
Scientific Writing Best Practice Training Improves Indonesian Students' Publication Competence

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ABSTRACT

This article aims to examine the effectiveness of a best practice-based training program on scientific writing and publication in improving the competencies of Indonesian students at Universiti Malaya. This activity is a form of community service (PkM) with participatory training methods and intensive mentoring involving 30 students. This study used a quantitative pre-experimental approach with a one-group pretest-posttest design. The activity stages include needs analysis, scientific article writing training, mentoring in scientific article writing, and evaluation of training results. Data were collected through scientific writing competency tests and publication readiness questionnaires before and after the training, then analyzed using descriptive statistics and paired sample t-tests. The results of the community service showed a significant increase in writing competency and understanding of the publication process, with an average pretest score of 54.20 increasing to 78.65 in the posttest ($p < 0.05$). Students experienced improvements in structuring articles, improving the quality of argumentation, applying appropriate citation techniques, and understanding journal selection, submission procedures, and the peer review process. In addition to cognitive aspects, students' readiness and confidence in reading scientific publications also improved. Overall, best-practice-based training proved effective in improving students' academic readiness to produce publishable scientific articles that meet the standards of reputable journals.

Keywords: best practice, scientific writing training, student competency

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INTRODUCTION

Scientific publications are a key indicator of students' academic competence in the modern higher education (Lisadwati et al., 2022; Tobari, 2022). The ability to write and publish scientific articles reflects not only mastery of scientific material but also the ability to think critically, analytically, and systematically (Rachmadyanti et al., 2025; Setiawan et al., 2021; Susrawan, 2021). Students skilled in writing scientific articles are better prepared to contribute to the academic community, produce quality research, and increase their chances of publication in reputable journals. At Universiti Malaya, Indonesian students face unique challenges related to language, international publication standards, and the peer-review process, making the improvement of scientific writing competency a strategic necessity (Zahro et al., 2025).

Initial needs analysis involving 30 Indonesian students at Universiti Malaya revealed key barriers in scientific writing and publication readiness. Most participants had never submitted articles to international journals and experienced difficulties in structuring scientific arguments, as well as having limited understanding of citation management and journal selection. Only a small proportion had experience using reference management tools such as Mendeley or Zotero. Pretest results also indicated low competency in article structure, academic language, paraphrasing, and publication procedures, highlighting the need for structured training.

The target participants were Indonesian undergraduate students actively engaged in research but lacking confidence and experience in converting their work into publishable articles. Key problems included limited knowledge of international journal standards, weak academic writing skills, low confidence in responding to reviewers, and insufficient understanding of submission and peer-review processes.

To address these issues, the program implemented a best-practice-based scientific writing and publication training model combining lectures, guided practice, mentoring, manuscript review, and publication simulation. The training covered article structure, academic writing, citation techniques, journal selection, publication ethics, and the submission and peer-review process, implemented through needs assessment, a pre-test, intensive training, mentoring, simulation, a post-test, and evaluation stages.

Several previous studies have demonstrated the importance of scientific writing and publication training for students. Sarmini et al. showed that interactive training improved students' abstract writing and manuscript preparation (pretest–posttest) (Sarmini et al., 2020). Irianto et al. found that a structured training program from idea to publication improved the quality of students' manuscripts (Irianto et al., 2021). Nandiyanto et al., (2019) emphasized the importance of academic literacy in producing quality publications (Nandiyanto et al., 2019). However, most studies are still descriptive, none are based on best practices, and they rarely use pre-experimental quantitative designs, and few research Indonesian students at foreign universities with international publication standards (Muchson, et al., 2024)

This research addresses the research gap, which includes the lack of quantitative pretest-posttest studies measuring training effectiveness (Aufa et al., 2021), the paucity of best-practice-based research, and the limited focus on Indonesian students at international universities. The research's novelty lies in the use of a pre-experimental quantitative design, the implementation of best-practice-based training, and the focus on Indonesian students at Universiti Malaya to provide an international perspective (Mlundi, 2026).

The objectives of this community service program were to improve students' competencies in scientific writing and publication, enhance their understanding of international publication procedures, and strengthen their academic confidence and readiness for scholarly communication. The targeted impacts of the program included

increased manuscript quality, improved publication readiness, higher motivation to publish in reputable journals, and greater student participation in academic communities. In the long term, this program is expected to contribute to the development of a sustainable academic culture among Indonesian students abroad and to strengthen their competitiveness in international scientific publication environments (Tambaip & Rediani, 2022; Zahro et al., 2025).

