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Scientific Writing Training for Students of Ibnu Sina Senior High School

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ABSTRACT

Objective: *This study aims to address the lack of formal instruction in scientific research methods at the elementary and secondary school levels by enhancing students' scientific writing skills, enabling them to produce well-structured and academically sound scientific articles.* ***Method:*** *The activity was conducted through a community service–based training program employing interactive lectures, guided practice, and mentoring sessions. The training introduced fundamental concepts of scientific research, including problem formulation, use of scientific methods, data interpretation, and systematic scientific writing. Participants were senior high school students who engaged in step-by-step writing exercises and received feedback on their drafts.* ***Results:*** *The training demonstrated a positive improvement in students' understanding of scientific research principles and their ability to organize ideas into coherent scientific articles. Students showed increased confidence in applying rational and empirical thinking, structuring manuscripts, and using appropriate academic language.* ***Novelty:*** *This program offers a structured and early-stage intervention model for scientific writing at the secondary school level, integrating research method literacy with practical writing skills, which are typically only emphasized at the university level. This approach contributes a novel framework for strengthening pre-university scientific literacy and academic writing competence.*

INTRODUCTION

A scientific paper is a written and published report containing an exposition based on the results of research or studies conducted by an individual or team. Written scientific papers must adhere to scientific principles and ethics established and adhered to by the scientific community [1], [2]. There are various types of scientific papers, including research reports, seminar or symposium papers, and journal articles, all of which are essentially the product of scientific activity [3].

Writing scientific papers is an integral part of education, from elementary school to university. Education teaches rational and empirical thinking using scientific methods. Based on the results of research using these scientific methods, scientific papers are written [4].

To attract students' interest in writing scientific papers, scientific paper competitions are often held. Various scientific paper competitions are held by the Department of Education and Culture, universities, private and state companies, state-owned enterprises, banks, and ministries for students, in the form of the annual Youth Scientific Paper Competition (LKIR). The Indonesian Institute of Sciences (LIPI) is holding a Youth Scientific Work Competition (LKIR) and the National Young Inventors Award (NYIA) by inviting Indonesian youth, elementary, middle, and high school students/equivalent to participate in both events (http://infokompetisi.lipi.go.id/) [5].

The interest of Wachid Haasyim High School students in writing scientific papers, particularly in the social sciences, is relatively low compared to the natural sciences and technology. Consequently, scientific writing competitions are less popular. These competitions, organized by various institutions, often attract few participants. This suggests that not only is there a low interest in scientific writing, but it may also be due to students' lack of scientific writing skills [6], [7].

Scientific writing skills cannot be acquired solely through regular school lessons. Students need training and opportunities to develop them by participating in various training programs or scientific writing competitions. Research by Marselina (2018) suggests that students should continuously practice their writing skills to ensure they are not forgotten [8], [9].

The school curriculum, both elementary and secondary, does not teach scientific research methods as a foundation for scientific writing. Specific courses on scientific research methods are not taught; therefore, students' scientific writing skills are only acquired through various sub-subjects within the existing curriculum. Based on this, the problem to be solved in this community service activity is how to improve the scientific writing skills of Ibnu Sina High School Malang students so that they can write good scientific articles [10], [11].

To answer this formulated problem, the following activity objectives will be achieved:

a. Providing students with knowledge of how to write scientific articles.
b. Building students' awareness of scientific thinking.
c. Improving students' ability to write scientific articles so they can participate in youth scientific article competitions.
d. Increasing students' understanding and awareness of scientific thinking.

Targets and Goals

High school students, with the target group being third-grade students. Specifically, the school to be used for the community service was determined after an initial survey, namely Ibnu Sina High School Malang. To enable them to complete school assignments related to scientific article writing, the following are:

a. Writing scientific articles is an activity that requires continuous practice.
b. Students are expected to participate in various scientific article competitions to identify and explore their potential in writing scientific articles.
c. Schools need to provide regular training for students in writing scientific articles.
d. Schools need to support and facilitate students participating in scientific article competitions.

