Suluah Bendang: Jurnal Ilmiah Pengabdian Kepada Masyarakat
Vol.24, No.3, 2024, pp. 111-118
ISSN: 1411-6960 (Print) ISSN: 2714-6766 (Electronic)
DOI: 10.24036/sb.04970
http://sulben.ppj.unp.ac.id

Improving Teachers' Capability in Writing Scientific Articles through Training and Mentoring in West Sumatra

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Revisi 28/10/2024;
Diterima 21/10/2024;
Publish 01/11/2024

Keyword: *Analysis teacher ability, module, Online, Project based learning*

Abstrak

This analysis aims to determine whether instructors have the capability of transforming their classroom action research findings into academic papers. The interval between the pandemic and post-pandemic requires a strategy to ensure that the transition of learning stays on to provide students with solace in their educational experience during this time. Thirty attendees, all members of the West Sumatra Automotive Engineering Subject Teacher Meeting, participated in the event. The participants were separated into online and offline groups. To evaluate the extent of learning value, online modules created by participants will be analyzed to judge instructors' capability to develop the academic paper. Participants were able to construct effective learning as a result. For online participants, the mentor must spend additional time instructing them on how to complete the mission.

INTRODUCTION

The advancement of technology and the ongoing epidemic have necessitated a transition in the educational system from traditional offline methods to online platforms. The effective implementation of online-based learning necessitates instructors' proficiency in various aspects, including the management of learning processes. This encompasses tasks such as the preparation of teaching tools, the evaluation of student progress, and the critical reflection on the efficacy of online learning methods. The existing professional organisation for teachers is known as the Subject Teacher Conference (MGMP). According to the data collected from July to December 2022, as well as the visit conducted by the student guidance team in the field of automotive engineering at PLK, the total number of individuals affiliated with the automotive engineering MGMP amounted to approximately 170. The unfortunate reality is that the

operations of the West Sumatera Automotive Engineering MGMP have experienced a prolonged hiatus as a result of insufficient funding, inadequate resources, and the impact of the Covid-19 pandemic. The implementation of online learning, as a new policy, has further exacerbated the situation by consuming additional time and increasing the workload of teachers, particularly in the preparation of instructional materials. Currently, the sole source of funding for activities is derived from membership fees, with no government aid provided. Consequently, the attendance for each activity is limited to a mere 5 or 6 members.

In addition to engaging in discussions and interviews, the principal of the Padang City MGMP and MGMP members from West Pasaman were also consulted. The aforementioned occurrence in Padang city was also observed in the region of West Pasaman. The implementation of the MGMP was attempted through the utilisation of the Zoom online platform. However, a significant number of members encountered limitations due to their data package restrictions, resulting in a limited number of active comments from MGMP participants. Teachers face significant challenges when it comes to implementing effective instructional strategies and providing enough learning tools, particularly in the context of the ongoing Covid-19 pandemic. This matter necessitates particular consideration in order to enhance the quality of education in all circumstances. It is important to note that the objective of vocational high schools is to cultivate competent and readily employable individuals who meet the demands of the industry. The purpose of this activity is to provide insight, knowledge and skills about the application of technology in designing digital-based learning processes to support current learning and its application through digital learning training such as training and assistance in making LKPD media, making evaluations, and reflecting on online-based learning.

In alongside the development of lesson plans and instructional materials, it is imperative for students to actively engage in the learning process in order to cultivate a mindset of continuous learning throughout their lives. In contemporary education, the cultivation of lifelong learning among students necessitates the use of novel pedagogical approaches. The existing literature discusses the use of cognitive theory in enhancing teachers' acquisition of new professional information (Maksum & Purwanto, 2019). Additionally, it highlights the significance of critical thinking skills in effectively managing the classroom for proficient teachers (Chen and Yang, 2019). Different perspectives on educators incorporate multiple instructional frameworks (Bower, et al., 2015;) and social-constructivist models to facilitate teachers' acquisition of effective communication skills in their pedagogical approaches (Maksum et al., 2019).

