JSP_EXPLORING THE USEFULNESS OF PROJECT-BASED LEARNING

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EXPLORING THE USEFULNESS OF PROJECT-BASED LEARNING IN ENHANCING STUDENTS' SCIENTIFIC WRITING SKILLS

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ABSTRACT

Project-based learning is a learning process using projects as a systematic teaching method that involves students in acquiring knowledge and skills through research assignments, authentic questions, and well-designed products. This study explores the usefulness of project-based learning in enhancing students' writing skills. The study was conducted in an advanced writing class consisting of 30 students as the subject of the study. This classroom action research was conducted in two consecutive teaching cycles, each cycle consists of two teaching sessions. The data were collected by administering pre-test and post-test. The study found that the students' scientific writing skills significantly improved after the implementation of project-based learning. It could be seen from the increasing mean scores in each teaching session. The findings highlighted that project-based learning should be utilized more intensively to develop students' scientific writing skills.

Keywords: scientific, writing, project-based learning

ABSTRAK

Pembelajaran berbasis proyek adalah proses pembelajaran dengan menggunakan proyek sebagai metode pengajaran sistematis yang melibatkan siswa dalam memperoleh pengetahuan dan keterampilan melalui tugas penelitian, pertanyaan autentik, dan produk yang dirancang dengan baik. Penelitian ini mengeksplorasi kegunaan pembelajaran berbasis proyek dalam meningkatkan kemampuan siswa. kemampuan menulis. Penelitian dilakukan di kelas pembelajaran menulis yang terdiri dari 30 siswa sebagai subjek penelitian. Penelitian tindakan kelas ini dilaksanakan dalam dua siklus pengajaran berturut-turut, setiap siklus terdiri dari dua sesi pengajaran. Pengumpulan data dilakukan dengan melakukan pre-test dan post-test. Penelitian menemukan bahwa keterampilan menulis ilmiah siswa meningkat secara signifikan setelah penerapan pembelajaran berbasis proyek. Hal ini terlihat dari peningkatan nilai rata-rata pada setiap sesi pengajaran. Temuan ini menyoroti bahwa pembelajaran berbasis proyek harus dimanfaatkan secara lebih intensif untuk mengembangkan keterampilan menulis ilmiah siswa.

Kata Kunci: ilmiah, menulis, pembelajaran berbasis proyek

INTRODUCTION

Writing is one of essesntial language skills that has a vital role in language learning. Writing involves various linguistic aspects, including micro and macro linguistic aspects. Writing can make students accustomed to composing writing in the form of words that form sentences and groups of sentences that form systematic, logical, and effective paragraphs through exercises in writing paragraphs in essays. Students are also introduced to writing procedures that comply with the rules so that they are clear when writing paragraphs or texts and are adapted to the situation and conditions (Siburian et al., 2019; Mantra & Widiastuti, 2019).

Writing skills belong to more than just someone with the talent to write but instead with serious practice. Anyone can possess writing skills. Communicating using written language requires an understanding of spelling and must comply with the rules of scientific writing(Sari et al., 2021; Mantra & Widiastuti, 2019). Using written

language is oriented towards increasing students' knowledge and understanding in compiling scientific work, ranging from scientific articles and term papers to research reports, such as theses, theses, and dissertations. Learning the skills of writing scientific papers in tertiary institutions must be adequately managed so that they can encourage students to be independent in reasoning, able to see the interrelationships between concepts and material, able to communicate in writing, and able to solve problems being faced in terms of writing scientific papers (Mantra et al., 2022; Suprihatin, 2021).

In this regard, lecturers must train students, not just teach language and its ins and outs, because more is needed to form practical writing skills (Cahyani et al., 2018). Many students need help with writing scientific papers, especially term papers. Based on observations of papers written by students, the problems faced by students in writing papers are (1) lack of consistency between the title of the paper and the contents of the paper, (2) the formulation of problems and subproblems not precise, (3) the discussion of each sub-problem is not detailed enough, (4) some literature reviews are less relevant to the problems and subproblems, (5) the conclusions do not yet reflect the description of the discussion of the problem, (6) pay little attention to the use of spelling, and (7) the writing procedures have not followed the applicable guidelines. These problems arise because writing activities require serious thought, time, and attention, which are considered a heavy burden (Listyani, 2020).

Scientific writing is a form of academic writing that describes a predetermined topic and must adhere to the scientific writing systematics. In the academic world, scientific writing is often used as one of the tasks students must do (Steffens et al., 2021; Sebola, 2022). To know students ability in scientific writing appropriate assessment should be carried out (I. A. M. S. Widiastuti et al., 2020). The indicators assessed in a scientific paper generally include four types, namely (a) an assessment of the introduction, (b) an assessment of the main text, (c) an assessment of the closing, and (d) an assessment of the appearance of the paper. Furthermore, students' ability should be continually be assessed and feedback should also be provided by the teachers to improve students' competence (Widiastuti & Saukah, 2017)

In order for students to be able to improve their skills in writing scientific papers, an appropriate learning method is needed. One of the learning methods that can be used is project-based learning. The project-based learning model is a form of student-centered learning aiming to develop more self-reliance in students (Mantra et al., 2021). This learning model provides opportunities for students to plan learning activities independently in project work activities. Project-based learning allows students to plan learning activities, carry out projects collaboratively, and produce work products (Yuliansyah & Ayu, 2021). The project-based learning model has advantages in increasing student learning outcomes and motivation (Taylor et al., 2021).

