Advanced Assistance in Scientific Manuscript Preparation Using Artificial Intelligence (AI), Google Scholar, and Reference Management Tools to Strengthen Students' Academic Literacy and Publication

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Abstract
This community service program aimed to strengthen students' academic literacy and improve the quality of scientific publications through advanced assistance in scientific manuscript preparation using Artificial Intelligence (AI), Google Scholar, and reference management tools. The activity involved undergraduate students and was conducted through training sessions, guided practice, and intensive mentoring focused on literature searching, citation management, academic paraphrasing, and manuscript organization. AI-based tools were introduced to support idea development, language refinement, and academic writing efficiency while maintaining research ethics and originality. The implementation results indicated increased student understanding of scientific writing techniques, improved ability to manage references systematically, and higher confidence in preparing publication-oriented manuscripts. Participants were also able to utilize digital academic resources more effectively in supporting evidence-based writing. Overall, the program contributed positively to enhancing students' academic competencies and fostering a sustainable culture of scholarly writing in higher education.

1. Introduction

Academic writing competence has become one of the essential skills required for university students in higher education (Bacha 2002). Scientific manuscripts not only function as academic assignments but also represent students' ability to communicate ideas, research findings, and critical thinking systematically and ethically (Marušić and Marušić 2003). However, many students still experience difficulties in preparing scientific manuscripts, particularly in searching for credible references, organizing citations, paraphrasing academic sources, and maintaining the quality and originality of their writing (Panjaitan, Novelyn, and Angreni 2024). Limited academic literacy and inadequate understanding of digital scholarly resources often hinder students from producing publication-quality manuscripts (Supriyadi et al. 2020; Syakur et al., 2025).

The rapid development of digital technology has created new opportunities to support academic writing activities (Strobl et al. 2019). Artificial Intelligence (AI) tools have increasingly been utilized in higher education to assist students in generating ideas, improving grammar, organizing content, and enhancing writing efficiency (Aljuaid 2024; Syakur et al., 2025). In addition, Google Scholar has become one of the most widely used academic search engines for accessing scholarly articles, journals, conference papers, and other scientific references. The integration of AI and Google Scholar can provide significant support for students in conducting evidence-based academic writing more effectively and efficiently.

Despite these advantages, the use of AI in academic writing also requires proper guidance and ethical understanding (Fikri and Syakur, 2025; Granjeiro et al. 2025). Many students still lack knowledge regarding responsible AI utilization, academic integrity, and appropriate citation practices. Furthermore, some students encounter challenges in managing references systematically, which often results in citation inconsistencies and potential plagiarism issues. Therefore, advanced assistance and mentoring activities are needed to help students optimize digital academic tools while maintaining scholarly ethics and writing quality.

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This community service program was conducted as a continuation of the previous training activities to strengthen students' academic literacy and improve the quality of scientific manuscripts. The program focused on advanced assistance in the use of AI, Google Scholar, and reference management tools through training sessions, guided practice, and intensive mentoring. The activities emphasized literature searching techniques, citation management, academic paraphrasing, manuscript organization, and ethical AI-assisted writing practices.

Through this program, students were expected to improve their understanding and practical skills in preparing publication-oriented scientific manuscripts. In addition, the activity aimed to foster a sustainable academic writing culture and encourage students to utilize digital scholarly resources more critically, responsibly, and productively in supporting their academic development.

2. Method

This community service program employed a participatory training and mentoring approach to improve students' academic literacy and scientific writing competence through the utilization of Artificial Intelligence (AI), Google Scholar, and reference management tools. The activity was conducted in several stages, including preparation, implementation, mentoring, and evaluation. The preparation stage involved identifying students' difficulties in scientific writing, preparing training materials, and selecting appropriate digital tools to support manuscript preparation. The materials focused on academic literature searching, citation techniques, academic paraphrasing, manuscript structure, ethical use of AI, and reference management practices. Several AI-based writing tools, Google Scholar, and reference management applications such as Mendeley or Zotero were introduced during the training sessions. The implementation stage consisted of workshops and hands-on practice sessions attended by undergraduate students. Participants received explanations regarding effective strategies for finding credible references through Google Scholar, organizing citations systematically, and utilizing AI tools to support idea development and language improvement in academic writing. Practical exercises were provided to help students directly apply the techniques and tools discussed during the sessions. The mentoring stage was conducted intensively to assist participants in preparing their own scientific manuscripts. Students were guided in selecting relevant references, improving manuscript organization, paraphrasing academic texts ethically, and correcting citation and bibliography formatting. The mentoring process also emphasized maintaining originality and avoiding plagiarism while using AI-assisted writing tools. Program evaluation was carried out through observation, participant feedback, and assessment of students' manuscript drafts before and after the activity. The evaluation focused on participants' understanding of academic writing techniques, ability to use digital scholarly resources, reference management skills, and overall improvement in manuscript quality. The results of the evaluation were used to measure the effectiveness of the program in strengthening students' academic literacy and enhancing their readiness to produce publication-oriented scientific writing.