In order to foster learner motivation, educators must strategically plan and oversee the learning process by actively engaging pupils. Moreover, Bransford et al. (2006) elucidate the significance of acquiring knowledge that can effectively engage cognitive faculties and enhance psychomotor abilities, subsequently fostering problem-solving aptitude and promoting collaborative teamwork (Casner-Lotto & Bringhton, 2006). Bower et al., (2015) proposed project-based learning as a potential learning approach in addressing these objectives, emphasising the need for active student engagement in the learning process. Chen and Yang (2019) provide definitions of Project Based Learning as an instructional approach that incorporates project work to enhance student creativity and motivation (Baharom, et al., 2015). Project work can be conceptualized as a form of learning that is characterized by open-ended contextual activities. It is an integral component of the learning process, wherein significant importance is given to the development of problem-solving skills (Badia & Campos, 2018). Ultimately, this educational approach enhances the cognitive, emotional, and psychomotor capacities of students. According to certain theories, a lesson should not solely cater to the immediate learning requirements of students but should also be designed with consideration

ISSN: 1411-6960

for future life patterns, hence fostering the development of lifelong learners among students. Hence, the implementation of this web-based module training aims to support educators in developing instructional resources and strategies that promote lifelong learning among students.

When implementing the Problem-based Learning (PjBL) module in the context of the COVID-19 pandemic, it is essential to adhere to the fundamental principles of PjBL as outlined by Badia and Becerril (2016). These principles include centrality, leading questions, constructive inquiry, autonomy, and realism. The principle of centrality underscores the notion that project work serves as the fundamental element of the curriculum. The learning technique revolves around a central focal point, wherein learners acquire essential knowledge concepts through engaging in project-based activities. According to Appleton, et al., (2006), project work serves as an external motivator that promotes the development of independence in the execution of learning activities. Moreover, it promotes students' engagement in the process of identifying the fundamental principles underlying the courses they have studied (Hasan et al., 2020). In contrast, Project-based Learning (PjBL) adheres to the idea of constructive inquiry, wherein project work does not engender psychological challenges for students, or if such challenges arise, students are equipped with the necessary prior knowledge to effectively address them. Consequently, project work serves as a means of practical application, facilitating the mastery of the subject matter. Al-Samarraie and Saeed, (2018) conducted a study on the topic.

The investigation encompasses a range of processes, namely designing, decision-making, problem identification, problem resolution, masking, and model development. During the project, participants are afforded the opportunity to exercise autonomy in decision-making, operate under the guidance of the presenter, and assume accountability for the outcomes they attain. Consequently, the PjBL module incorporates the provision of handouts, worksheets, and practical work instructions. One crucial element of realism in education is the need for the learning process to effectively simulate real-life experiences for students. This entails ensuring that many aspects, such as the selection of topics, tasks, and positions within a professional setting, as well as opportunities for collaborative work, accurately reflect authentic work environments. Additionally, the products created by students should align with industry standards and cater to the needs and expectations of potential clients.

METHOD IMPLEMENTATION

In order to ascertain the approach for implementing this service activity, the service team initiated consultations with the head of the Padang city MGMP, who served as the host of the activities. The principal of SMK N 8 Padang expressed satisfaction in offering recommendations for his school as the designated site for implementation. Furthermore, the principal demonstrated readiness to accommodate all teachers from the West Sumatra MGMP specialising in automotive. In accordance with the agreement reached with the partners, this endeavour will employ a range of instructional techniques, including lectures, demonstrations, exercises, presentations, and project discussions, with the aim of successfully accomplishing the project. The evaluation approach involves administering a pretest in the form of a questionnaire to assess teachers' knowledge in the domain of communication technology-based learning, encompassing online learning, as well as their prior experiences in this area. This process is undertaken to gain a comprehensive understanding of the proposed solutions that will be implemented after the analysis of observations and conversations with vocational teachers specializing in automotive studies. Additionally, a posttest will be administered at the conclusion of the activity. The activity was attended by a total of 30 individuals, who were geographically dispersed throughout the province of West Sumatra. Of these participants, 15

engaged in the activity remotely via online means, while the remaining 15 participated in person at a physical location. The content provided in this training session serves as an introductory overview of various topics, including the enhancement of project-based learning materials, the implementation of class action research, the process of transforming class action research findings into a scientific article, and the procedures for registering and submitting articles to scientific journals in accordance with the journal's template.

RESULT AND DISCUSSION

The outcomes that have been attained as a continuation of the actions taken in the year previous are as follows:

The Programme offers training and support for enhancing online teaching tools through the utilisation of project-based learning and problem-based learning approaches.