METHODS

This study employed a quantitative descriptive method with a one-group pretest-posttest pre-experimental design. This approach was used to measure changes in students' competency in writing and publishing scientific articles before and after participating in best practice-based training conducted via Zoom and online in the 2026 (Hakim et al., 2025). The Community Service (PkM) approach used in this program was a participatory training model (*participatory training approach*), which emphasized active participant involvement through discussions, guided practice, mentoring, simulations, and reflective evaluation. This approach was selected because it allowed participants to gain direct practical experience and immediate feedback in scientific writing and publication activities.

The subjects of this study were 30 Indonesian students who were members of the Indonesian Student Association (Persatuan Pelajar Indonesia) at Universiti Malaya and participated in intensive training. Participants were selected purposively based on the criteria of being active students, having an interest in scientific publication, and currently preparing or having experience in writing academic papers.

The research instruments consisted of a scientific writing competency test and a publication readiness questionnaire (Abduh & Arham, 2025). The competency test contained 20 assessment items with a score range of 0–100, covering indicators such as article structure, argument quality, academic language use, citation techniques, paraphrasing, and bibliography formatting. Assessment was conducted using an analytical rubric with a 1–5 scale for each indicator. Meanwhile, the publication readiness questionnaire consisted of 25 Likert-scale statements (1–5) measuring participants' understanding of journal selection, submission procedures, publication ethics, reviewer response strategies, and confidence in scientific publication.

Prior to implementation, the instruments were validated by two experts in education and scientific publication to ensure content validity. The validity test results indicated that all instrument items met the required criteria with correlation coefficients above 0.30. Reliability testing using Cronbach's alpha showed coefficients of 0.87 for the competency test and 0.89 for the publication readiness questionnaire, indicating that both instruments were highly reliable.

Data were analyzed descriptively by calculating the average pretest and posttest scores, percentage improvements (gain scores), and participants' achievement distributions. Furthermore, a paired sample t-test was conducted to determine the statistical significance of competency improvements after the training program. Program impact analysis was also carried out through manuscript quality evaluation, participant engagement during training sessions, and increased publication readiness based on questionnaire results and observational data collected throughout the program. The outputs of the program included draft scientific articles prepared by participants and considered ready for submission to reputable national or international journals.

RESULT AND DISCUSSION

A best-practice-based scientific article writing and publication training attended by Indonesian students at the University of Malaya demonstrated significant improvements in both technical and procedural competencies. Descriptive analysis of pretest and posttest scores revealed an average increase in participants' competency scores from 54.20% in the pretest to 78.65% in the posttest, representing a 24.45 gain (see [Table 1](#)). These results indicate an improvement in students' ability to write scientific articles, from drafting manuscript outlines and selecting appropriate academic language to applying citation techniques to understanding the publication process ([Satyawati et al., 2022](#)).

Table 1. Statistical analysis results of scientific writing training effectiveness

Statistical	Value
Pre-Test Average	54.20%
Post-Test Average	78.65%
Pre-Test Standard Deviation	8.75
Post-Test Standard Deviation	9.40
Mean Gain	24.45
t-Statistic (paired t-test)	15.82
p-Value (significance)	0.000 (<0.05)

This improvement reflects not only numerical progress but also a broader transformation in participants' academic competencies. The best practice-based training model proved effective because it combined theoretical explanations with intensive hands-on practice, direct mentoring, peer discussion, manuscript review, and publication simulations. Through this approach, participants were able to bridge the gap between conceptual understanding and practical implementation in scientific writing. Students not only learned the theory of article writing but also systematically applied it in developing publishable manuscripts ([Mabaroh, 2024](#)).

In addition to quantitative improvements, observations during the training revealed that participants began to demonstrate stronger critical and analytical thinking skills in academic writing (see [Figure 1](#)). Students who initially struggled to organize their ideas became capable of systematically structuring manuscripts by clearly separating the introduction, methods, results, and discussion sections while presenting more logical and evidence-based arguments. They also demonstrated improved abilities in identifying research gaps, developing literature-based backgrounds, and connecting findings with relevant theoretical frameworks ([Wariani et al., 2025](#)).

The effectiveness of the best-practice model was further supported by several enabling factors, including interactive mentoring, continuous feedback from trainers, collaborative peer-review activities, and the use of real manuscript examples from reputable journals. Participants reported that practical simulations and direct revision sessions significantly increased their understanding of international publication standards. The participatory learning environment also encouraged active engagement, motivation, and confidence among participants.