Project-based learning can improve academic achievement, deepen understanding of teaching materials, and increase learning motivation. Project-based learning encourages students to be creative and independent in producing products as learning outcomes (Mantra et al., 2022). Implementing project-based learning

models encourages the development of learning products in a natural way under actual activities, naturally making students experience meaningful learning (Mantra et al, 2022). The development of this product fosters students' positive attitudes towards the surrounding environment. Project-based learning provides students with experiences to build their knowledge (Sari & Prasetyo, 2021). Additionally, project-based learning builds up students' creativity and critical thinking skilss (Widiastuti et al., 2022).

The project-based learning model intends to encourage students to learn more deeply by using inquiry. The lecturer acts as a facilitator who guides students to gain experience that allows students to construct understanding independently (Trishchenko, 2018).The results of observations made by researchers in the class show that (1) students' motivation to write is very lacking, (2) the task of writing scientific papers in the form of articles or papers is always considered a challenging and complex task to complete and, (3) the average student has not been able to complete their studies on time due to obstacles in the preparation of the thesis (Jusslin & Hilli, 2023). Theoretically, students' receptive knowledge of the language influences whether students' writing skill is good. A person can only write well if his listening and reading skills are good, supported by knowledge of scientific writing principles and frequent writing practice (Shafiee Rad et al., 2023). Moreover, critical thinking skill also become essential for the students in writing academic papers (Widiastuti et al., 2022).

The low ability of students to write scientific papers causes competency achievement to be more optimal. The low ability of students to write scientific papers

is influenced by several reasons, namely: (1) students cannot write, (2) lecturers rarely give individual scientific writing practice assignments due to lack of time and fear of not achieving learning targets, and (3) the learning methods used by the lecturer are lectures, exercises, and assignments which are carried out classically. Therefore, efforts are needed so that students can achieve maximum competency. Efforts are made to use the suitable learning model. That is, a learning model that can engage students in scientific activities to improve their ability to write scientific papers (Setlight et al., 2023; Wardah et al., 2022).

Studies have been conducted concerning project-based learning to improve students' writing skills (Abidah et al., 2022; Suteja & Setiawan, 2022; Yusmaniar et al., 2022). However, studies have yet to be conducted on project-based learning implemented in university classes to enhance students' scientific writing skills. Studies found that the project-based learning model has advantages as a learning model that is expected to improve students' ability to write scientific papers. Through project-based learning, students are trained to be skilled in scientific activities, such as field observation skills, analytical skills, organizing data, and making reports and presentations. In addition, learning does not only occur in the classroom but also the surrounding environment. Students can explore other learning resources both from the school environment and from the community environment. Based on the phenomenon described above, this study is considered urgent to be conducted to reveal the usefulness of project-based learning in enhancing students' scientific writing skills.

RESEARCH METHODS

Classroom Action study (CAR) is undertaken in classrooms or other settings by instructors (educators) to improve learning processes and praxis. Classroom Action Research is used to solve classroom problems and in-service training, where instructors learn new skills and approaches and strengthen their analytical talents (Cohen et al., 2018). Furthermore, it is a tool for creating innovative learning, improving connections between instructors and scientific researchers, and providing a solution to difficulties that arise in the classroom (Ary et al., 2018). CAR is carried out in four steps, beginning with action planning, then learning actions and observation activities, and concluding with reflection to examine the results. The data analysis was figured out using mean score and percentage. The findings were then descriptively presented.

RESULTS AND DISCUSSION

Scientific writing abilities are an action or activity the reader performs to link new and old material to obtain new knowledge. Readers' efforts in comprehending reading content may be classed into literal, interpretative, critical, and creative understanding, as well as linking information and learning new knowledge. This section briefly elaborates on the study's results on implementing project-based learning to improve students' scientific writing skills.

Results

The preparatory investigation was undertaken by conducting interviews with the lecturers currently teaching in the class chosen as the subjects of the study to determine the participants' pre-existing competency in scientific writing skills.

Thus, in the pre-cycle phase, the researchers delivered a pre-test prior to the teaching and learning process. Before the implementation, a pre-test was performed to determine the subjects' prior scientific writing skills.

