop helped me develop practical skills in using AI tools for research writing.	3.88	.641	High
C. Perceived Usefulness and Ethical Implications of AI Tools in Academic Writing				
11	I find AI tools useful in improving the efficiency of my research writing process.	4.00	.535	High
12	AI tools help me produce clearer and more organized academic manuscripts.	4.00	.756	High
13	I am aware of the ethical guidelines related to the use of AI tools in academic writing.	3.88	.641	High
14	I believe that AI tools can be used ethically without compromising academic integrity.	4.00	.535	High
15	I feel confident in using AI tools responsibly and ethically in my future research writing.	4.00	.756	High

DISCUSSION

This action research aimed to examine the effectiveness of a seminar-workshop on AI tools and ethical AI practices in enhancing senior faculty members' research writing competence. The findings indicate that before the intervention, participants demonstrated only a moderate level of knowledge and skills in AI-assisted research writing. After the seminar-workshop, faculty members reported significant improvements in their competence and confidence in the responsible use of AI tools for academic writing. Participants also expressed positive perceptions regarding the usefulness of AI tools in improving efficiency and manuscript quality. Additionally, they demonstrated heightened awareness of ethical considerations in the responsible use of AI for scholarly work.

The observed improvement in faculty competence following the intervention can be theoretically explained through technology integration and digital competence frameworks, which emphasize structured learning experiences as key to developing effective technology use (Zawacki-Richter et al., 2020). The seminar-workshop provided guided exposure, hands-on practice, and contextualized examples, enabling participants to bridge gaps between existing research expertise and emerging AI technologies. From a competence-based perspective, learning occurred as participants integrated technological knowledge with their disciplinary and scholarly knowledge. This aligns with contemporary views that professional development interventions are essential for translating positive attitudes toward AI into actual competence (Bond et al., 2024). Moreover, the explicit inclusion of ethical discussions likely contributed to participants' increased confidence in using AI responsibly, reinforcing reflective and accountable technology adoption (Bozkurt et al., 2023).

The findings of this study are consistent with previous research reporting that faculty members generally hold favorable attitudes toward AI but initially lack sufficient practical competence in its academic application (Zawacki-Richter et al., 2020; Bond et al., 2024). Like the results of Dwivedi et al. (2023), this study found that

targeted capacity-building initiatives can enhance confidence and perceived usefulness of AI tools in research-related tasks. However, some studies have reported persistent ethical concerns and resistance to AI adoption even after training, which contrasts with the strong ethical confidence observed among participants in this study (Bozkurt et al., 2023). This divergence may be attributed to the explicit emphasis on ethical AI practices embedded within the seminar-workshop, rather than treating ethics as a peripheral topic. Contextual factors, such as participants' professional maturity and immediate research needs, may have also contributed to the stronger post-intervention alignment between competence and ethical awareness.

A notable secondary finding was the relatively consistent agreement among participants regarding ethical awareness and responsible AI use after the intervention. This may be explained by the integration of ethical guidelines alongside technical instruction, which aligns with theories of responsible innovation emphasizing the co-development of skills and values (Bozkurt et al., 2023). Additionally, the lower variability in post-intervention responses suggests a convergence of understanding among participants, possibly due to shared learning experiences during the seminar workshop. This outcome supports the argument that collective professional development activities can foster common standards and shared interpretations of emerging technologies. The finding underscores the importance of framing AI not merely as a technical tool but as a scholarly practice governed by ethical norms (Dwivedi et al., 2023).

Theoretically, the findings extend digital competence and technology integration frameworks by demonstrating their applicability to AI-assisted research writing among senior academics. Furthermore, the results highlight the value of structured seminar-workshops that combine technical training with ethical reflection as an effective model for faculty development. Practically, higher education institutions may consider embedding AI literacy and ethical AI use into regular research capacity-building programs to support sustained scholarly productivity. At the policy level, the study provides empirical support for institutional guidelines that promote responsible AI adoption while safeguarding academic integrity. These implications should be interpreted within the context of faculty development rather than as universal prescriptions for all academic settings.

A major strength of this study is its action research design, which facilitated immediate intervention and reflective evaluation within a real institutional context; the use of pretest–posttest measures provided clear evidence of perceived change following the seminar-workshop. However, the study is limited by its relatively small sample size and reliance on self-reported data, which may be subject to response bias. The absence of a control group also limits the ability to attribute changes solely to the intervention. These limitations suggest that the findings should not be generalized beyond similar contexts.

Future research may build on these findings by employing larger samples across multiple institutions to enhance generalizability. Longitudinal studies could examine whether improvements in AI-assisted research writing competence are sustained over time. Further investigations might also integrate objective measures of research output quality to complement self-reported competence data. Comparative studies exploring different models of AI training, such as modular courses or mentoring-based approaches, would provide deeper insight into effective faculty development strategies. Finally, future research could explore disciplinary differences in AI adoption and ethical perceptions to refine context-sensitive intervention designs.

CONCLUSION

This action research demonstrated that a structured seminar-workshop on AI tools and ethical AI practices effectively enhanced senior faculty members' research writing competence. The findings revealed a clear progression from moderate baseline knowledge and skills to higher levels of competence, confidence, and ethical awareness following the intervention. The integration of technical training with explicit discussions on responsible AI use enabled participants to adopt AI tools more critically and ethically in their scholarly writing. Overall, the study underscores the value of targeted professional development initiatives in supporting faculty adaptation to emerging AI technologies while upholding academic integrity.

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Conflict of Interest

The authors declare no conflict of interest with respect to the research, authorship, and publication of this manuscript.

Ethics Approval

This study was conducted in accordance with institutional ethical standards for educational research. Formal approval was obtained from the School Head/Principal of the Mindanao State University–Integrated Laboratory School before data collection. Participation in the study was voluntary, and informed consent was obtained from all participants. Confidentiality and anonymity were strictly observed, and no personally identifiable information was collected. All data were used solely for academic and research purposes.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. Data are not publicly accessible to ensure the confidentiality and privacy of research participants.

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