

STRENGTHENING WRITING LITERACY AND THE ETHICS OF UTILIZING ARTIFICIAL INTELLIGENCE THROUGH A WRITING SEMINAR FOR STUDENTS AT MAN 1 MAGELANG

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Abstract: The development of Artificial Intelligence (AI) offers opportunities and challenges in writing education. AI can support idea development and improve writing quality, but its inappropriate use may weaken critical thinking and raise academic ethics concerns. This community service program aimed to improve writing literacy and strengthen students' understanding of ethical AI use through a writing seminar at MAN 1 Magelang. Using a participatory approach, the program involved interactive seminars, discussions, demonstrations, writing practice, mentoring, evaluation, and reflection. Participants were students from the Misykat and English Club extracurricular activities. Data were collected through observations, interviews, questionnaires, writing assessments, and documentation, then analyzed using qualitative descriptive methods supported by descriptive statistics. The results indicated improvements in participants' ability to generate ideas, determine writing perspectives, develop outlines and paragraphs, construct arguments, and revise their work systematically. Participants also demonstrated stronger digital literacy, critical thinking, writing confidence, and awareness of AI as a learning partner rather than a substitute for human reasoning. Furthermore, the program increased awareness of academic integrity, plagiarism prevention, source verification, transparency in AI use, and intellectual property rights. The program produced an integrated literacy model combining writing skills, digital literacy, and AI ethics for implementation in secondary schools and Islamic schools.

Keywords: writing literacy, Artificial Intelligence, academic ethics, writing seminar, digital literacy.

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INTRODUCTION

Writing skills are a literacy competency that plays a crucial role in developing students' critical thinking, scientific communication, and problem-solving skills. Writing is not simply about expressing ideas in text; it also involves organizing ideas, evaluating information, constructing arguments, and communicating knowledge logically. Therefore, writing skills are a crucial indicator of learning success and provide students with the necessary skills to navigate higher education, the workplace, and life in the digital age.

However, the literacy skills of Indonesian students remain a concern. The results of the 2022 Programme for International Student Assessment (PISA) indicate that Indonesian students' reading literacy skills remain below the average for OECD member countries. This condition results in low abilities to comprehend information, construct arguments, and produce critical, evidence-based writing (OECD, 2023). Furthermore, the PISA framework emphasizes that 21st-century literacy requires not only reading skills but also the ability to process digital information, think reflectively, and communicate ideas effectively through writing (OECD, 2023).

These problems are also evident in the learning process at school. Many students still struggle to develop ideas, structure their writing, build relationships between sentences and paragraphs, and present arguments logically. This situation indicates that writing instruction has not fully developed the higher-order thinking skills required for 21st-century learning.

On the other hand, the development of Artificial Intelligence (AI), particularly Generative AI such as ChatGPT, Gemini, Claude, and Microsoft Copilot, has transformed the way students search for information, develop ideas, and produce writing. This technology provides opportunities to increase learning effectiveness, expand access to learning resources, and support more personalized learning experiences (UNESCO, 2023). UNESCO emphasizes that AI can be a significant innovation in education if used responsibly and oriented toward strengthening human capacity, rather than replacing student learning (UNESCO, 2023). In line with this, the OECD (2023) stated that AI has the potential to support learning by providing rapid feedback, assisting with material development, and creating more adaptive learning. Although its use still requires regulation and oversight to avoid compromising learning quality or academic integrity.

The development of AI also demonstrates its increasing ability to understand and generate natural language. The OECD (2023) reports that large language models such as GPT are capable of demonstrating excellent

performance on various reading and science literacy tasks tested in the PISA (Parliamentary Student Assessment). These findings suggest that AI has the potential to be an effective learning partner when used appropriately.

However, the use of AI also presents challenges. The ease of instant text generation can reduce student engagement in the process of thinking, constructing arguments, and revising their writing independently. If AI is only used to generate final answers, students' critical thinking skills and writing literacy could potentially decline. Furthermore, the use of AI without adequate understanding can give rise to academic integrity issues, such as plagiarism, unclear intellectual ownership, transparency regarding AI use, information accuracy, and algorithmic bias (Panagopoulou et al., 2023).

UNESCO (2023) emphasized that the implementation of AI in education must prioritize a human-centered approach, meaning that AI serves to strengthen human capabilities, not replace them. Therefore, students need to be equipped with the ability to use AI critically, verify the information generated, and uphold academic honesty. Therefore, strengthening writing literacy in the AI era needs to be integrated with digital literacy and the ethics of using Artificial Intelligence as part of 21st-century competencies.

Various studies have shown that AI can improve the quality of writing instruction when used as an aid. Werdiningsih et al. (2024) found that ChatGPT helped students generate ideas, improve sentence structure, enrich vocabulary, and boost writing confidence. However, the study also highlighted the risks of AI dependency if not balanced with critical thinking skills. Gustilo et al. (2024) emphasized that AI has great potential in education, but its implementation requires clear ethical guidelines. Taufikin et al. (2025) also reported that the use of ChatGPT can improve writing quality and enhance argumentation coherence, while Kuraesin et al. (2024) revealed that various ethical obstacles remain, such as plagiarism, a lack of guidelines for AI use, and concerns about diminishing independent thinking skills.

