Improving Scientific Article Writing Skills for Science Teachers in Banjarnegara Regency through Project-Based Learning

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Abstract

There are three main elements of activities assessed in assigning credit points to teachers. First is education, second is learning and third is continuous professional development. Education and learning are activities that are usually carried out by a teacher. However, not many teachers are still doing sustainable professional development. One of them is in scientific publications. For this reason, a service was carried out regarding training in writing scientific papers to increase the acquisition of credit scores for Banjarnegara Regency MGMP Science teachers. The training methods applied include planning, implementing training and mentoring and monitoring. Based on the service carried out, it was found that the length of time teaching did not show a positive relationship with writing ability and quantity of publications. Through this service, teachers already have the motivation to start writing even though there have been no published results from this service activity.

Keywords: *writing skills, scientific work, project-based learning*

INTRODUCTION

There are three main elements of activities assessed in assigning credit points to teachers. First is education, second is learning and third is continuous professional development. Education and learning are activities that are usually carried out by a teacher. Continuous Professional Development (PKB) is the development of teacher competencies that are carried out as needed, gradually, continuously to improve their professionalism (Ardiansyah et al., 2022; Handayani & Rukmana, 2020). This activity must be established and implemented not only by teachers but must be supported by schools, national education, and universities. There are three kinds of PKB activities, namely self-development, scientific publications and innovative work.

Scientific publication is the main continuing professional development activity that teachers experience obstacles in (Handayani & Dewi, 2019; Imam et al., 2018; Zainil et al., 2022). Conditions and facilities to motivate scientific publication activities in teachers must be created. The conditions for conducting scientific publication activities have been created,

by making scientific publications a major element in obtaining credit points for improving teacher functional positions. The means to publish scientific work is still an obstacle. There are three groups of scientific publications in continuing professional development activities, namely 1) presentations at scientific forums, 2) publication of research results or innovative ideas in the field of formal education and 3) publication of textbooks, enrichment books and/or teacher's guides.

The means of presentation activities in scientific forums are activities in the form of seminars, workshops, or other scientific meetings. Teachers as presenters or discussants, must make scientific papers. The means of publishing research results or innovative ideas in the field of formal education is the existence of scientific journals that meet the specified requirements. The existence of an educational journal that is accredited and takes place on an ongoing basis is what is needed as a means of publicizing the scientific papers of teachers.

Community service in the form of coaching activities for writing scientific articles has been widely carried out. Marwoto (2013) in his service report stated that there was a significant increase in the ability of teachers to write scientific articles, after participating in three activities, namely, training in writing scientific articles, making the core points of writing scientific articles, and consulting on making scientific articles. The results of simple observations show that the improvement in the ability to write scientific articles has not conditioned teachers to publish their scientific work. This indication is shown by the real fact that many teacher ranks stop at class IVa. This is because to get to the next group requires the publication aspect of scientific articles. Scientific publications will be realized if there are scientific journals that can publish their articles. Training and coaching of teachers in making scientific papers has not had an impact on the development of teachers' functional positions, because to publish their work, teachers are constrained by knowledge of available journals.

MGMP IPA Banjarnegara district covers 98 junior high schools, public and private, where the list of schools can be seen in the Appendix. The MGMP secretariat is located at SMP N 2 Banjarnegara, on Jl Tentara Pelajar No 31 Banjarnegara. The MGMP management for the 2022 - 2025 service period was appointed based on the Decree of the Kadin Dikpora of Banjarnegara Regency dated September 5, 2022 with Number 800 / 0109.a / Dikpora / 2022. The number of members based on data in the Ministry of Education and Culture's SIM PKB is 239 teachers. Based on discussions with the head of the MGMP of science teachers in Banjarnegara district, the ability to write scientific articles of teachers is still quite low, as evidenced by the small number of scientific publications made from the 239 teachers.

Based on these facts, it is necessary to carry out an activity to improve the ability to write scientific articles of junior high school science teachers in Banjarnegara through project-based learning so that teachers will not experience obstacles in calculating credit numbers for promotion. Project-based learning is a learning method that uses projects/activities as media. The teacher will facilitate so that students can explore, assess, interpret, synthesize, from the information obtained to produce various forms of learning outcomes (Nurfitri et al., 2023). With project learning given to students, the results can be used as data

for writing scientific papers for teachers. Several studies have shown that project learning can improve students' problem solving skills (Hariyani, 2024; Mulyani, 2020) and students' learning independence (Aulia et al., 2019; Martiani, 2021).

Departing from this problem, the service team consisting of lecturers and students tried to provide training and assistance in writing scientific papers and calculating credit scores for MGMP Science Junior High School teachers in Banjarnegara Regency. With this activity, it is hoped that the ability of teachers to write scientific articles will increase, so that it will no longer be an obstacle for promotion for teachers.

METHODS

The method of implementing the service is carried out by planning, training, practice, and monitoring activities. In the planning stage, discussions were held with the Magunsari community to find out the problems faced and draft activities to be carried out. At the training stage, material was given from the service team regarding project-based learning using materials that are around and computer-based, manuscript preparation techniques, how to submit manuscripts to sinta accredited journals, calculating credit scores. Finally, monitoring of the process and results of the manuscript from the learning carried out and ensuring that the product of this service activity is successfully submitted to the journal. The flow chart of the service method carried out is shown in Figure 1.