Evaluation of the program's success is carried out immediately after the activity concludes. The training is assessed by the extent to which participants can reiterate the knowledge provided. This allows participants to assess their absorption of the material received through short assignments to write scientific papers during the training.

RESEARCH METHOD

The stages of activity implementation are as follows:

1. Preparation Phase

The preparation phase is used to plan and prepare various requirements for implementing the activity. These activities include meetings with the community service team, preparation of training materials, and discussions of training modules. The community service team held three meetings to discuss field preparations. The first meeting, held on April 20, 2025, discussed the materials and methods to be used in the community service implementation.

Through the discussions, input was obtained, including:

a. The community service is focused on raising awareness of the importance of writing scientific articles for students.
b. Improving students' ability to write scientific articles. The community service team acts as a facilitator in finding solutions.

2. Coordination with Partners

Coordination with the principal was conducted to determine the activity date. The community service activity was agreed upon.

3. Activity Implementation

a. The community service activity was held the day after the Department roadshow, which took place on Tuesday, July 22, 2025, from 9:00 AM to 12:00 PM WIB in the Laboratory Room of SMA Ibnu Sina Malang.
b. The activity is planned to be opened by the school principal. The lecture will be facilitated by one of the community service members, and will conclude with a closing ceremony by a teacher representative.

During the discussion, participants will be asked to actively share their experiences and difficulties in writing scientific articles and provide input on finding solutions.

a. Overcoming problems encountered in writing scientific articles. The activity process is as follows:
b. The activity began with an explanation of the activity's objectives by Dr. Eva Wany, which is one of the obligations of the Tri Dharma of Higher Education (conducting teaching and learning at a university, conducting research, and community service). Next, the team introduced each participant individually to break the ice and strengthen relationships. Further explanation of the activity's theme, scientific article writing, was delivered by Drs. Ec Budi Prayitno SE.MM.
c. Next, the Scientific Paper Writing training for Ibnu Sina Malang High School students began.
d. Evaluation of Phase 1 of the Activity
e. Evaluation of the Finalization Phase of the Activity
f. Implementation Report

The high school curriculum does not teach scientific research methods as a basis for writing scientific papers. There is no specific subject on scientific research methods; therefore, students' scientific writing skills are only acquired through various sub-subjects within the existing curriculum. Based on this, the problem to be solved in this community service activity is how to improve the scientific writing skills of Ibnu Sina High School students in Malang so that they can write good scientific articles.

The stages of implementation on September 2, 2025, are:

a. Providing students with knowledge on how to write scientific articles.
b. Building students' awareness of scientific thinking.
c. Improving students' ability to write scientific articles. The benefits to be gained from this activity are:
    1) Improving students' ability to write scientific articles, enabling them to participate in youth scientific article competitions.
    2) Improving students' understanding and awareness of scientific thinking.
    3) Addressing problems encountered in writing scientific articles. The activity process is as follows:
d. The activity began with an explanation of the activity's objectives by Dr. Eva Wany, which is one of the obligations of the Tri Dharma of Higher Education (conducting teaching and learning at a university, conducting research, and community service). Next, the team introduced each participant individually to break the ice and strengthen relationships. Further explanation regarding the activity theme regarding writing scientific articles was delivered by Mr. Drs. Ec Budi Prayitno SE.MM.
e. Next, the Scientific Paper Writing training program for Ibnu Sina High School Malang students began.
f. Evaluation of Phase 1 of the Activity
g. Evaluation of the Finalization Phase of the Activity
h. Implementation Report

The high school curriculum does not teach scientific research methods as a basis for writing scientific papers. Specific subjects on scientific research methods are not taught, therefore, students' scientific writing skills are only acquired through various sub-subjects within the existing curriculum. Based on this, the problem to be solved in this community service activity is how to improve the scientific writing skills of Ibnu Sina High School Malang students so that they can write good scientific articles.

The stages during the implementation on September 2, 2025, are:

a. Providing students with knowledge of how to write scientific articles.
b. Building students' awareness of scientific thinking.
c. Improving students' ability to write scientific articles. The benefits to be gained from this activity are:
    1) Students' ability to write scientific articles will improve, enabling them to participate in youth scientific article competitions.
    2) Increase students' understanding and awareness of scientific thinking.