However, most previous research has focused on higher education with students as subjects and has primarily examined perceptions or the effectiveness of AI use. Studies on the integration of strengthening writing literacy, AI literacy, and academic ethics in secondary education, particularly in Islamic schools (madrasah), are still relatively limited.

Based on these conditions, three main research gaps exist. First, there are still few community service programs that integrate writing literacy with the ethical use of AI in a single activity design. Second, previous research has been conducted primarily on university students, thus not reflecting the needs of madrasah students who are developing academic character

and a culture of literacy. Third, previous research has focused more on the impact of AI use than on educational strategies that integrate writing skills and the ethical use of AI through writing seminars.

Based on these research gaps, the novelty of this article lies in the integration of strengthening writing literacy, Artificial Intelligence literacy, and academic ethics through a writing seminar designed to meet the needs of students at MAN 1 Magelang. The seminar not only equips participants with writing techniques but also instills an understanding that AI is a learning aid (learning partner), not a substitute for the thinking process, and therefore its use must uphold academic honesty.

This activity was implemented based on needs identification results at MAN 1 Magelang, which indicated that some students still experience difficulties developing ideas, structuring their writing, and utilizing digital technology productively. Furthermore, the use of various AI applications has not been accompanied by an understanding of the ethics of their use. Therefore, a program is needed that not only improves writing skills but also builds awareness regarding the responsible use of AI.

Based on the above description, this activity aims to improve the writing literacy of students at MAN 1 Magelang through a writing seminar while simultaneously strengthening their understanding of the ethics of using Artificial Intelligence in academic activities. In addition to improving writing skills, this activity is expected to shape students who are able to utilize AI critically, responsibly, transparently, and in accordance with the principles of academic integrity. Theoretically, this activity is expected to enrich studies on the integration of writing literacy, digital literacy, and AI ethics in secondary education. Practically, it can serve as a model of community service that can be replicated by other schools or madrasas in facing the transformation of education in the era of artificial intelligence.

METHOD

This community service activity (PkM) is implemented through a participatory approach, incorporating a writing seminar combined with interactive lectures, demonstrations, discussions, writing practice, and mentoring. The participatory approach was chosen because it positions participants as active participants in the learning process, enabling them not only to receive material but also to engage directly in discussions, practice, and reflection. This approach is considered effective in enhancing participants' knowledge, skills, and participation through active engagement during the learning process (Cornwall & Jewkes, 1995).

The community service activity was conducted as part of the Integrated Educational Internship program for Tidar University students from July 14–September 9, 2025. The writing seminar was held on September 4, 2025, at MAN 1 Magelang, Magelang Regency, Central Java. The target group for this activity was students participating in the Misykat and English Club extracurricular activities, as both organizations engage in activities related to writing, journalism, and literacy development. The selection of participants was based on coordination with the madrasah and extracurricular instructors, taking into account the need to improve writing skills and understanding of the ethical use of Artificial Intelligence (AI) in academic activities.

The program was implemented through six stages: needs analysis, planning, seminar implementation, mentoring, evaluation, and reflection. The needs analysis phase was conducted through field observations and interviews with supervising teachers, extracurricular instructors, and the Deputy Principal for Student Affairs to identify students' writing literacy, learning needs, and level of understanding of the use of Artificial Intelligence in academic activities. The results of the needs analysis served as the basis for developing the activity design, seminar materials, learning strategies, and evaluation instruments to ensure the program met the needs of the partners (UNESCO, 2023).

The planning phase included establishing activity objectives, developing an implementation schedule, coordinating with the school regarding facilities and infrastructure, selecting resource persons from the Student Activity Unit (LPM) Mata, Tidar University, developing seminar modules, presentation media, and evaluation instruments. In addition, the community service team also developed a flow of activities and learning scenarios to ensure the seminar was systematic and oriented towards active participant involvement.

The seminar was conducted face-to-face using a student-centered learning strategy that combined interactive lectures, demonstrations, discussions, case studies, writing practice, and a question-and-answer session. The seminar covered the urgency of writing literacy in the digital age, techniques for finding and developing writing ideas, developing a writing outline, techniques for writing popular articles, an introduction to Artificial Intelligence in education, the use of AI as a writing tool, and the ethics of using Artificial Intelligence in academic writing. In the practical session, participants were given the opportunity to write a paper based on a specific theme, responsibly utilizing AI as a tool through a process of verification, editing, and independent development of ideas in accordance with UNESCO's recommended principles for AI use (UNESCO, 2023).

The mentoring phase followed the seminar presentation. During this phase, the resource person and community service team provided direct guidance to participants in composing their writing, developing paragraph structure, refining language use, and evaluating the results of using AI to ensure they adhered to the principles of originality and academic integrity. The mentoring phase aimed to ensure that participants were able to implement the acquired material into their actual writing practice.

Activity evaluation was conducted to measure the achievement of the seminar objectives through observations during the activity, assessment of writing practice results, discussion sessions, Q&A sessions, and distribution of participant response questionnaires. The instruments used included participant activity observation sheets, interview guidelines with the supervising teacher, a writing assessment rubric, an evaluation questionnaire using a Likert scale, and documentation of the activity in the form of photos and videos. The use of these various instruments aimed to obtain a comprehensive picture of the effectiveness of the seminar and changes in participants' understanding after participating (Kirkpatrick & Kirkpatrick, 2016).

