

Analysis of a Mathematical Book-Writing Training Program: A Case Study of Formulas and Smart Tricks for Mathematics Education Students

Maswar Maswar¹, Moh. Atikurrahman²

^{1,2}Mathematics Study Program, Faculty of Tarbiyah, Ibrahimy University, Situbondo, Indonesia

Received: 2026-05-05

Revised: 2025-07-02

Accepted: 2026-08-02

Published: 2026-08-10

Abstract

A textbook is a set of learning materials that are systematically arranged and display the integrity of the competencies that will be mastered by students in learning activities. This Community Service (CS) activity aims to provide training in Writing 1001 Types of Formulas and Smart Tricks for Elementary and Middle School Mathematics to students who are actively studying and come from several classes of the Mathematics Education study program, Ibrahimy University, Situbondo. The understanding gained from this training can later be used to produce writings in the form of elementary and middle school mathematics books. A total of twenty-six students participated in this writing training, which was held twice a week for one month, namely in February 2025. From the results of the pre-test and post-test, it was seen that each participant experienced an increase in writing scores after receiving the training. In addition, data from the interview process showed the perceptions of the participants who gave a positive response to this book-writing training. This CS activity implies that we know what difficulties Mathematics Education students experience in learning to write books and solutions, and what can be done to help them. However, the drawback of this book-writing training is that it only involved a relatively small number of participants and in a relatively short time. The next writing training can recruit more participants and increase the training time longer, so that maximum results can be obtained.

Keywords

Community Service; Formulas and Smart Tricks; Mathematical Book -Writing Training; Mathematics Education Students.

Corresponding Author

Maswar Maswar

Ibrahimy University, Indonesia; maswar@ibrahimy.ac.id

INTRODUCTION

Quality implementation for educators is essentially a strategic need to meet the Main Performance Indicators (MPI) and Derivative Performance Indicators (DPI) of universities. In the field of mathematics, scientific publications in the form of textbooks, monographs, and reference books are vital instruments in the development of science, technology, and art. Through book writing, the results of mathematical research and innovations carried out by lecturers can be disseminated, so that the benefits can be widely felt by the community, the private sector, and other policy users.

Other real challenges are still faced in compiling scientific papers due to the strong oral culture compared to the writing culture, as well as the low interest in publication due to a lack of understanding of standardized book preparation procedures (Dian Irmayani et al., 2024).

Therefore, mathematics book writing training is very crucial to equip lecturers and students with the ability to convert ideas and research results into structured manuscripts. This training not only aims to improve technical skills, but also fosters academic responsibility in developing mathematical literacy as part of the achievement of professional institutional performance.

The importance of writing skills for students is also in line with the mandate of Law No. 20 of 2003 and No. 14 of 2005 which emphasize that the learning process must pay attention to local content and the ability to develop teaching materials. Students, as prospective educators or professionals, need to be equipped with the skills to compile textbooks and scientific articles because this activity is a sub-element of professional development that has strategic value in the academic world. In addition to functioning as a means of solving problems through exposure to research results, mastery of this writing technique also aims to prepare them to meet the requirements for promotion to functional positions in the future through the acquisition of significant credit scores (Pratiwi, et al., 2022).

However, in reality, there are still many obstacles in the form of lack of experience in formal writing and limited understanding of academic standards. Systematic training is very necessary for students to increase confidence and motivation in publishing their work in accredited scientific journals. By mastering scientific ethics, editing techniques, and Intellectual Property Rights (IPR) registration procedures, students are expected to not only be able to produce quality book drafts, but also make a real contribution to improving intellectual credibility and overall education quality (Syahrir, et al., 2024). Therefore, this Community Service (CS) activity aims to provide opportunities for students of the Mathematics Study Program to take part in free book writing training in order to help them improve their abilities and skills in writing textbooks or references, especially in the field of mathematics.