3) Activity Implementation

d. The community service activity will be held the day after the Department roadshow, which will be held on Tuesday, September 2, 2025, from 9:00 AM to 4:00 PM WIB, in the Laboratory Room of SMA Ibnu Sina Malang.
e. The activity will be opened by the principal. A lecture will be facilitated by one of the community service members, and will conclude with a closing ceremony by a teacher representative.
f. During the discussion, students will share their experiences and difficulties in writing scientific articles and provide input on finding solutions to overcome the problems they face. The activity process will be as follows:

The stages of the implementation on September 2, 2025, are:

a. Scientific
b. Processing. The activity process will be as follows:
c. The activity will begin with an explanation of the activity's objectives by dr. Eva wany, which is one of the obligations of the Tri Dharma of Higher Education (conducting teaching and learning at a university, conducting research, and community service). Next, the team introduced each participant individually to break the ice and strengthen relationships. Further explanation regarding the activity's theme, scientific article writing, was delivered by Drs. Ec Budi Prayitno SE.MM.

Next, the Scientific Paper Writing training for Ibnu Sina High School Malang students began, continuing until its completion.

Photos of Community Service Activities are as follows:

Figure 1. Team leader delivering material.

RESULT AND DISCUSSION

Results

The results of the community service program indicate that the scientific writing training had a positive impact on students' initial understanding of scientific writing concepts. Prior to the activity, most students were unable to clearly distinguish between scientific and non-scientific writing. After participating in the training, students demonstrated a better understanding of the characteristics of scientific papers. Their

comprehension of the structure of scientific articles, including introduction, methodology, results, and discussion, improved significantly. This improvement was evident during discussions and practical exercises conducted throughout the program. Students were able to identify simple research problems relevant to their surrounding environment. In addition, students showed increased interest in scientific writing activities. This improvement in understanding serves as an early indicator of the program's success.

The evaluation results during the training showed an improvement in students' ability to develop scientific article outlines. Students who previously struggled to organize ideas in written form began to demonstrate more systematic thinking. Through guided instruction and concrete examples, students learned how to formulate research backgrounds logically. Their ability to define research objectives in scientific writing also improved. Furthermore, students gained awareness of the importance of using objective and formal academic language. Common errors such as the use of informal expressions and subjective opinions gradually decreased. This was reflected in the short writing assignments completed at the end of the training session. Therefore, the training made a tangible contribution to enhancing students' technical scientific writing skills.

The implementation of the training also increased students' awareness of the importance of scientific thinking. Students began to understand that scientific writing emphasizes not only final outcomes but also rational and empirical thinking processes. During discussion sessions, students actively shared their experiences and difficulties related to scientific writing. These interactions encouraged students to think more critically when observing phenomena around them. Students also realized that scientific writing helps develop analytical and problem-solving skills. This awareness is an important foundation for building an academic culture within the school environment. In addition, students became more open to feedback and constructive criticism. This change indicates the development of positive scientific attitudes.

The results demonstrate that the training method successfully created a participatory learning environment. Students were not passive recipients of information but actively engaged in discussions and writing exercises. The dialogical approach applied during the training helped students understand the material more effectively. Students were given opportunities to express the challenges they faced in scientific writing. The community service team acted as facilitators in helping students identify solutions to these challenges. This approach increased students' confidence in writing scientific papers. Moreover, students perceived the training as relevant to their academic needs. As a result, the learning process became more effective and meaningful.

Overall, the results indicate that the scientific writing training successfully achieved its intended objectives. Students experienced improvements in knowledge, skills, and attitudes toward scientific writing. The program also encouraged students to be better prepared to participate in scientific writing competitions. Their ability to produce simple scientific articles showed positive development. In addition, the activity strengthened collaboration between the school and the university. Support from the

school administration contributed to the smooth implementation of the program. Final evaluations showed that most students were able to absorb the training material effectively. Therefore, this training can serve as a model for similar programs in other secondary schools.