The data obtained were analyzed using descriptive qualitative analysis, with the stages of data reduction, data presentation, and conclusion drawing as outlined by Miles, Huberman, and Saldaña (2014). Quantitative data from the questionnaire was analyzed using descriptive statistics in the form of percentages to describe the level of understanding, participation, and response of participants to the implementation of the seminar.

RESULTS AND DISCUSSION

Participant Needs Analysis

The initial stage of the community service activity began with a needs assessment through observations of student literacy activities and semi-structured interviews with Indonesian language teachers, the Misykat and English Club extracurricular supervisors, and the Vice Principal for Student Affairs at MAN 1 Magelang. The needs analysis was conducted to obtain an overview of the participants' writing literacy skills and their level of understanding of the use of Artificial Intelligence (AI) in academic activities. The results of this analysis served as the basis for developing seminar materials, learning strategies, and the form of mentoring provided to participants, ensuring that the program aligns with real-world needs (Cornwall & Jewkes, 1995).

Based on the observations, it was found that most students still struggled to develop ideas into coherent and systematic writing. When given a specific topic, many participants were able to express their ideas verbally, but encountered difficulties in putting them into writing. Ideas tended to be undeveloped, paragraphs lacked logical connections, and arguments were still descriptive in nature, lacking support from relevant facts or references. This situation indicates that critical thinking skills and the ability to organize ideas in written form still require strengthening through more targeted learning.

Interviews with Indonesian language teachers reinforce these findings. The teachers reported that some students still struggle to determine the focus of a discussion, structure their writing flow, and develop main ideas into several interconnected paragraphs. During the learning process, students tend to write directly without prior planning or outlining, resulting in less coherent writing and failing to meet the standards of good writing. This finding aligns with the results of the PISA assessment, which indicates that students' literacy skills are measured not only by reading ability but also by their ability to understand, evaluate, integrate, and communicate information effectively through various text formats (OECD, 2023).

In addition to difficulties developing ideas, observations also revealed that most participants lacked a grasp of the basic structure of article writing. When asked to write a simple article, many students were unable to differentiate the functions of the introduction, body, and conclusion proportionally. Some writing still exhibited unsystematic paragraph structure, the use of repetitive sentences, and minimal transitions between ideas. This situation indicates that students need guidance on writing outlines, paragraph development, and argumentation techniques to make their writing more coherent and understandable.

Other findings indicate that the culture of revising writing has not yet developed optimally. Most students consider the writing process complete once the first draft is completed. Only a few participants double-checked spelling, sentence structure, content consistency, or information accuracy before submitting their writing. However, the revision process is crucial for producing quality writing because it provides writers with the opportunity to improve the structure, language, and substance of their writing comprehensively. The low level of revision practice indicates that students still view writing as an activity that produces a final product, rather than a process that requires continuous reflection and refinement.

Interview results also indicated that almost all participants were familiar with various Generative Artificial Intelligence-based applications, particularly ChatGPT and Gemini. Some students reported using these applications to assist

with schoolwork, search for information, translate text, or summarize course material. Easy access to AI technology indicates that participants have a fairly good level of basic digital literacy. However, the use of AI has not been accompanied by an understanding of the ethical boundaries of its use in academic activities.

Most participants still believe that AI is an application capable of automatically providing correct answers, allowing the results to be used immediately without verification. Some students even stated that they often copy-paste AI-generated answers rather than re-developing them in their own language or checking the sources of information used. This situation indicates that participants do not yet understand the risks of using AI, such as the possibility of inaccurate information (AI hallucinations), algorithmic bias, and potential violations of academic integrity if AI results are used without critical evaluation.

These findings align with UNESCO guidelines, which emphasize that the implementation of Generative Artificial Intelligence in education must prioritize a human-centered approach, positioning AI as a tool that enhances human capabilities, not replaces students' thinking processes, creativity, or decision-making (UNESCO, 2023). UNESCO also emphasizes the importance of developing AI literacy so that students can understand how AI systems work, verify the information they generate, and use the technology responsibly in accordance with the principles of academic ethics (UNESCO, 2023).

These findings are also supported by the OECD (2023), which states that the development of AI has transformed the way students acquire and process information. While AI offers significant opportunities to improve the quality of learning, its use still requires critical thinking skills, digital literacy, and the ability to evaluate the validity of information. Without these competencies, students potentially become dependent on technology, making the learning process less meaningful and hindering the optimal development of independent thinking skills (OECD, 2023).

Based on the overall needs analysis results, it can be concluded that students at MAN 1 Magelang require a reinforcement program that focuses not only on improving technical writing skills but also on developing digital literacy and the ethical use of Artificial Intelligence. These findings serve as the basis for developing seminar materials that integrate technical writing training with education on the critical and responsible use of AI, based on the principles of academic integrity, so that participants can utilize technology as a learning partner without compromising the creativity and originality of their work.

Implementation of the Writing Literacy Strengthening Seminar

The writing seminar was designed as an educational intervention that focused not only on delivering material but also on developing writing skills through active and participatory learning experiences. The learning strategy employed combined interactive lectures, demonstrations, discussions, writing practice, reflection, and direct mentoring. This approach provided participants with the opportunity to experience firsthand the process of producing a piece of writing, from generating ideas to editing. Thus, the seminar not only enhanced participants' conceptual knowledge of writing but also developed practical skills that could be applied in a variety of academic and non-academic contexts.