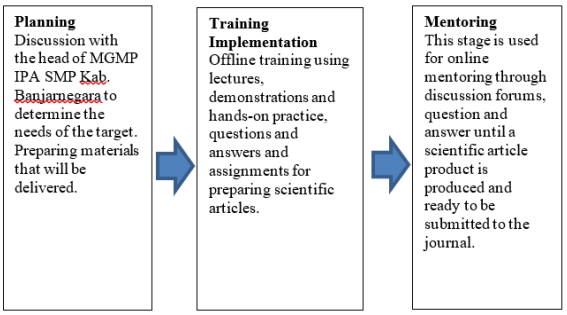

Figure 1. Procedure of service implementation

RESULTS AND DISCUSSION

The service activities were carried out on Saturday, August 5, 2023 at AULA Ki Hadjar Dewantara, Dindikpora Banjarnegara which was attended by 96 participants of science teachers in Banjarnegara Regency. Before the service activity began, a pretest was given regarding the trainees' knowledge of project-based learning and writing articles from the learning activities carried out. Based on the results of the pretest, it was found that most of the trainees had known how to make articles as shown in Figure 2.

Figure 2. Percentage of participants' knowledge in compiling scientific articles

Most of those who responded that they knew how to prepare scientific articles were the product of having attended training in the preparation of scientific articles, as shown in Figure 3.

Meanwhile, for participants who responded that they knew how to prepare scientific articles, it turned out that they had attended more than two trainings on writing scientific articles. Meanwhile, for those who have never known how to write scientific articles, it turns out that the training participants have never attended training in writing scientific articles.

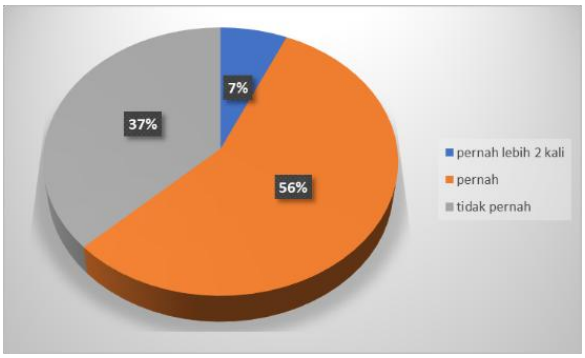

Figure 3. Percentage of trainees' experience in participating in scientific article writing training

Based on the knowledge and experience of attending the training, it has an impact on the ability to produce scientific papers. On average, trainees who have attended training on the preparation of scientific articles have experience in compiling articles and publishing these articles as shown in Figure 4.

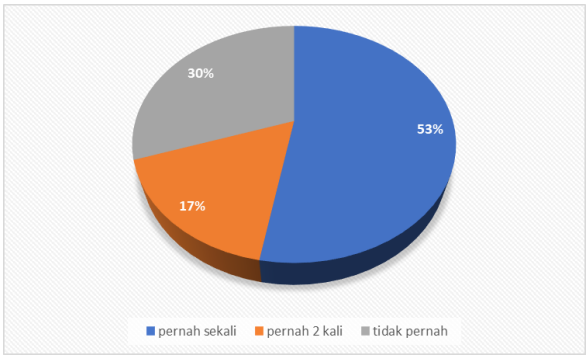

Figure 4. Percentage of experience writing scientific articles

After the pretest, the service activities continued with training, in the form of material presentation on organizing project-based classroom learning by utilizing materials around students and organizing project-based classroom learning with computer assistance. In addition, material for preparing articles based on project-based learning activities and calculating credit scores was also presented. After the presentation of the material, followed by a question and answer session, which was followed by quite enthusiasm from the participants who asked questions about how project-based learning was carried out whether it had to be in the entire learning activity or only on certain topics. It was explained by the service team from Department of Physics FMIPA UNNES, with project-based learning cannot be done for all learning activities with all topics that must be mastered by students. This is of course, due to the limited time available and not all physics topics can be projected to students, taking into account the limited teaching time and the cost of providing materials for making projects that are also limited. There are also participants who ask about if we have succeeded in making the project how we get the data that will be used as material for the preparation of the article. For what data will be collected, of course, it is adjusted to the learning objectives that have been determined together. Suppose the project is to train students' critical thinking skills and abilities, then data collection can be done using observation sheets and portfolios. And for validation of observation sheets can be done by peers who have a minimum education of strata two or master's program or teachers who have more than ten years of teaching experience. This aims to use a valid and

reliable measurement tool, so that what is collected will also be valid and reliable.

The service activity was closed with an assignment in the form of applying project-based learning in classroom action research which later the data obtained as data for preparing articles. On the assignment, online monitoring is also carried out through WAG and Gdrive to document the draft articles that have been prepared for further review. A group photo of this service activity can be seen in Figure 5.

Figure 5. Photo with the Physics Cluster Service Team and MGMP Science Teacher participants of Banjarnegara Regency

CONCLUSION

Based on the results and discussion, it can be concluded that the service activities to improve the skills of writing scientific articles for science teachers in Banjarnegara district through project-based learning are able to improve writing skills and are expected to be used in the acquisition of credit numbers for teachers in promotion.

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