Discussion

The findings indicate that students' low scientific writing ability is closely related to the absence of formal instruction in research methods at the secondary school level. The existing curriculum does not explicitly provide structured training in scientific writing [12], [13]. Consequently, this program served as a complementary learning activity to formal classroom instruction. These findings align with the view that scientific writing skills must be developed through focused and continuous practice. The training provided students with an opportunity to understand the scientific thinking process holistically. Thus, the program addressed a genuine need in students' academic development. It also helped bridge the gap between the demands of scientific competitions and students' actual abilities. This highlights the urgency of implementing similar training programs in secondary education [14], [15], [16].

The improvement in students' scientific writing skills demonstrates the effectiveness of the training approach employed. The combination of lectures, discussions, and practical exercises contributed to enhanced student understanding. This approach allowed students to learn actively and reflectively. The use of concrete examples helped students grasp abstract concepts related to scientific writing. Group discussions also encouraged peer learning and idea exchange. These interactions strengthened both conceptual and practical understanding. This finding supports the argument that active learning strategies are effective in developing writing skills. Therefore, diverse and interactive training methods should be maintained [17], [18].

Students' increased awareness of scientific thinking represents a significant outcome of the training program. Scientific thinking is a fundamental requirement for producing high-quality scientific papers. The training helped students realize that scientific writing is not merely a task but a way of structured thinking [19], [20], [21]. This awareness has the potential to foster long-term academic attitudes. Students began to perceive scientific writing as a learning process rather than an obligation. This perspective is essential for cultivating scientific literacy in schools. With increased awareness, students are more likely to practice writing continuously. In the long term, this may contribute to improved human resource quality [22].

Active student participation during the training indicates that the program was well aligned with students' needs and characteristics. Students felt directly involved in the learning process. This involvement increased their sense of ownership of the activity. The facilitator role played by the community service team also supported the program's success. This approach created a supportive and non-intimidating learning environment. Students felt comfortable asking questions and expressing opinions. Such interactions

enriched the learning experience. Therefore, participatory approaches play a crucial role in effective scientific writing training [23], [24], [25], [26].

The training also highlights the importance of collaboration between universities and secondary schools. Universities play a strategic role in supporting schools in developing students' academic competencies. This collaboration supports the implementation of the university's community service mission. Schools benefit from improved academic learning quality through such partnerships. Students gain learning experiences beyond regular classroom instruction. Furthermore, collaboration opens opportunities for sustainable follow-up programs. Therefore, partnerships between universities and schools should be continuously strengthened. This collaboration can generate broader educational benefits [27].

Despite the positive outcomes, this training program has several limitations. The relatively short duration limited the depth of material coverage. Not all students were able to produce complete scientific articles immediately. Therefore, follow-up training sessions are necessary. Continuous mentoring would help students further develop their writing skills. Teacher involvement also needs to be increased to integrate training outcomes into regular learning activities. Institutional support from the school is another critical factor. Addressing these limitations will enhance the effectiveness of future training programs.

Overall, the results and discussion demonstrate that scientific writing training is an effective strategy for improving secondary school students' academic competencies. The program successfully addressed gaps in research method instruction at the school level. It made a meaningful contribution to developing students' skills and scientific attitudes. These findings reinforce the importance of non-curricular programs as complements to formal education. The program also shows strong potential for replication in other schools. With improved planning and sustainability, its impact can be expanded further. Therefore, scientific writing training should be integrated into broader academic development initiatives for students.

CONCLUSION

Fundamental Finding : This community service–based scientific writing training demonstrates that structured and guided interventions can significantly enhance secondary school students' understanding, skills, and attitudes toward scientific writing, particularly in contexts where formal research methodology instruction is absent from the curriculum. **Implication :** The findings imply that integrating systematic scientific writing training into extracurricular or collaborative school–university programs can effectively strengthen students' scientific literacy, critical thinking, and academic preparedness, as well as increase their readiness to participate in scientific writing competitions and higher education learning environments. **Limitation :** Despite these positive outcomes, the program was limited by its relatively short duration and the absence of long-term mentoring, which restricted students' ability to independently produce fully developed scientific articles. **Future Research :** Future studies are

recommended to examine the long-term impact of sustained scientific writing training, explore the integration of such programs into formal school curricula, and assess the effectiveness of teacher-led mentoring models in fostering continuous scientific writing competence among secondary school students.