Observations during the activity showed that participants progressed at every stage of the writing process. At the beginning of the activity, most students still struggled to choose a topic because they were accustomed to waiting for the teacher to provide a theme. After receiving material on ideas exploration techniques through environmental observations, personal experiences, current issues, and social phenomena around the school, participants began to generate alternative ideas independently. Group discussions and brainstorming sessions helped participants broaden their perspectives on a topic, resulting in more diverse and relevant ideas. These changes demonstrate that the process of discovering ideas can be developed through learning experiences involving interaction, reflection, and exploration of the surrounding environment, rather than simply through a one-way presentation of material (Kolb, 2015).

Improved ideation skills were also influenced by the opportunities given to participants to discuss their observations with resource persons and group members. During this process, participants received feedback on the feasibility of a topic, its potential for development, and its novelty that could be incorporated into a written work. This activity demonstrates that participatory learning can encourage students to construct knowledge through a collaborative process. These findings align with the participatory learning approach, which positions students as active subjects in building understanding through dialogue, experience, and direct involvement in the learning process (Cornwall & Jewkes, 1995).

In addition to the ability to discover ideas, the seminar also contributed to improving participants' ability to determine the angle or perspective of their writing. Before the seminar, most participants tended to write based on general themes, resulting in less focused writing. After receiving guidance, participants began to understand that a theme can be developed from different

perspectives according to the writing purpose and the characteristics of the reader. The ability to determine an angle helped participants narrow the scope of their discussion, making their writing more focused, in-depth, and engaging. This improvement demonstrates that understanding the concept of angle is a crucial factor in producing informative and communicative writing.

The practical results also demonstrated an improvement in participants' ability to develop an outline. Prior to the training, most students wrote articles directly without first developing a structure, resulting in a disjointed flow. After receiving material on outlining techniques, participants were able to organize their ideas into an introduction, body, and conclusion more systematically. The prepared outline served as a guide for developing paragraphs, making the writing process more focused and efficient. This ability demonstrates that outlining serves as a metacognitive strategy, helping participants plan their writing content before beginning the writing process.



Figure 1. Presentation of Material

The development of paragraphing skills was also evident during the practical activities. In the initial stages, the paragraphs written by participants tended to contain several main ideas within a single section, making the relationships between sentences unclear. After receiving guidance on paragraph structure and the use of main sentences, explanatory sentences, and supporting sentences, participants began to construct more coherent paragraphs. Their use of conjunctions and transitions between ideas also improved, making the overall writing easier to understand. This demonstrates that the hands-on practice, coupled with feedback from the resource person, significantly contributed to improving the quality of the participants' writing organization.

The seminar also had a positive impact on participants' ability to construct arguments. Prior to the activity, most of the participants' writing was dominated by personal opinions that were not supported by facts or supporting data. After receiving explanations about the importance of using credible sources of information and techniques for developing arguments based on evidence, participants began to be able to connect their opinions with observational data, references, and relevant examples. This change demonstrates the development of participants' critical thinking skills in constructing logical, evidence-based arguments. This ability is an important indicator of writing literacy because it requires participants not only to express opinions but also to provide reasons that can be academically justified. Another aspect that improved was the ability to revise written work. Before the seminar, most participants assumed that completed writing could be submitted directly without editing. After participating in the mentoring, participants began to understand that revision is an integral part of the writing process, aimed at improving the quality of content and language. In the practical activities, participants were asked to reread their writing, improve sentence structure, evaluate the accuracy of spelling, clarify relationships between ideas, and ensure that the information conveyed aligns with the writing objectives. The revision process was also carried out through peer review, which involves providing feedback to each participant so that each piece of writing gains a broader perspective before being declared complete.

The effectiveness of seminars in improving writing literacy skills is inseparable from the application of an experiential learning approach. According to Kolb (2015), the learning process occurs optimally when participants gain real-world experience, reflect on that experience, develop new concepts, and then test them in practice. These stages are reflected during the seminar, where participants not only receive theoretical explanations but also directly experience the process of producing writing, receive feedback, reflect on errors, and improve their work. This learning cycle allows participants to develop a deeper understanding than learning that focuses solely on delivering material.

Furthermore, the effectiveness of seminars is also influenced by the application of a participatory learning approach. During the activity, participants are given space to express opinions, discuss, ask questions, provide feedback on each other's writing, and collaborate on completing writing assignments. This active involvement creates a dialogic learning environment and encourages participants to construct knowledge through social interaction. Cornwall and Jewkes (1995) explain that a participatory approach can increase a sense of ownership in the learning process because participants are directly involved in every stage of the activity. Thus, the participants' improved writing skills

stemmed not only from the presentation of the material by the speakers, but also from the sharing of experiences, discussions, reflections, and collaborations throughout the seminar.

Overall, the seminar results demonstrated that a learning strategy integrating experiential and participatory learning improved various aspects of participants' writing skills, from generating ideas, determining angles, developing outlines, developing paragraphs, constructing arguments, and revising their writing. These findings demonstrate that strengthening writing literacy will be more effective when implemented through student-centered learning, providing authentic learning experiences, and actively involving participants throughout the learning process. Therefore, the writing seminar model implemented in this activity has the potential to become an alternative literacy strengthening program that can be replicated at the secondary education level to improve the quality of writing skills and build a sustainable literacy culture.