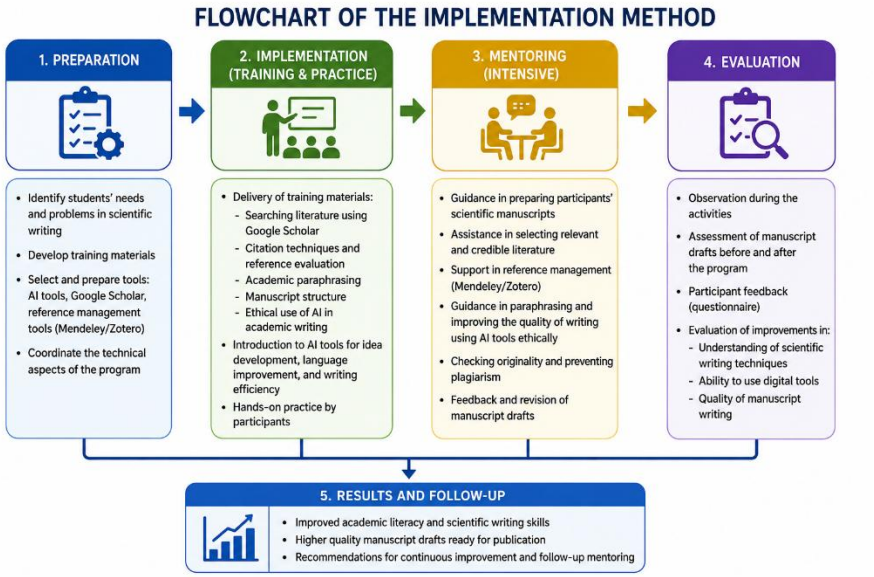

Figure 1. Flowchart of the implementation method for the community service program on scientific manuscript preparation using Artificial Intelligence (AI), Google Scholar, and reference management tools.

Figure 1 illustrates the flowchart of the implementation method used in the community service program on scientific manuscript preparation utilizing Artificial Intelligence (AI), Google Scholar, and

reference management tools. The program was conducted through five main stages, namely preparation, implementation, mentoring, evaluation, and results with follow-up activities. The preparation stage focused on identifying students' needs, developing training materials, and preparing digital academic tools. The implementation stage consisted of training sessions and hands-on practice related to literature searching, citation techniques, academic paraphrasing, manuscript structure, and ethical AI utilization in academic writing. Intensive mentoring activities were carried out to assist participants in improving manuscript quality, managing references, and preventing plagiarism. Furthermore, the evaluation stage assessed participants' progress through observations, manuscript reviews, and feedback questionnaires. The final stage highlighted the outcomes of the program, including improved academic literacy, enhanced scientific writing skills, and the production of publication-oriented manuscript drafts.

3. Result and Discussion

The community service program was successfully implemented through training sessions, guided practice, and intensive mentoring activities involving undergraduate students. The program focused on improving students' academic literacy and scientific writing competence through the utilization of Artificial Intelligence (AI), Google Scholar, and reference management tools. Based on observations during the activities, participants showed strong enthusiasm and active participation throughout the program.

During the implementation stage, students gained a better understanding of scientific manuscript preparation, particularly in searching for credible academic references using Google Scholar (Lapane et al., 2021). Participants were able to identify relevant journals, organize scholarly sources, and apply appropriate citation techniques in their writing. The introduction of reference management tools such as Mendeley and Zotero also helped students manage citations and bibliographies more systematically and efficiently (Panda 2023). Many participants who previously prepared references manually demonstrated improved accuracy in citation formatting after the training.

The use of AI tools in academic writing provided significant benefits for students in developing ideas, improving grammar, organizing manuscript structure, and enhancing writing efficiency. Students became more confident in preparing publication-oriented manuscripts because AI-assisted tools simplified several technical aspects of academic writing (Proske et al., 2025). However, the mentoring process emphasized that AI should be used ethically and responsibly as a supporting tool rather than a substitute for students' critical thinking and originality.

The mentoring activities contributed substantially to improving manuscript quality. Participants received direct guidance in paraphrasing academic sources, refining sentence structure, improving coherence between sections, and avoiding plagiarism (Bapte and Bejalwar, 2022; Kale, 2023; Malla et al., 2025). Several manuscript drafts produced during the program showed noticeable improvement in clarity, organization, and academic language quality compared to the initial drafts prepared before the mentoring sessions.