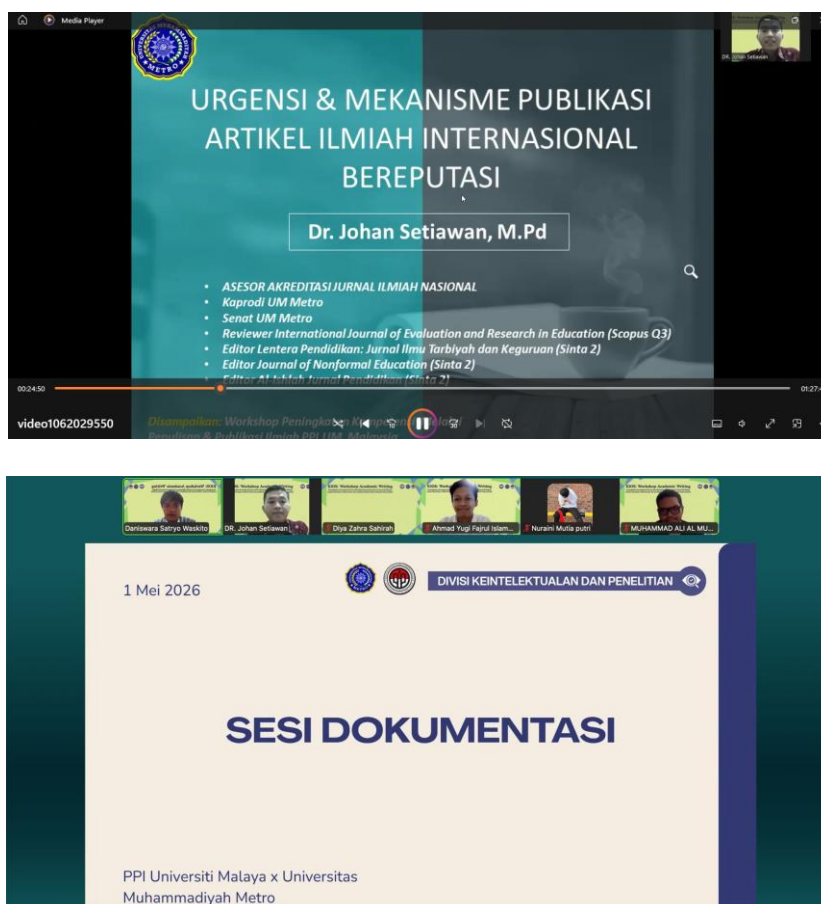


Figure 1. Documentation of training activities

The t-statistic value of 15.82 with a significance level of $p < 0.05$ indicates that the improvement was not coincidental but rather a real impact of the training intervention. Statistically, these results support the assumption that the best practice-based training model is effective in significantly improving student competency. The relatively stable standard deviation between the pretest and posttest also indicates that improvement occurred evenly across most participants, not just in certain groups (Chuan et al., 2025).

In terms of procedural understanding of publication, most participants showed significant improvements in understanding the submission stages, selecting journals appropriate to their research topic, and understanding publication ethics such as plagiarism, conflicts of interest, and copyright. Students also became more familiar with the peer-review process, responding constructively to reviewers' comments and systematically revising their manuscripts. Before the training, many participants perceived the publication process as complex and inaccessible. However, after participating in the simulation and hands-on practice sessions, these perceptions changed to become more positive and realistic (Blegur et al., 2023).

Participant feedback further confirmed the effectiveness of the training program (see Figure 2). Based on post-training evaluation questionnaires, most participants stated that the mentoring sessions helped them better understand the structure of scientific articles, while many reported increased confidences in submitting manuscripts to journals. In addition, the majority of participants expressed satisfaction with the practical and interactive training methods. Participants particularly appreciated the direct feedback provided by trainers and the



collaborative peer-review discussions, which helped them identify weaknesses and improve manuscript quality.

Further analysis shows that this training serves as a form of academic socialization, introducing students to the culture and standards of international scientific communication. This is particularly important given the context of Indonesian students studying in an international university environment. The training helps them understand global expectations for scientific publications, thus enhancing their readiness to compete in the international academic community (Suhadi & Wadison, 2025).