Artificial Intelligence Utilization Training in Writing

One of the key innovations in this writing seminar was the integration of Artificial Intelligence (AI) training as part of the writing literacy strengthening process. The training was designed to build an understanding that AI is not simply a technology capable of automatically generating text, but rather a learning partner that can support the thinking process, idea exploration, and the development of writing quality. This approach was chosen in response to the increasing use of AI technology among students, which is not yet accompanied by an understanding of its functions, benefits, and limitations in academic activities.

In the initial stage of the training, participants were introduced to various Generative Artificial Intelligence platforms currently widely used in education: ChatGPT, Gemini, Claude, and Microsoft Copilot. Speakers explained the characteristics, advantages, and limitations of each platform in assisting the writing process. ChatGPT was introduced as an application capable of assisting with idea exploration, writing outlining, and language editing. Gemini was introduced as a platform integrated with various Google services, facilitating information retrieval and content development. Claude was introduced as a language model capable of understanding the context of writing in greater depth and thus evaluating the coherence and quality of argumentation. Meanwhile, Microsoft Copilot was introduced as a technology that supports the writing process through integration with Microsoft Word, simplifying the process of composing and editing academic documents.

The introduction to these various platforms aimed to broaden participants' knowledge of AI technology developments while also providing an understanding that each application has different functions according to user needs. Thus, participants were not only exposed to a specific application but also understood the basic principles of utilizing Generative Artificial Intelligence to support the learning process. This finding aligns with UNESCO guidelines, which emphasize that education needs to equip students with AI literacy so they can understand how the technology works, select appropriate applications, and utilize AI responsibly in the learning process (UNESCO, 2023).

After gaining an introduction to the various AI platforms, participants participated in a practical session on using AI in writing activities. The first stage began with training on developing effective prompts. The resource person explained that the quality of AI output is greatly influenced by the quality of the prompts provided by the user. Therefore, participants were guided in developing prompts that were specific, clear, and aligned with the writing objective. Through this exercise, participants understood that AI cannot produce optimal information if the user is unable to formulate instructions accurately. This activity also trains systematic thinking skills because participants must determine the goals, context, and expected results before interacting with AI.

The next stage focused on utilizing AI to generate writing ideas. Participants were asked to define a specific theme, then use ChatGPT or Gemini to generate alternative topics, angles, and exploratory questions that could be developed into an article. The practical results demonstrated that AI was able to help participants discover various possibilities for developing a theme that had not previously been considered. However, the resource person emphasized that the ideas generated by AI should not be accepted immediately, but rather should be selected, adapted, and developed based on the participant's experience, knowledge, and context. Thus, AI serves as a source of inspiration that broadens the scope of thinking, not as a determinant of the content of the writing.

In addition to assisting with idea exploration, participants also utilized AI to develop article outlines. Based on the chosen theme, participants asked AI to generate a writing structure consisting of an introduction, body, and conclusion. The resulting outlines were then evaluated together by comparing their suitability to the writing objectives. During this process, participants learned that AI-generated outlines are alternative and therefore require refinement to meet the writer's needs. Through these activities, participants

not only gained examples of systematic writing structures but also developed critical thinking skills in selecting and modifying the most appropriate outline.

The next training focused on utilizing AI to improve the quality of language in writing. Participants were asked to input their drafted paragraphs into an AI application to receive suggestions on spelling, grammar, choice of diction, and sentence clarity. Practical results demonstrated that the AI was capable of providing editing recommendations that helped improve the readability of the writing. However, the resource person emphasized that all AI suggestions must be critically reviewed, as not all changes align with the context or intent of the writer. Therefore, the final decision regarding the use of a sentence rests with the writer, not the AI system.

Participants were also trained to use AI to thoroughly check the structure of an article. AI was used to identify whether the writing had a logical organization, a coherent relationship between ideas, and a congruence between the title, content, and conclusion. Next, participants were asked to compare the AI evaluation results with those of peer reviewers. This process demonstrated that AI can help identify technical weaknesses in writing, while human judgment is still needed to evaluate aspects of creativity, context, relevance, and depth of argumentation. Therefore, participants understood that AI cannot completely replace the human review process.

The final stage of the training was the evaluation of the AI results. Participants were guided to verify information through books, scientific journals, and other official sources before using AI results in their writing. The resource person also provided an example of the phenomenon of AI hallucination, a condition where AI generates information that appears convincing but is not supported by true facts. Through this practice, participants began to understand the importance of checking the accuracy of information, the suitability of references, and the validity of data before using it in academic work. This activity demonstrated that the ability to use AI responsibly depends not only on mastery of technology, but also on the ability to think critically in evaluating every piece of information received.

Observations during the training showed that the use of AI in the writing process increased participants' confidence in developing ideas and composing articles. Participants no longer viewed AI as an application providing instant answers, but as a learning partner that offered alternative solutions when they encountered writing blockages. This shift in perspective indicates that the seminar successfully shifted the paradigm of AI use from being merely an answer generator to a learning partner that supports active learning.