RESEARCH METHODS

This book writing training is carried out 4 times in 1 month, on Saturday and Sunday, for approximately one month in February 2025, namely when the lecture process is on vacation so as not to disturb the concentration of participants when learning to prepare for book writing. The schedule for this Book Writing training can be seen in Table 1 below.

Table 1. Book Writing Training Schedule 2025

Yes	Date	Time	Training Materials
1	Saturday, February 8, 2025	12.30-17.00	a. Working on pretest questions b. Convey the purpose and benefits of training c. Uncover the secrets of understanding basic math concepts with ease
2	Sunday, February 9, 2025	10.30-12.00	a. Displays a set of mathematical formulas b. Explain the tricks that must be mastered
3	Saturday, February 15, 2025	12.30-15.00	a. Convey a collection of formulas and tricks that must be mastered b. Teaching fun mathemagic
4	Saturday, February 22, 2025	10.30-12.00	Work on posttest questions

Regarding the location, this CS activity was held in the classroom of the Tadris Mathematics Laboratory, Faculty of Tarbiyah. The participants of this CS activity were 26 students of the Tadris Mathematics Study Program. Participants of this Book Writing training are those who have an interest in working both in writing books and in writing scientific articles, so it is necessary to prepare for self-writing from an early age. The participant data can be seen in Table 2 below.

Table 2. Data of Book Writing Training Participants 2025

Yes	Name	Study Programs	Semester
1	Zairatul	TMTK	VI
2	Uswatun	TMTK	VI
3	Dian	TMTK	VI
4	Niswa	TMTK	VI
5	Wilda S	TMTK	II
6	Riska	TMTK	VI
7	Siti N.K	TMTK	VI
8	Nisrina	TMTK	VI
9	Melissa	TMTK	VI
10	Syafika	TMTK	VI
11	Risqiyatul	TMTK	VIII

Yes	Name	Study Programs	Semester
12	Annisaul	TMTK	VIII
13	Wilda	TMTK	VIII
14	Aswiratun	TMTK	VIII
15	Mamluatul	TMTK	VIII
16	Sapphire	TMTK	VIII
17	Puja	TMTK	VIII
18	Nabila	TMTK	VIII
19	Shinta	TMTK	VIII
20	Wilda A	TMTK	VIII
21	Arlailatul	TMTK	VIII
22	Siti N.H	TMTK	VIII
23	Lutfah	TMTK	VIII
24	Inayatul	TMTK	VI
25	Rifka	TMTK	VI
26	Sabrina	TMTK	VIII

The instructional material in this training is prepared by synergizing three main references as theoretical and practical foundations, namely 1300 Math Formulas by Alex Svirin (2004), Precise Formulas of Junior High School Mathematics by Abdul Aziz (2010), and Introduction to Basic Mathematics by Maswar et al. (2022). The selection of this literature is based on its ability to present the material comprehensively as well as effective problem-solving methods to be integrated into the teaching process. This strategy aims to equip book-writing trainees with tactical techniques in assembling quality and systematic manuscript drafts.

In addition to the technical aspects, this training also adopts the Student-Friendly Math Learning Strategies (SFMLS) to change the negative perception of mathematics which is often considered scary and boring. This strategy integrates the mathemagic game method that uses symbols and numbers to increase enthusiasm, the use of mathematical puzzles to train reasoning and critical thinking skills, and the delivery of inspiring mathematical stories. By combining a strong formula foundation and an entertaining approach, it is hoped that the participants will be able to compile a textbook that is not only scientifically accurate but also able to stimulate students' interest and creativity in learning mathematics.



Figure 1. Teaching Materials Used for Book Writing Training 2025

Regarding the research instruments used, a *pre-test* was given to the participants at the first meeting to find out their scores and level of ability in answering Book Writing questions. Then, a *post-test* was held at the time of the last meeting with the aim of finding out their scores and the level of change in their abilities after participating in the Book Writing training. In addition, interviews with each participant were held after the Book Writing training was completed with the aim of finding out the participants' perception of this Book Writing training and the suggestions they could give.