The learning tools developed by the training participants in an online setting have undergone refinement by certain educators and have subsequently been used into classroom action research. The offline participants, consisting of 15 teachers, can utilise their expertise to develop articles. Meanwhile, those who have not participated offline can contribute to enhancing the implementation process of the planned PTK for the current academic year. Limited progress is observed in this training programme, specifically in relation to the application of Pedagogical Content Knowledge (PTK) and the production of research articles. The activities pertaining to this particular activity are depicted in Fig 1.

Figure 1. Implementation of training and mentoring a) online participant background, b) introduction to the material for improving PjBL-based teaching materials, c) delivery

ISSN: 1411-6960

of online-based learning materials by presenters, d) assistance in improving materials by presenters 2.

Training and assistance in conducting Classroom Action Research with project-based methods in online learning.

The speaker on classroom action research (PTK) was delivered by a speaker from LPMP, Mr. Iryasman, M.Pd. he is an expert in the field of classroom action research. The process is as shown in Fig 2.

Figure 2. The process of delivering material about PTK, a) the speaker is explaining the importance of learning innovation from a PTK, b) assistance from the PTK process made, c) explaining why the cycle of PTK must be in accordance with student conditions, d) one of the online participants is explaining.

Furthermore, the dissemination of information on PTK is an integral aspect to consider. Additionally, the speaker discussed the essential components required for PTK to gain recognition from the promotion assessment team. Based on the speaker's elucidation, it was determined that a PTK necessitates a coherent progression from its inception to its finish. The development process of each cycle should be grounded in reflective analysis of the implementation of acquired knowledge. In order to effectively address the sequence of problems that serve as the primary focus of study, it is necessary to resolve them through the implementation of appropriate actions within each research cycle. The speaker asserts that class action researchers frequently have a tendency to selectively characterise their desired outcomes and thereafter pursue them. In order to conceal the sequential arrangement of problems addressed during the research process.

Training on drafting scientific articles and publishing articles in national journals

The training procedure involves modifying the outcomes of classroom action research conducted by participants in response to the previous year's training. The objective of this training programme is to adhere to the guidelines set forth by publishing journals and to uphold the ethical standards associated with writing articles for publication in national journals. All 15 participants who participated in the offline activities had previously received a report detailing the outcomes of the classroom action study. In contrast, out of the total cohort of 15 individuals that engaged in the online platform, a mere 10 people obtained the outcomes of the class action research. It is advisable for individuals who have not undergone a comprehensive Project-Based Learning (PjBL) experience to utilise the prior report, on the condition that it has not been previously disseminated. The reference journals utilised in this study are those that have demonstrated successful submission of manuscripts, as depicted in Fig 3.