These findings align with UNESCO guidelines, which emphasize that the implementation of Generative Artificial Intelligence in education must be oriented toward a human-centered approach. Within this approach, AI is positioned as a technology that strengthens human capacity, assists the learning process, and encourages creativity and critical thinking without replacing the intellectual role of students (UNESCO, 2023). Therefore, the use of AI in education must always be accompanied by human reflection, evaluation, and decision-making capabilities.

The results of this activity also support the OECD's view that AI has significant potential to improve the quality of learning through providing rapid feedback, personalized learning, and supporting the development of digital literacy skills. However, the OECD emphasizes that these benefits can only be achieved if students have the ability to critically evaluate information, understand the limitations of technology, and use AI ethically in the learning process (OECD, 2023). Therefore, training that integrates writing skills with AI literacy, as implemented in this activity, represents a concrete implementation of 21st-century learning that combines technological mastery with strengthening academic character.

Overall, the training results demonstrate that the integration of Artificial Intelligence in writing seminars is not intended to replace students' thinking processes, but rather to strengthen their abilities to generate ideas, structure their writing, improve language quality, evaluate their writing, and develop critical thinking skills. This approach positions AI as a learning partner that expands learning opportunities while simultaneously fostering awareness that the quality of a piece of writing is still determined by the analytical skills, creativity, reflection, and academic integrity of the writer.

Strengthening the Ethics of Artificial Intelligence Utilization

One important finding from the seminar was the participants' increased understanding of the ethical aspects of using Artificial Intelligence (AI) for academic activities. Prior to the event, most participants viewed AI, particularly ChatGPT and similar applications, as a technology that quickly generated answers without considering the academic processes behind it. After participating in the ethics strengthening session, participants began to understand that the use of AI in learning cannot be separated from the principles of academic integrity, scientific honesty, and intellectual responsibility for each work produced. This change in understanding was evident in the participants' increased ability to distinguish between the use of AI as a learning aid (learning partner) and its use as a substitute for independent thought and writing (Panagopoulou et al., 2023).

The seminar material positioned academic integrity as the primary foundation for the use of AI. Participants were given the understanding that every academic paper must reflect the author's own thoughts, analysis, and argumentation. AI was introduced as a tool to assist in the exploration of ideas, the development of an outline, language editing, and the provision of initial feedback, but the final decision regarding the content of the paper remains the author's responsibility. Through case discussions and analysis of real-life examples, participants understood that using AI without the active involvement of authors can undermine critical thinking and violate the principles of academic honesty. This finding aligns with the study by Panagopoulou et al. (2023), which emphasized that the primary challenge in implementing AI in education lies not with the technology itself, but rather with how users maintain academic integrity when utilizing AI-based systems.

The second aspect of concern was plagiarism. Before the seminar, some participants assumed that AI-generated texts could be used directly for school assignments because they were not taken directly from specific sources. After receiving an explanation of the modern concept of plagiarism, participants understood that using AI-generated texts without modification, critical analysis, or clear acknowledgement still has the potential to violate academic ethics. In the training, participants were asked to compare AI-generated writing with their own revisions to demonstrate the importance of the author's intellectual contribution to each work. This approach helped participants understand that originality is not only measured by the similarity index of the text but also by the author's own thought process, interpretation, and synthesis (Gustilo et al., 2024).

The seminar also introduced participants to the phenomenon of AI hallucination, a condition where an AI system produces information that appears convincing but is actually inaccurate, lacks scientific basis, or is even completely false. Through simulations using ChatGPT and Gemini, participants encountered several examples of invalid references, unpublished citations, and data that did not align with the original source. This experience provided an important lesson: AI results should not be accepted automatically but must be verified using credible scientific sources. Thus, participants began to develop a critical attitude towards AI-generated information and realized the importance of fact-checking before using it in academic writing. These findings reinforce UNESCO's recommendation that AI should be used responsibly through human evaluation and verification (UNESCO, 2023).

Furthermore, participants gained an understanding of AI bias (algorithmic bias). The discussion session explained that AI systems are built on training data that can contain cultural biases, language biases,

social perspectives, and specific preferences. Therefore, AI results are not always objective or representative of all viewpoints. Participants then practiced comparing answers from several AI platforms, such as ChatGPT, Gemini, Claude, and Microsoft Copilot, on the same topic. The practical results revealed variations in the information, argumentation structure, and recommendations provided by each system. This experience encouraged participants not to accept a single AI answer as absolute truth, but to conduct comparative analysis and consider multiple sources of information before constructing arguments in their writing. This skill is an essential part of critical digital literacy, required in the era of artificial intelligence (Panagopoulou et al., 2023).

The discussion on disclosure of AI use was also relatively new to the participants. The seminar instilled an understanding that the use of AI in the writing process should be conducted transparently if it is used substantially in the preparation of the work. Participants were introduced to international practices that are beginning to require authors to provide a statement on the use of AI (AI disclosure statement) in scientific articles and academic assignments. This understanding aims to build an academic culture that upholds transparency so that readers can understand the extent of AI's contribution to the development of a work. This approach aligns with research by Gustilo et al. (2024), which emphasizes that transparency is a crucial principle in maintaining trust in academic work in the era of generative AI.