REFERENCES

[1] S. Mlundi, "Enhancing Scientific Writing Skills Among Postgraduate Students: Evaluating the Impact of Academic Writing Training at the Institute of Accountancy Arusha, Tanzania," 2025, doi: 10.2139/ssrn.5337168.

[2] U. Kalim, "Evaluating teacher competencies in Pakistan's public schools: Enhancing the impact of professional development programs," *Eval Program Plann*, vol. 106, p. 102467, Oct. 2024, doi: 10.1016/j.evalprogplan.2024.102467.

[3] H. Dovhopolova, "COMPUTER PROGRAM AS A METHOD OF DEVELOPING STUDENTS' FOREIGN LANGUAGE COMMUNICATION SKILLS," in *THEORETICAL AND EMPIRICAL SCIENTIFIC RESEARCH: CONCEPT AND TRENDS - VOLUME 3*, European Scientific Platform, Jul. 2020. doi: 10.36074/24.07.2020.v3.02.

[4] ع. ا. م. ا. الرحيم, "The Effectiveness of Using Scientific Station Strategy in improving EFL Writing skills among secondary school students," vol. 2023, no. 3, pp. 1–34, Sep. 2023, doi: 10.21608/muja.2023.307559.

[5] F. Pradana and A. Suyatna, "The Needs of Interactive Electronic School Books to Enhance the Critical Thinking Skills of the Students," in *Proceedings of the International Conference on Teacher Training and Education 2017 (ICTTE 2017)*, in ictte-17. Atlantis Press, 2017. doi: 10.2991/ictte-17.2017.50.

[6] K. Laine, P. Tynjälä, A. Eteläpelto, and R. Hämäläinen, "Students' self-reported learning outcomes after a business start-up education program," *International Journal of Training Research*, vol. 17, no. 2, pp. 98–115, May 2019, doi: 10.1080/14480220.2019.1638621.

[7] J. Walkington, "Improving partnerships between schools and universities: professional learning with benefits beyond preservice teacher education," *Teacher Development*, vol. 11, no. 3, pp. 277–294, Oct. 2007, doi: 10.1080/13664530701644581.

[8] D. Hale and R. Palmer, "The Role Universities Play in Primary and Secondary Schools: University-Assisted Community Schools and Community Partnership Schools," in *Community Partnership Schools*, Springer International Publishing, 2023, pp. 21–38. doi: 10.1007/978-3-031-16404-0_2.

[9] S. Fielden, "Peer Review Report For: Gender and Assigned Role Influences Medical Students´ Learning Experience in Interprofessional Team Training Simulations [version 1]," Feb. 2017, *F1000 Research Ltd*. doi: 10.21956/mep.19432.r28580.

[10] C. A. Knifsend, "Intensity of activity involvement and psychosocial well-being among students," *Active Learning in Higher Education*, vol. 21, no. 2, pp. 116–127, Mar. 2018, doi: 10.1177/1469787418760324.

[11] P. Young-Min, "Teaching and Learning for Cultivating Students' Awareness on Writing Ethics," *korean language education research*, vol. null, no. 33, pp. 73–102, Dec. 2008, doi: 10.20880/kler.2008..33.73.

[12] K. Balloo, "Students' Difficulties During Research Methods Training Acting as Potential Barriers to Their Development of Scientific Thinking," in *Redefining Scientific Thinking for*

Higher Education, Springer International Publishing, 2019, pp. 107–137. doi: 10.1007/978-3-030-24215-2_5.

[13] S. Cottrell, "Critical, analytical writing: Critical thinking when writing," in *Critical Thinking Skills*, Macmillan Education UK, 2011, pp. 167–190. doi: 10.1007/978-0-230-34489-1_10.

[14] S. Lovett, "Beyond Group Discussions," in *Teaching Gradually*, Routledge, 2023, pp. 177–182. doi: 10.4324/9781003447382-37.