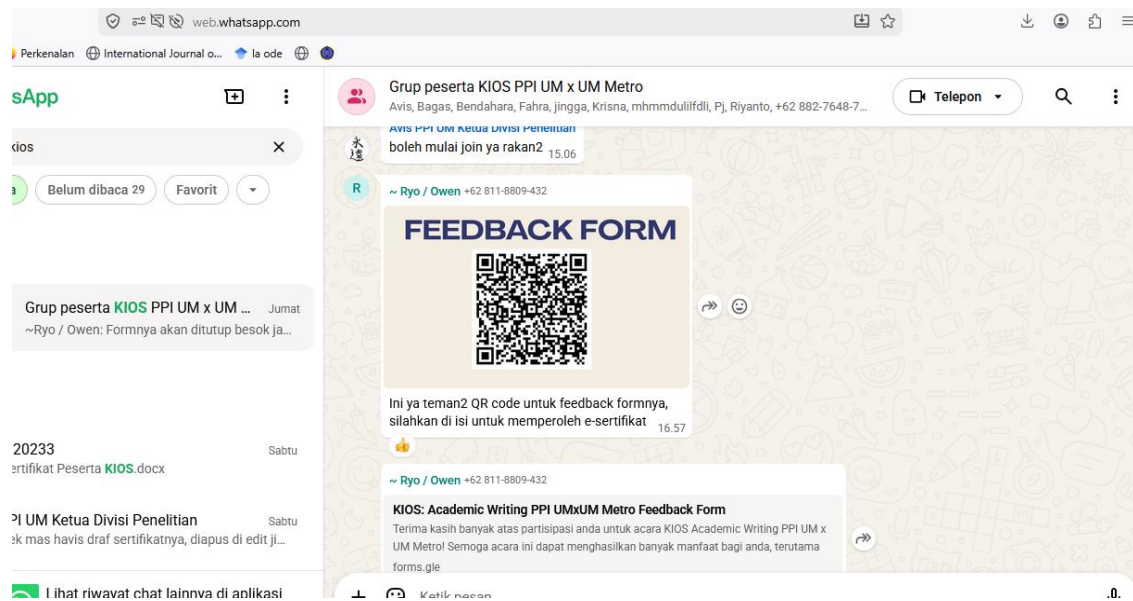


Figure 2. Feedback form

Variations in scores between participants were still evident, particularly related to initial writing skills and prior academic experience. Students with experience writing undergraduate theses, dissertations, or conference papers tended to achieve higher initial scores and showed steady improvement. Meanwhile, students without publication experience showed a relatively larger jump in improvement. This phenomenon indicates that the training had an inclusive impact, benefiting both novice and experienced participants.

Motivation also emerged as a key factor influencing training success. Participants who actively engaged in discussions, requested feedback, and revised manuscripts repeatedly showed more substantial progress than less active participants. This finding indicates that the effectiveness of best-practice-based training is influenced not only by instructional design but also by participant engagement, learning motivation, and consistency in practice.

Although the training proved effective, several obstacles warranted attention. The relatively short duration of the program limited opportunities for advanced manuscript revision and long-term publication mentoring. Differences in participants' disciplinary backgrounds also affected adaptation to specific writing conventions. Technical constraints such as internet connectivity during online sessions occasionally disrupted interaction and mentoring effectiveness. Therefore, follow-up mentoring programs and longer-term publication assistance are strongly recommended to sustain competency improvement and increase publication outcomes (Muthi et al., 2025).

Overall, best practice-based training builds a holistic learning experience by integrating cognitive, affective, and psychomotor aspects. Students not only improve their technical writing skills and understanding of publication procedures but also gain motivation, professional attitudes, reflective skills, and readiness to participate in the global scientific community. These results confirm that the best practice-based training model is an effective and relevant strategy for improving the academic competence of international students (Rachmadyanti et al., 2025).

The findings also provide important implications for the replication of similar programs in other higher education institutions. A structured training model combining mentoring, practice-based learning, publication simulation, and continuous feedback can be adapted for broader academic capacity-building initiatives. Institutions may replicate this program by integrating publication mentoring into student development programs, research training activities, or academic writing centers. Sustainable implementation of such programs has the potential to improve student publication productivity, strengthen institutional academic reputation, and foster a long-term culture of scientific publication (Agustin & Fithriyah, 2025).

CONCLUSION

Based on the research results, best-practice-based scientific article writing and publication training have proven effective in improving the competency of Indonesian students at the University of Malaya. This is demonstrated by a significant increase in average scores between the pretest and posttest, reflecting developments in both technical scientific writing skills and procedural understanding of publication. Students demonstrated improvements in systematically structuring articles, applying appropriate citation techniques, selecting relevant journals, and understanding the submission and peer-review stages. Descriptively, this training not only strengthened students' cognitive abilities but also increased their academic readiness, motivation, and confidence in producing publishable articles. However, this study was limited by its design without a control group and the relatively short training duration. Therefore, future research is recommended to employ a more robust experimental design and a longer mentoring period to obtain more comprehensive results. Overall, the best practice-based training model can be recommended as an effective strategy for developing students' academic capacity, particularly in improving the quality of their writing and readiness for scientific publication in an international university environment. As an operational follow-up, higher education institutions are encouraged to establish advanced scientific writing clinics that provide continuous mentoring in manuscript revision, journal selection, publication ethics, and article submission. In addition, periodic monitoring of participants' publication progress, such as manuscript submissions, publication acceptance, and academic writing activities, is necessary to sustain students' motivation, productivity, and long-term scientific publication culture in international academic environments.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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