Figure 2. The Participants are Taking a Book Writing Training



Figure 3. Participants and Presenters Photo Group After the Book Writing Training Event

RESULTS AND DISCUSSION

Based on the data obtained from the pre-test and post-test, you can see the comparison of each participant's Book Writing score in the table below:

Table 3. *Pre-test* and *Post-test* Results of 2025 Book Writing Training Participants

Yes	Name	<i>Pre-Test</i>	<i>Post-Test</i>
1	Zairatul	45	65
2	Uswatun	50	75
3	Dian	65	90
4	Niswa	45	60
5	Wilda S	45	65
6	Riska	60	85
7	Siti N.K	55	75
8	Nisrina	60	85
9	Melissa	50	70
10	Syafika	45	65
11	Risqiyatul	50	70
12	Annisa	65	85
13	Wilda	40	60
14	Aswiratun	55	75
15	Mamluatul	45	60
16	Sapphire	55	75
17	Puja	55	80
18	Nabila	50	80
19	Shinta	45	65
20	Wilda A	40	60
21	Arlailatul	45	60
22	Siti N.H	50	75
23	Lutfah	60	70
24	Inayatul	60	85
25	Rifka	50	70
26	Sabrina	50	70

Table 4. Results of Descriptive Statistical Analysis of 2025 Book Writing Participant Test Data

Descriptive Statistics						
	N	Range	Minimum	Maximum	Sum	Red
Pre_Test	26	25	40	65	1325	50.96
Post_Test	26	30	60	90	1875	72.12

From Table 4 above, the results of descriptive statistical analysis are known that there are 26 students in the pretest and posttest. In the pretest, the number was 1,325 and in the posttest it was 1,875. Meanwhile, the average pretest score was 50.96 and the posttest average was 72.12. The difference between posttest and pretest is 21.16. Through these results, it is known

that there is an increase in the average score from pretest to posttest. Thus, book writing training has positive implications for students' writing skills, especially in the field of mathematics about formulas and tricks for elementary and secondary school mathematics.

Table 5. Results of Inferential Statistical Analysis of 2025 Book Writing Participant Test Data

	Paired Samples Test						t	df	Sig. (2-tailed)
	Red	Paired Differences			Lower	Upper			
		Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
Post_Test - Pre_Test	21.154	3.552	0.697	19.719	22.588	30.369	25	0.000	

From table 5 above, it is clear that with a significance degree of 5% or a confidence interval of 95%, a calculated t-value of 30.369 was obtained with a significant value of 0.000 less than 0.05. This shows that the increase in values from pretest to posttest in the paired sample is significant. In other words, research on samples can be generalized to the research population. It also reveals that the zero hypothesis is rejected and the alternative hypothesis is accepted, meaning that there is a significant increase in average scores from the pretest to the posttest as a result of the treatment of writing 1001 books of formulas and tricks for elementary and secondary school mathematics in Tadris Mathematics students.

The quantitative data is in line with qualitative findings in the field that show that through mentoring and counseling (workshop), students have succeeded in overcoming the limitations of experience in understanding the procedures for writing quality books with ISBNs. This activity proved to be effective in opening up participants' insights into the flow of book preparation, starting from determining the title, preparing an outline, to processing the material into systematic paragraphs. This usefulness is very felt by students, especially in preparing books as an alternative to thesis or final project. As a post-training implementation step, students are encouraged to start compiling modules as technical stages that are easier to reach, considering the short duration of the work and the focus of discussion on one specific topic. The integration between statistical improvement of competency scores and in-depth technical understanding confirms that the training has succeeded in having a real positive impact on students' literacy skills and scientific productivity (Muvid, 2024).