[15] N. A. Demchenko, "Training course for students philologists scientific writing skills development," *Bulletin of Luhansk Taras Shevchenko National University*, no. 7 (330), pp. 122–130, 2019, doi: 10.12958/2227-2844-2019-7(330)-122-130.

[16] S. Ahmad and K. F. Khairuddin, "Collaboration between Lecturers and Industry in Implementing Career Transition Programs for Students with Abilities," *International Journal of Academic Research in Progressive Education and Development*, vol. 13, no. 4, Nov. 2024, doi: 10.6007/ijarped/v13-i4/23638.

[17] Y. Shin, 박헌우, and 황현옥, "Effect of the Scientific Writing through Logical Thinking Development on Science Inquiry Process Skills and Scientific Attitude of Elementary School Students," *BIOLOGY EDUCATION*, vol. 37, no. 1, pp. 151–161, Mar. 2009, doi: 10.15717/bioedu.2009.37.1.151.

[18] K. Krittawattanawong, "Effects of task-based writing instruction on english writing ability of upper secondary school students," Office of Academic Resources, Chulalongkorn University. doi: 10.58837/chula.the.2008.235.

[19] S. K. Sharma, "Statistical Methods in Scientific Research," in *Scientific Methods Used in Research and Writing*, CRC Press, 2020, pp. 9–37. doi: 10.1201/9781003119180-2.

[20] J. S Villanueva, "Writing Apprehension Level of Senior High School Students in Relation to their Writing Skills," *International Journal of Scientific Engineering and Research*, vol. 6, no. 12, pp. 15–19, Dec. 2018, doi: 10.70729/ijser18457.

[21] N. Y. B. Sinaga, S. Suwandi, and A. Anindyarini, "The Influence of Interest in Writing on Kisaran State Middle School Students' Poetry Writing Skills," *International Journal of Research and Scientific Innovation*, vol. XI, no. VII, pp. 10–16, 2024, doi: 10.51244/ijrsi.2024.1107002.

[22] E. T. Barbecho, "Writing Competence of Senior high School Students of Cebu Technological University: Intervention for Scientific Writing Development," *International Journal of English Literature and Social Sciences*, vol. 4, no. 2, pp. 469–476, 2019, doi: 10.22161/ijels.4.2.41.

[23] M. KARINA, R. SATOTO, A. H. D. ABDULLAH, and R. YUDIANTI, "PROPERTIES OF NANOCELLULOSE OBTAINED FROM SUGAR PALM (ARENGA PINNATA) FIBER BY ACID HYDROLYSIS IN COMBINATION WITH HIGH-PRESSURE HOMOGENIZATION," *Cellulose Chemistry and Technology*, vol. 54, no. 1–2, pp. 33–38, Feb. 2020, doi: 10.35812/cellulosechemtechnol.2020.54.04.

[24] O. FYODOROV, "METHODS TO IMPROVE QUALITY OF VISUAL AIDS IN BUILDING PRESENTATIONS FOR DISTANCE EDUCATION," *Scientific papers of Berdiansk State Pedagogical University Series Pedagogical sciences*, no. 2, pp. 185–196, 2024, doi: 10.32782/2412-9208-2024-2-185-196.

[25] A. T. Tyowua, "Results Section of Research Papers," in *A Practical Guide to Scientific Writing in Chemistry*, CRC Press, 2023, pp. 79–95. doi: 10.1201/9781003186748-11.

[26] C.-H. LOH, J.-D. CHEN, J.-H. LIN, and W. E. N. HSIEH, "Structural Damage Assessment Through Both Centralized and Sensor-level Vibration-based Data Analysis," in *Structural*

Health Monitoring 2017, in SHM 2017. DEStech Publications, Inc., Sep. 2017. doi: 10.12783/shm2017/14137.

[27] E. Pyper, D. Harrington, and H. Manson, "Do parents' support behaviours predict whether or not their children get sufficient sleep? A cross-sectional study," *BMC Public Health*, vol. 17, no. 1, May 2017, doi: 10.1186/s12889-017-4334-4.

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