Furthermore, the seminar strongly emphasized the importance of verifying information sources. Participants were trained not to use AI-generated references directly, but to retrace the original sources through scientific journals, academic books, and the official websites of trusted institutions. In the practical session, participants were asked to check the appropriateness of citations, DOIs, author names, and publication years of the AI-suggested references. This activity gradually fosters the habit of validating information before using it as the basis for scientific arguments. Thus, AI is positioned as a tool that helps identify potential references, while the selection and validation process remains the user's responsibility. This practice is in accordance with the AI ethics framework developed by UNESCO (2023), namely that humans must remain the primary decision-makers (human oversight) in the entire process of using AI.

Another aspect that received attention was intellectual property rights. Participants gained an understanding that although AI can automatically generate text, images, and illustrations, the use of these results still requires

consideration of ownership of the work, copyright, and the ethical use of digital content. Discussions revealed that many participants had not previously understood that AI output could contain elements derived from training data, so users still need to exercise caution in using it, especially if the work is published. Therefore, the seminar instilled the principle that every AI user must respect copyright, cite sources where necessary, and not claim the system's output as entirely original without adequate intellectual contribution (Lockett et al., 2024).

Overall, the strengthening of ethical AI use in this seminar successfully transformed participants' paradigms regarding the use of technology in learning. Whereas previously AI was perceived as a tool for obtaining instant answers, after attending the seminar, participants began to view AI as a learning partner that must be used critically, responsibly, transparently, and under human control. This change was reflected in participants' increased awareness of verifying information, re-editing AI output, constructing arguments based on their own thinking, and avoiding plagiarism. This finding reinforces the research findings of Kuraesin et al. (2024), which stated that strengthening AI ethical literacy from an early age is an effective preventive strategy in building academic character while preparing students to face the transformation of AI-based education.

Impact of Activities on Writing Literacy

The writing seminar had a positive impact on participants' writing literacy, encompassing cognitive aspects, skills, and academic attitudes. Based on observations, evaluations of writing practices, reflective discussions, and feedback from their mentors, participants demonstrated improved abilities in developing ideas, constructing arguments, utilizing digital technology responsibly, and increasing their confidence in writing. These findings indicate that integrating writing literacy with Artificial Intelligence (AI) literacy provides a more comprehensive learning experience than writing lessons that focus solely on technical aspects.

The first improvement was seen in participants' critical thinking skills. Before the seminar, most participants tended to accept information from the internet or AI without evaluating it. After the training, participants began to be able to compare various sources, verify information, and construct arguments based on relevant evidence. During the writing practice, participants no longer directly copied AI output but instead edited and developed ideas based on their own understanding. These findings indicate that AI has successfully positioned itself as a supporter of the thinking

process, rather than a provider of instant answers. These results align with research by Werdiningsih et al. (2024), which states that the benefits of ChatGPT are optimal when accompanied by the ability to reflect and critically evaluate the information generated.

The seminar also improved participants' writing skills. After participating in the training and mentoring, participants were better able to generate ideas, determine writing angles, construct outlines, develop coherent paragraphs, and construct more logical arguments. Their writing structure became more systematic, the relationships between paragraphs more coherent, and their language use more effective. Furthermore, participants began to understand that writing is a process that requires repeated revision to produce better writing. These findings support research by Taufikin et al. (2025) which states that using ChatGPT as a writing preparation and editing tool can improve the quality of argumentation, coherence, and effectiveness of the writing process if it remains controlled by the writer.

The next change was evident in the participants' increased digital literacy. Prior to the training, most students were familiar with ChatGPT and Gemini, but only used them to obtain quick answers. After the training, participants understood how to select an appropriate AI platform, develop effective prompts, evaluate AI output, verify information, and responsibly integrate multiple sources into their writing. Participants also realized that the quality of AI output is greatly influenced by the quality of instructions and the user's ability to evaluate the results. Thus, the seminar not only improved AI skills but also strengthened critical digital literacy as a crucial 21st-century competency (Gustilo et al., 2024).

The seminar also impacted participants' academic integrity. Through materials on plagiarism, transparency in AI use, source verification, and originality, participants began to understand the importance of using AI only as a tool. In writing practice, the processes of analysis, argumentation, and conclusion drawing were still carried out independently. After the seminar, participants became more accustomed to double-checking references, editing AI output, and avoiding direct copying. These findings indicate that the seminar successfully instilled the value of academic honesty as part of writing literacy. These results align with research by Gustilo et al. (2024), which emphasized that education on the ethical use of AI is a crucial factor in maintaining academic integrity.

Furthermore, the seminar also boosted participants' confidence in writing. Before the activity, many participants found it difficult to begin writing due to a lack of ideas and fear of producing poor work. After participating in

practical exercises, discussions, and receiving feedback, participants became more confident that writing skills can develop through practice. The presence of AI helped alleviate writer's block in the initial stages, but the final results were still developed based on the participants' own thinking. This suggests that AI can improve writing self-efficacy when utilized appropriately. These findings are consistent with research by Werdiningsih et al. (2024), which found that ChatGPT can boost writers' confidence by assisting with idea exploration, sentence structure, and language editing.