The positive results of this Community Service (CS) activity reinforce the findings of several previous studies related to the effectiveness of scientific paper writing training. As reported by Fitria and Prastiwi (2020), book writing training has been proven to be able to increase the competency scores of participants from various educational backgrounds. However, in contrast to the training which is heterogeneous (including students, lecturers, and the general public), this CS is specifically designed to answer the special needs of students in certain disciplines. The characteristics of general and online training are also seen in the study of Kayyis et al. (2021), which, although effective, do not provide focused assistance to homogeneous target groups as is done in this program.

Furthermore, when compared to the training by Saputri et al. (2021) and Sirajuddin and Yahrif (2021), which targeted English Language Education students, there was a *fundamental distinction* in the participant profiles. In their study, participants were assumed to have linguistic independence as the basic capital of writing. On the other hand, the participants in this CS are students of the Mathematics Study Program (semesters II to VIII) who cognitively have a very strong mastery of mathematics material, but face significant obstacles in the technical aspects of writing textbooks and references. Therefore, this CS fills the gap by converting participants' conceptual understanding of mathematics into systematic formal literacy skills, a crucial step that they have never had before. The significant increase in scores in this training proves that a segmented approach to the exact science cluster is able to produce drafts of scientific papers that are not only accurate in substance but also meet the standards of quality publications.



Figure 3. The Atmosphere During the Book Writing Training

In addition, from the interview process, participants' perceptions of this Book Writing training were obtained. Related to the mentoring process, and mentoring materials. For example, Annisa states:

"This activity really helps me in understanding book writing, well. The material presented is structured and systematic, easy to digest and understand. I was also given an understanding of how to google relevant references and how to modify the material and examples according to the needs of the writer and reader."

For the part of the experience and satisfaction aspect in book writing assistance, Wiwin expressed his opinion during the interview process:

"For me, this book writing training is very useful, in addition to providing valuable experience for me it also helps me increase my confidence in writing books and other scientific works. Not only that, with this training, I feel that I have to learn more deeply about mathematical formulas and tricks that are easy to understand and fun. Honestly, I am very satisfied with the training materials provided."

This finding is in line with several studies from previous CS activities. For example, providing book writing training to several students of the Civil Engineering Study Program in Sukabumi. Although the participants benefited from the book writing training they provided, the participants' perceptions were not explored more deeply through individual interviews as held in the book writing training in this CS activity. The same is true for Book Writing training by Where participants are assumed to benefit from the Book Writing training given, but are not factually conveyed through the interview process. Sukmawan et al., (2022) and Candria (2022).

CONCLUSIONS AND SUGGESTIONS

This CS activity aims to provide book writing training to active students of the Mathematics Tadris Study Program, Faculty of Tarbiyah, Ibrahimy Situbondo University who have an interest in writing scientific papers or articles, but have limited book writing skills. From the results of the pre-test and post-test of the participants, data was obtained that there was a significant increase in scores in the training in writing books in the field of mathematics about formulas and tricks for mathematics in elementary and secondary schools. In addition, from the results of the interview, the participants expressed a high sense of appreciation for this book writing training because it was considered very useful in helping to improve their mathematical book writing skills. The implication of this CS activity is that this training can be said

to be very useful to help improve the abilities and skills of students of the Tadris Mathematics Study Program, Faculty of Tarbiyah, Ibrahimy University in writing books, especially in the field of mathematics. In addition, this CS activity helps us find out the opinions and suggestions of students regarding what kind of book writing training can be given next. Although this CS activity is considered useful, it is no exception without its drawbacks. Apart from the relatively small number of participants in this book writing training, the implementation time is also quite short, namely only 4 weeks on February 1, 2025. Book writing training activities in the future can be carried out by recruiting more participants and with a longer duration of time, although not only in mathematics books.