The pre-test mean score was 40.50, with 30 students scoring higher. Furthermore, just three of the 30 participants who completed the pre-test could pass the stated minimal passing grade. The pre-test results revealed that most participants needed help answering all questions based on the pre-test criteria. After using the project-based learning technique, the participants improved their ability to create a descriptive paragraph in cycle I. The mean score of post-test 1, followed by 30 subjects, was 60.50, and 20 subjects could pass the set minimum passing grade. Furthermore, it demonstrated a considerable increase in the respondents' scientific writing skills after adopting project-based learning.

Furthermore, the students were more engaged, passionate, and loved the teaching-learning process in the second cycle. According to the observations, the subjects appeared more severe and engaged during the teaching and learning. Furthermore, the results revealed that all students received a minimal passing mark. The current research may be terminated because it had already met the success indication of all students passing the minimum passing grade.

The researcher used the questionnaire as supporting data to study the participants' attitudes regarding adopting project-based learning to enhance their scientific writing skills. According to the questionnaire percentages, the total number of respondents who replied strongly agree, agree, uncertain, disagree, and strongly

disagree was 90%, 5%, 5%, 0%, and 0%. These figures show that subjects have responded positively to implementing a project-based learning strategy to improve science writing skills. In other words, most students agree that project-based learning can improve their science writing skills. Student feedback demonstrates that project-based learning strategies can help them develop science writing skills.

Discussion

The findings of the mean score demonstrate that the project-based learning approach may significantly increase students' skills. The project-based learning methodology significantly impacts students' capacity to produce scientific papers for the following reasons. Through scientific writing project activities, project-based learning may push students to tackle real-world challenges. It was demonstrated when the lecturer gave students the option of using real-world problems from their area or problems from books or the internet. Real-world challenges are more complex and complicated for students since they are directly tied to everyday life. Students are motivated to solve environmental concerns discovered via scientific research. This finding is in line with Nuramalina et al (2022) and also supported by O'Neill & Short (2023)

Project-based learning encourages students to participate in their learning. Students actively participate in project activities from the beginning to the completion of learning, as indicated by the discoveries during learning. Students were shown to be involved in recognizing environmental problems and developing project plans for writing scientific papers from the start of their studies. Students were noted to be engaged in conducting field observations and interviews at the research site throughout the execution of research in the field. Students actively seek sources of theory while writing results and discussions based on field observations in books and on the internet. Furthermore, students actively carry out direct counseling to professors and revise scientific works. This finding confirmed the findings as studied by Yusof et al (2022) and also supported by Tursunovich (2023)

Project-based learning boosts student performance by requiring them to complete more ordered assignments. This is because student activities are based on project planning or design and project execution timetables that were established at the outset. Before beginning a project, students plan by developing a project design, in this instance, a research proposal. Students have more latitude in completing assignments in project-based learning. This is because project-based learning allows students to develop plans and schedule project completion. Students are given the authority to assist the instructor on the project's development directly. Students can participate in project-based learning. This finding is supported by Suteja & Setiawan (2022) and (Mantra et al.(2022)

Project-based learning can encourage students to compete for the most outstanding products. The production of goods distinguishes project-based learning after the learning process as a source of instructor assessment of student learning outcomes. It motivates students to compete to create things, namely scientific work. The project-based learning strategy can improve students' critical thinking and cognitive capacities while increasing learning motivation and creativity. The six pupils grew increasingly self-sufficient and took on greater responsibility for the tasks

they were working on. The presence of a deadline for working on projects and producing goods helps students to take ownership of the tasks they are working on. Project-based learning enables students to take responsibility for their learning and become autonomous learners. The finding is in line with the findings by Mantra et al (2022) and supported by Ssemugenyi, (2023)

This investigation also discovered various flaws in its execution. These flaws include the following: First, the project takes a long time to finish. Students require a significant amount of time to complete scientific work items. This is because project work requires writing tasks ranging from project design to project execution timelines. This takes a considerable amount of time. Furthermore, more than project completion is required in class, but also in the field for data collecting.

In project-based learning, students must be active, independent, and responsible for the project they are working on. These factors make the implementation of project-based learning suboptimal. This lack of independence and responsibility manifests itself in the fact that some students are overly dependent on their peers and prefer to wait for their friends' work or the guidance of their lecturers. Therefore, lecturers must work harder to maintain students' motivation to continue to do well and help students complete their projects to the fullest.

CLOSING
Conclusion

Project-based learning is suitable for improving students' scientific writing skills because this approach has natural and clear learning steps. Based on the findings and discussion, the study results can be concluded that the project-based learning model significantly affects the ability to write scientific papers. The application of project-based learning trains students to construct opinions and criticism because students are expected to be more open in receiving input from other people. Activities in project-based learning develop collaborative abilities to support each other. Additionally, students have the opportunity to practice presenting their work as best as possible.Overall, applying good project-based learning can provide valuable abilities for students. The implementation of project-based learning is considered to be successful when students actively eggange in learning, and produce high-quality work results. This study suggests that intensive project-based learning should be utilized in teaching scientific writing skills.

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