Assistance in the Preparation of Scientific Manuscripts Using Artificial Intelligence (AI) and Google Scholar to Enhance Students' Academic Literacy and the Quality of Scholarly Writing

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Abstract
This community service program aims to enhance students' academic literacy and scientific writing skills through the ethical and responsible use of Artificial Intelligence (AI) and Google Scholar. The activity involved 30 students from various study programs in a single implementation. The challenges faced by students include limited ability to identify reputable scholarly sources, organize scientific manuscripts systematically, and maintain originality and academic integrity. The program employed training, mentoring, and hands-on practice, focusing on effective literature search strategies using Google Scholar, the use of AI as a supportive tool in academic writing, and the application of proper citation and paraphrasing in accordance with scholarly standards. The activities were conducted through material presentations, interactive discussions, and evaluation of participants' scientific writing outputs. The results indicate improvements in students' ability to access relevant academic sources, develop well-structured manuscripts, and enhance awareness of academic ethics and integrity. Therefore, this program contributes to strengthening a high-quality academic culture that is adaptive to technological advancements in higher education.

1. Introduction

Academic literacy is an essential competency that university students must possess, particularly in the context of scientific writing as a medium for knowledge development and dissemination (Pradana et al., 2025). Students are expected to be able to identify credible scholarly sources, critically review academic literature, and compose scientific manuscripts in accordance with academic conventions (Halawa et al., 2025). However, in practice, many students still experience difficulties in conducting effective literature searches, organizing scientific manuscripts systematically, and maintaining academic integrity, especially in terms of citation practices and originality (Nurhayati et al., 2024). The advancement of digital technology has introduced various tools that can support academic writing processes (Hafizd et al., 2025). Google Scholar has become a primary platform for accessing reputable scholarly sources, while the use of Artificial Intelligence (AI) has increasingly expanded as a supporting tool for idea development, language editing, and structural organization of manuscripts (Rahayu, 2024). Nevertheless, the use of AI without adequate understanding of academic ethics may lead to issues such as excessive reliance on AI-generated content and an increased risk of plagiarism (Abdurrahman et al., 2025). Therefore, structured guidance is necessary to ensure that students are able to utilize AI and Google Scholar appropriately, responsibly, and in compliance with academic standards. In response to these challenges, this community service program was designed to provide assistance in the preparation of scientific manuscripts through the ethical use of AI and Google Scholar. The program involved 30 students from various study programs in a single implementation and employed training, mentoring, and hands-on practice. This initiative aims to enhance students' academic literacy and to foster a culture of high-quality and integrity-based scholarly writing within the higher education environment.

Furthermore, students' ability to produce high-quality scientific manuscripts plays a crucial role in their academic success, particularly in completing final projects, producing student publications, and participating in academic forums such as seminars and conferences (Zaenudin et al., 2023). Limited

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scientific writing skills not only affect the quality of academic outputs but also hinder the development of scientific thinking, analytical abilities, and students' confidence in expressing ideas in written form. This condition highlights the need for systematic and practical interventions through community service activities that address students' real academic needs. Assistance in scientific manuscript preparation based on AI and Google Scholar is particularly relevant as it integrates pedagogical approaches with the use of digital technologies that are already familiar within students' academic lives. This approach is not intended to replace students' critical thinking or independent writing processes, but rather to function as a supportive tool that enhances efficiency, accuracy, and overall writing quality. Through structured guidance, students are expected to understand both the potential and the limitations of AI use, as well as to optimize Google Scholar as a reliable and accountable source of academic literature. Therefore, this community service program not only focuses on improving technical skills in scientific writing but also emphasizes the strengthening of academic attitudes that uphold honesty, responsibility, and scholarly ethics. This approach aligns with higher education efforts to prepare human resources who are adaptive to technological advancements while remaining grounded in academic values and intellectual integrity.

2. Method

This community service program was implemented using a participatory and applicative approach that emphasized active student involvement throughout all stages of the activity. The participants consisted of 30 students from various study programs, selected based on their willingness and need to improve scientific writing skills. The program was conducted in a single structured implementation cycle. The implementation method comprised three main stages: training, mentoring, and hands-on practice. The training stage focused on delivering conceptual materials on academic literacy, ethical scientific writing, literature search strategies using Google Scholar, and the responsible use of Artificial Intelligence (AI) as a supporting tool in scientific writing. The materials were delivered through interactive lectures and discussions to encourage critical understanding among participants. The mentoring stage was conducted intensively by providing guidance to students in developing scientific manuscript outlines, selecting and managing relevant references, and applying proper citation and paraphrasing techniques in accordance with academic standards. During this stage, students were assisted in utilizing AI to support idea development, language editing, and manuscript structuring while maintaining originality and academic integrity. The hands-on practice stage aimed to apply all acquired knowledge through the preparation of scientific manuscript drafts by participants. The students' written outputs were evaluated based on manuscript structure, accuracy in source utilization, and adherence to academic ethics. This evaluation served as a basis for assessing the effectiveness of the program and providing constructive feedback to improve students' scientific writing quality.