ACKNOWLEDGEMENT

The author expressed his deep appreciation and gratitude to all parties who have contributed and supported extraordinarily in the success of this community service activity. In particular, thanks are extended to colleagues and article-writing partners for the intellectual collaboration, dedication, and constructive thinking throughout the process of compiling this scientific paper. The author also expressed his sincere gratitude to the Institute for Research and Community Service (IRCS) of Ibrahimy University for the facilities, direction, and administrative support that made this activity possible to carry out well. The highest appreciation was also given to the Faculty of Tarbiyah and the entire academic community of the Mathematics Study Program, Ibrahimy University, especially the students who had actively participated with high enthusiasm during the training. The valuable support and input from all parties not only improved the participants' technical skills in writing math books but also became an important foundation for the development of more innovative training programs in the future.

REFERENCES

- Aliyyah, R. R., Ulfah, S. W., Sherawati, E. S. B., Rachmadtullah, R., & Asmara, A. S. (2020). Bidikmisi: Analysis of the Implementation of the Higher Education Scholarship Program. *Journal of Administration and Educational Management (ALIGNMENT)*, 3(1), 37–54.
- Candria, M. (2022). Paper-Based Book Writing Training for Students of the Faculty of Sharia and Law, State Islamic University (UIN) Walisongo, Semarang. *Harmony: Journal of Community Service*, 6(1), 93–97.
- Fitria, T. N., & Prastiwi, I. E. (2020). Book Writing Test (Test of English Foreign Language) Training for Vocational / High School Students, Students, Lecturers, and the General. *Budimas: Journal of Community Service*, 2(2), 43–49.
- Hasibuan, L., Us, K. A., & Pendi, H. Z. (2021). Managing Tuition Costs: A Literature Study Review. *Journal of Literaology*, 5(2), 1–14.

- Irmayani, N. W. D., Selamat, I. W. A., & Suda, K. R. S. (2024). Training on Textbook and Monograph Book Writing for Lecturers at the National Polytechnic Campus. *Journal of Community Service of the Nation*, 2(1), 1–5.
- Kayyis, R., Pratiwi, D., Tristiana, N. E., & Wulandari, F. (2021). Book writing training for the public using the Zoom application. *Immunology*, 4(2), 188–196
- Maswar. (2019). Mathematics Learning Strategies for Fun Students (MMS) Based on Mathematic Game Methods, Mathematical Puzzles and Stories. *Ariphmatics: Journal of Mathematics Education and Learning*, 1(1), 28-43.
- Mujiati, M., Nasir, N., & Ashari, A. (2018). Factors That Cause Students to Drop Out of School. *Didactic: Journal of Education and Science*, 18(3).
- Muvid, M. B. (2024). ISBN Quality Book Writing Training Workshop for UIN Walisongo Semarang Students. *Journal of Community Service*, 1(2), 33–44.
- Pratiwi, S. R., Nainggolan, Y. T., & Cahyaningrum, W. (2021). Training in Writing and Writing Scientific Articles for Teachers. *Journal of Community Service Bestari (JPMB)*, 1(4), 167–178.
- Syahrir, M., Peradana, R., & Ahmad, F. (2024). PkM Training on Writing Textbooks and Scientific Articles for MA Al-Fakhriyah Teachers. *J. A. I: Journal of Indonesian Abdimas*, 4(3), 1410-1416.
- Saputri, K., Sulaiman, M., & Yuliani, S. (2021). Book Writing Training for Semester VII Students of the English Education Study Program UM Palembang. *Abdine: Journal of Community Service*, 1(2), 190–195.
- Sirajuddin, S., & Yahrif, M. (2021). Listening Training for Test Book Writing for Students of the Bachelor of English Education Study Program. *Mega Pena: Journal of Community Service*, 1(1), 67–75.
- Sofya, R., Siwi, M. K., & Oknaryana, O. (2018). Socioeconomic Conditions of Students Dropping Out of School. *JIFE: Journal of Economic Education Innovation*, 8(2), 90–94.
- Sukmawan, R., Susilawati, L., & Hestiana, S. (2022). Improving the Comprehension Ability of Civil Engineering Students at the University of Muhammadiyah Sukabumi. *Journal of Community Service of the Archipelago*, 2(2), 41–52.