Overall, the writing seminar not only improved technical writing skills but also simultaneously developed participants' critical thinking skills, digital literacy, academic integrity, and self-confidence. The integration of writing training with education on the ethics of AI utilization results in a more holistic learning experience because participants are not only able to produce better writing but also understand how to use technology responsibly. This finding supports the research findings of Werdiningsih et al. (2024), Taufikin et al. (2025), and Gustilo et al. (2024), which emphasize that the use of AI in education will provide optimal benefits when accompanied by strengthening critical thinking skills, writing skills, and academic integrity.

Program Implications

The seminar on strengthening writing literacy and the ethics of using Artificial Intelligence (AI) at MAN 1 Magelang has important implications, both theoretically and practically. The results of the activity indicate that writing instruction in the digital age cannot simply focus on writing techniques; it also needs to be integrated with digital literacy, critical thinking skills, and the ethics of using AI so that students can use technology productively and responsibly. This integration is crucial for developing 21st-century competencies without neglecting academic integrity (UNESCO, 2023).

Theoretically, the results of the activity reinforce that writing literacy in the AI era is not only related to the ability to produce text, but also encompasses the ability to evaluate information, utilize technology critically, and apply academic ethics. These findings support the concept of human-centered AI proposed by UNESCO (2023), namely that AI serves to strengthen human capacity, not replace thinking and creativity. Furthermore, the results of the activity expand previous studies, which have primarily been conducted in higher education, into a learning model relevant to secondary-level students (Gustilo et al., 2024).

In practice, practice-based seminars and mentoring have proven to be an effective service model for improving student literacy. The combination of

interactive lectures, writing practice, discussions, guided use of AI, and reflection provides a more meaningful learning experience than purely theoretical instruction. Through this approach, participants not only learn to write but also critically evaluate AI results, enabling similar models to be implemented in other schools and Islamic schools (Kolb, 2015).

For schools, this activity demonstrates the need to develop a culture of literacy sustainably and integrated with the development of digital technology. Improving writing skills does not depend solely on classroom learning but also requires support from extracurricular activities, literacy communities, and collaboration with universities. Schools also need to develop guidelines for AI use so that students have a clear reference point for ethical use of technology (OECD, 2023).

For teachers, this program emphasizes the changing role of educators as facilitators and mentors in the use of AI. Teachers not only teach writing techniques but also guide students in verifying information, constructing arguments, and applying academic ethics. Furthermore, teachers need to develop assessments that assess not only written work but also students' thinking processes. This aligns with UNESCO's (2023) recommendation that positions teachers as the primary actors in human-centered learning.

In the madrasah context, this program demonstrates that writing literacy can be integrated with character building through Islamic values such as honesty (*cidq*), trustworthiness, responsibility, and scientific integrity. These values serve as an important foundation for the ethical use of AI, giving madrasahs the opportunity to develop digital literacy that focuses not only on technological mastery but also on the development of responsible student character and respect for intellectual property rights (Panagopoulou et al., 2023).

This program also supports 21st-century learning by developing the 4C competencies (critical thinking, creativity, collaboration, and communication). Participants are trained to think critically in evaluating AI information, creatively develop ideas, communicate effectively in constructing arguments, and collaborate through group discussions and practice. Furthermore, digital literacy and AI literacy are emerging competencies required in the era of digital transformation. The OECD (2023) emphasizes that education systems need to equip students with critical thinking, creativity, problem-solving, and ethical decision-making skills to enable them to coexist with AI technology.

Overall, this program demonstrates that integrating writing literacy with ethical AI use is a learning model that aligns with current educational needs. The program not only improves writing skills but also strengthens digital

literacy, academic integrity, and student readiness for technological developments. Therefore, this model has the potential to be replicated in schools, Islamic schools, and other educational institutions as a literacy strengthening strategy for 21st-century learning.

CONCLUSION

The community service activity, which included a seminar on Strengthening Writing Literacy and Ethics in the Use of Artificial Intelligence for Students at MAN 1 Magelang, has proven to positively contribute to improving students' literacy competencies while simultaneously fostering ethical awareness in the use of artificial intelligence technology. Based on observations, writing practice, discussions, and activity evaluations, the seminar successfully improved participants' abilities in finding and developing ideas, determining writing angles, developing outlines, constructing coherent paragraphs, constructing evidence-based arguments, and conducting systematic revisions. Furthermore, participants demonstrated improved critical thinking skills, digital literacy, writing confidence, and an understanding of the use of AI as a learning aid (learning partner), not as a substitute for thinking.

This program also successfully strengthened participants' understanding of the ethics of using Artificial Intelligence in academic activities, including the principles of academic integrity, preventing plagiarism, awareness of the potential for AI hallucinations and algorithmic bias, the importance of verifying information sources, transparency in AI use (AI disclosure), and respect for intellectual property rights. Thus, the seminar not only developed technical writing skills but also shaped academic character that upholds scientific honesty, responsibility, and the critical and responsible use of technology.

Overall, this activity resulted in a literacy strengthening model that integrates writing skills, digital literacy, and the ethical use of Artificial Intelligence in response to the needs of 21st-century learning. This model has the potential to be replicated in other schools and madrasas as an alternative strategy for developing a literacy culture that adapts to technological developments without neglecting the values of academic integrity. For the program's sustainability, it is recommended that schools develop regular AI-based writing literacy training, develop guidelines for using AI in learning, and strengthen collaboration between schools, universities, and literacy communities to build an innovative, ethical learning ecosystem that is oriented toward the sustainable development of student competencies.

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