Table 1. Stages and Activities of the Community Service Program

No	Activity Stage	Type of Activity	Activity Description	Expected Outputs
1	Preparation	Coordination and planning	Coordination among the community service team, selection of participants (30 students), preparation of training materials, and arrangement of supporting facilities	Activity implementation plan and mentoring modules
2	Training	Material delivery	Delivery of materials on academic literacy, ethical scientific writing, literature search strategies using Google Scholar, and the use of AI in scientific writing	Improved conceptual understanding of participants
3	Mentoring	Guided assistance	Mentoring in developing scientific manuscript outlines, selecting reputable references, and applying proper citation and paraphrasing techniques	Manuscript outlines and preliminary reference lists
4	Hands-on Practice	Draft preparation	Practical activities in preparing scientific manuscript drafts using Google Scholar and AI ethically and responsibly	Draft scientific manuscripts
5	Evaluation	Review and feedback	Evaluation of manuscript structure, accuracy of source utilization, and adherence to academic ethics	Revised drafts and improved writing quality
6	Follow-up	Reflection and recommendations	Reflective discussion, provision of improvement recommendations, and reinforcement of integrity-based scientific writing commitment	Manuscripts ready for further development or publication

3. Result and Discussion

The implementation of this community service program involving 30 students from various study programs yielded positive outcomes in enhancing academic literacy and scientific writing skills. Throughout the training and mentoring processes, students demonstrated improved understanding of literature search strategies using Google Scholar, particularly in identifying reputable sources, utilizing

citation features, and filtering relevant articles based on research topics. This improvement was reflected in the students' ability to develop more focused and academically appropriate preliminary reference lists. The mentoring process also resulted in noticeable improvements in the quality of students' scientific manuscript structures. Prior to the program, many participants experienced difficulties in organizing manuscripts systematically and adhering to academic writing conventions. Following the activities, students were able to develop clearer manuscript structures, including introduction, methodology, results, and discussion sections, and to present more coherent academic arguments. The use of Artificial Intelligence (AI) as a supportive writing tool contributed to improving language clarity, paragraph cohesion, and the accuracy of scientific terminology, while still maintaining students' critical thinking and authorship. In terms of academic ethics, the program significantly increased students' awareness of originality and scholarly integrity. Participants demonstrated a better understanding of proper paraphrasing techniques, accurate citation practices, and the limitations of AI use in academic writing. Reflective discussions during the activities revealed that students became more critical and selective in utilizing digital technologies as supportive tools rather than substitutes for academic processes. Therefore, the findings confirm that structured assistance based on AI and Google Scholar is effective in improving scientific writing quality while fostering responsible and integrity-driven academic attitudes.

Figure 1. Program achievements illustrating improvements in academic literacy and scientific writing skills through the ethical use of Artificial Intelligence (AI) and Google Scholar.

Figure 1 illustrates the key achievements of the community service program in enhancing students' academic literacy and scientific writing skills. The diagram highlights three interrelated outcome indicators: the ability to conduct quality literature searches, the competence to organize scientific manuscripts, and the understanding of academic ethics and originality. The results indicate that 85% of students were able to effectively identify reputable scholarly sources using Google Scholar, as reflected in their selection of relevant and credible references. In terms of manuscript development, 80% of students demonstrated improved ability to structure scientific manuscripts systematically in accordance with academic writing standards. The highest achievement was observed in the ethics and originality aspect, where 90% of students showed increased awareness of ethical writing practices, proper citation techniques, and plagiarism prevention. Overall, the figure confirms that structured assistance in scientific writing using Artificial Intelligence (AI) and Google Scholar has a significant positive impact on improving students' academic quality.

Figure 2. Documentation of the training and mentoring activities on scientific manuscript preparation using Artificial Intelligence (AI) and Google Scholar.

Figure 2 presents documentation of the training and mentoring activities on scientific manuscript preparation utilizing Artificial Intelligence (AI) and Google Scholar. The activity was conducted in an interactive manner, actively engaging students throughout the learning process. During this session, students received direct guidance in searching for reputable scholarly literature, developing manuscript outlines, and applying proper citation and paraphrasing techniques in accordance with academic writing standards. The atmosphere of the activity reflects a high level of student engagement, as indicated by active discussions and hands-on practice in scientific writing. This documentation represents the mentoring process aimed at strengthening academic literacy, enhancing scientific writing skills, and promoting the ethical and responsible use of technology.

4. Conclusion

The community service program focusing on assistance in scientific manuscript preparation through the use of Artificial Intelligence (AI) and Google Scholar has proven effective in enhancing students' academic literacy and scientific writing skills. Through training, mentoring, and hands-on practice, students demonstrated improved abilities in identifying reputable scholarly sources, organizing scientific manuscripts systematically, and applying academic writing ethics that uphold originality and scholarly integrity. The ethical and responsible use of AI as a supportive writing tool was shown to facilitate the writing process without diminishing students' critical thinking. This program also contributed to raising students' awareness of the importance of responsible technology use in academic contexts. Involving 30 students from various study programs, the activity demonstrates that structured, technology-based assistance can serve as a relevant and adaptive strategy for improving academic quality in higher education. Therefore, similar programs are recommended to be implemented on a sustainable basis and expanded in scope to further strengthen a culture of high-quality and integrity-driven scientific writing.

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