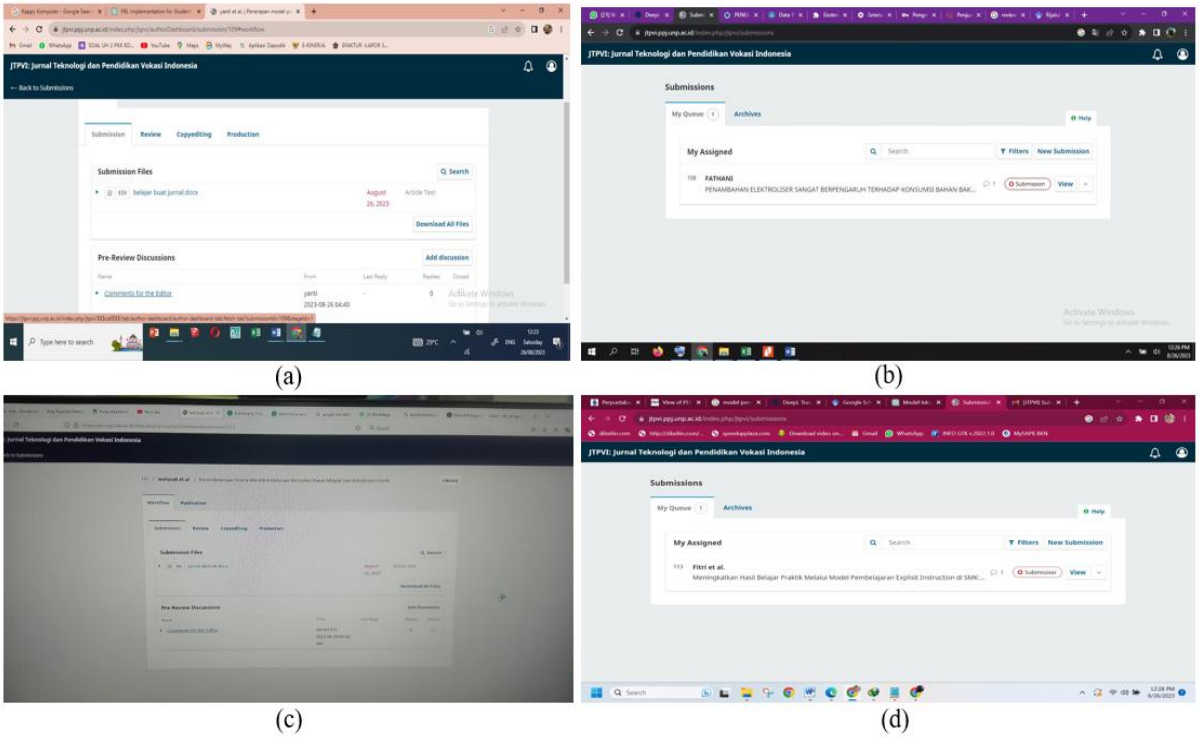

Figure 3. The results of submitting articles by participants, a) submit articles on behalf of yarniyanti, b) submit results on behalf of raijalul fatani, c) submit results on behalf of Wahyudi, and d) submit results on behalf of warisma fitri.

The journal objectives used for this training are JTPVI Vol. 1 No. 4 (2023): JTPVI: Jurnal Teknologi dan Pendidikan Vokasi Indonesia | JTPVI: Jurnal Teknologi dan Pendidikan Vokasi Indonesia (unp.ac.id) and Automotive engineering education journal AEEJ : Journal of Automotive Engineering and Vocational Education (unp.ac.id). For the final submission, it is recommended that participants do it themselves so that it matches the wishes and qualifications needed to advance to a functional position in accordance with the rank of the trainee.

Pretest and posttest to ensure that participants are competent.

ISSN: 1411-6960

The posttest findings revealed a significant improvement in the participants' abilities. The training programme employed a comprehensive assessment approach, with each presenter offering customised guidance and support to facilitate this progress. The analysis of the training outcomes revealed a significant level of improvement, as illustrated in Figure 4. Certain participants encountered a state of stasis in their scoring progress due to frequently seeking permission as a result of concurrent academic obligations. A subset of the individuals involved in this study, specifically participants numbered 23 and 24, exhibited a marginal improvement in their scores, with the values rising from 82 to 83. Upon the conclusion of the training programme, the participants encountered difficulties in successfully submitting papers that adhered to the comprehensive guidelines provided throughout the training and mentoring sessions.

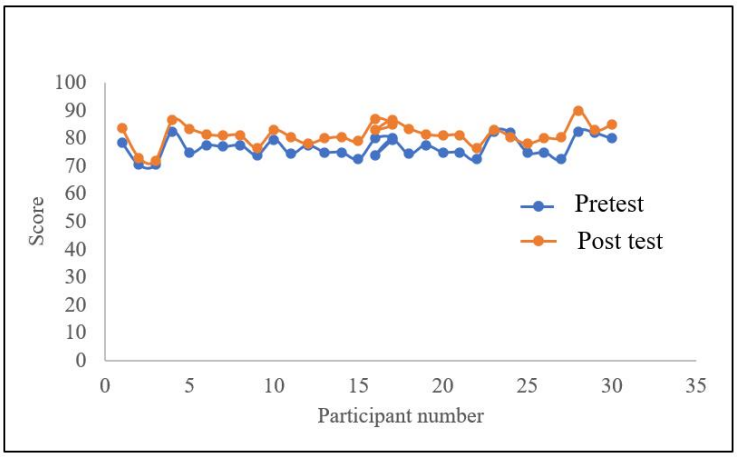

Figure 4. Improved trainee scores

Conclusion

Based on the findings of this community service initiative, it can be inferred that the proficiency of MGMP teachers specialising in automotive engineering can be enhanced by the implementation of a project-based training methodology. However, it is imperative that appropriate support be provided to ensure their readiness for learning. This implies that the training procedure integrates the dissemination of information and active engagement from the individuals involved. The current training programme has experienced a significant rise in the number of trainees, with an increase of 85%. Particularly when recounting scientific papers and subsequently adapting them into templates for scientific journals.

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