Evaluation results obtained from observations, manuscript assessments, and participant feedback indicated positive outcomes of the program implementation (Hermawati et al., 2023; Istiana and Singh, 2025). Most participants reported increased understanding of scientific writing techniques, improved ability to use digital academic tools, and greater confidence in preparing scholarly manuscripts for publication purposes. The activity also encouraged students to become more independent in accessing and utilizing scholarly resources to support evidence-based writing.

Overall, the program demonstrated that the integration of AI, Google Scholar, and reference management tools can effectively strengthen students' academic literacy and scientific writing competence. The combination of training and intensive mentoring not only improved technical writing skills but also fostered awareness regarding academic ethics, originality, and responsible use of digital technologies in higher education (William and Woods, 2024). Therefore, similar activities are recommended to be implemented continuously to support the development of a sustainable academic writing culture among university students (Ho, 2022).

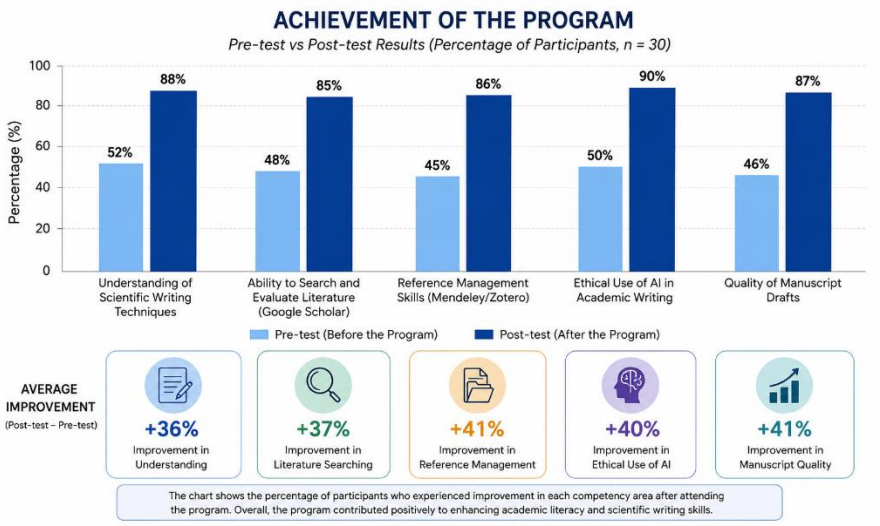

Figure 2. Achievement of the community service program based on participants' pre-test and post-test results in scientific writing competencies.

Figure 2 presents the comparison between pre-test and post-test results of participants after attending the community service program on scientific manuscript preparation using Artificial Intelligence (AI), Google Scholar, and reference management tools. The graph shows significant improvement across all assessed competency indicators, including understanding of scientific writing techniques, ability to search and evaluate literature using Google Scholar, reference management skills, ethical use of AI in academic writing, and quality of manuscript drafts.

The highest improvement was observed in reference management skills and manuscript quality, each increasing by 41%, indicating that participants became more capable of organizing citations systematically and producing better-structured scientific manuscripts after the training and mentoring activities. Ethical use of AI in academic writing also demonstrated a substantial increase of 40%, reflecting improved participant awareness regarding responsible AI utilization and academic integrity. In addition, participants' understanding of scientific writing techniques improved by 36%, while their ability to search and evaluate scholarly literature increased by 37%.

Overall, the results indicate that the integration of AI, Google Scholar, and reference management tools effectively enhanced students' academic literacy and scientific writing competence. The combination of training, hands-on practice, and intensive mentoring contributed positively to participants' readiness in preparing publication-oriented scientific manuscripts.

Figure 2. Documentation of training and mentoring activities on scientific manuscript preparation using Artificial Intelligence (AI), Google Scholar, and reference management tools involving undergraduate students during the implementation of the community service program.

4. Conclusion

The community service program on scientific manuscript preparation using Artificial Intelligence (AI), Google Scholar, and reference management tools was successfully implemented and contributed positively to improving students' academic literacy and scientific writing competence. Through training sessions, hands-on practice, and intensive mentoring, participants demonstrated better understanding of scientific writing techniques, literature searching, citation management, academic paraphrasing, and ethical AI utilization in academic writing.

The integration of AI and digital academic resources effectively supported students in preparing more systematic, coherent, and publication-oriented manuscripts. In addition, the use of reference management tools helped participants organize citations and bibliographies more accurately and efficiently. Evaluation results indicated significant improvement in participants' writing skills, confidence, and ability to utilize scholarly resources responsibly.

Overall, the program not only enhanced technical academic writing skills but also fostered awareness regarding academic ethics, originality, and responsible technology utilization. Therefore, continuous mentoring and similar academic literacy programs are recommended to support the development of a sustainable scholarly writing culture among university students.

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