



Implementing Problem-Based Learning to Improve Collaborative Writing Skills through Lesson Study in the Indonesian Language Subject

(Implementasi Problem Based Learning dalam Meningkatkan Keterampilan Menulis Kolaboratif melalui *Lesson Study* pada Mata Pelajaran Bahasa Indonesia)

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Abstract: The time constraints, lack of resources, and conventional teaching methods often make students lose interest in writing skills. This article analyses the implementation of problem-based learning approaches through lesson study as an effective solution to enhance students' writing skills collaboratively on Indonesian language subject. The lesson study activity directed in applying problem-based learning was done as much as six times with writing skills material. The research was conducted with a participatory based qualitative approach to six different classes at SMAN 2 Tanggul Jember, each consisting of an average of 35 students. Data related to writing skills were collected through student work sheets, while data related to collaboration were collected through observation sheets. This study resulted in an increase in the aspect of writing skills performed by the model teacher and lecturer in six open classes. More students scored between 61-80, meeting the criteria of BSH (Developing as Expected). On the other hand, improvements have also been observed in the process of inter-student collaboration in writing. For example, a few students who were previously idle in the classroom became more engaged, the teaching process began to be structured, and student activity within groups increased. In conclusion, problem-based learning, practiced through study lessons, has significantly enhanced students' collaborative writing skills at the Senior High School level.

Keywords Collaboration, Indonesian language, lesson study, problem based learning, writing skills

Abstrak: Terbatasnya waktu, kurangnya sumber daya, dan metode pengajaran konvensional sering membuat siswa kehilangan minat dalam keterampilan menulis. Artikel ini berusaha menganalisis penerapan pendekatan pembelajaran berbasis masalah melalui lesson study sebagai solusi yang efektif untuk meningkatkan keterampilan menulis siswa secara kolaboratif pada mata pelajaran Bahasa Indonesia. Aktivitas lesson study yang diarahkan dalam menerapkan pembelajaran berbasis masalah dilakukan sebanyak enam kali dengan materi keterampilan menulis. Penelitian ini dilaksanakan dengan pendekatan kualitatif partisipatoris untuk enam kelas berbeda di SMAN 2 Tanggul Jember, yang terdiri dari rata-rata 35 siswa per kelas. Data terkait keterampilan menulis dikumpulkan melalui lembar kerja siswa, sementara data terkait kolaborasi dikumpulkan melalui lembar observasi. Data lesson study dianalisis secara deskriptif kualitatif. Hasil penelitian menunjukkan bahwa dalam aspek keterampilan menulis yang dilakukan oleh guru dan dosen model pada enam kali open class, terdapat peningkatan siswa pada rentang nilai 61-80 dan pada kriteria grafik perkembangan BSH (Berkembang Sesuai Harapan). Di sisi lain, peningkatan juga teramati pada proses kolaborasi antarsiswa dalam menulis, misalnya mulai berkurangnya siswa yang idle di kelas, mulai terstrukturinya tahapan mengajar guru, mulai meningkatnya keaktifan siswa dalam dinamika kelompok. Kesimpulannya, pembelajaran berbasis masalah yang dilakukan melalui kegiatan lesson study dapat secara signifikan meningkatkan keterampilan menulis kolaboratif antarsiswa di sekolah menengah atas.

Kata Kunci Kolaborasi, bahasa Indonesia, lesson study, pembelajaran berbasis masalah, keterampilan menulis

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INTRODUCTION

One of the crucial aspects of 21st century education is the development of writing skills (Motallebzadeh et al., 2018; Wrahatnolo, 2018; Yu et al., 2019). A good writing ability is not only an important academic competence, but also a valuable skill in various aspects of life, both in the personal and professional spheres. The Indonesian language has become one of the important and compulsory subjects in primary school until college to support this writing skills (Hasanudin et al., 2021; Mulyana, 2018).

However, the challenge of teaching writing skills is often a problem faced by teachers and students in high schools. Time constraints, lack of resources, and conventional teaching methods often make students lose interest in writing (Ariningsih et al., 2012; Hoerudin, 2021; Sugiarto & Suhendra, 2018). They feel constrained by complex grammar rules, as well as lack of motivation in the learning process (Aliyah et al., 2018; Azis, 2016; Gianistika, 2021; Hoerudin, 2022). Therefore, innovative approaches to learning writing skills have become crucial, one of them through problem-based learning. Problem-based learning (PBL) is a learning approach that places problem-solving at the core of the learning process.

The studies on implementation of problem-based learning in increasing writing skills are various (Fitriyani et al., 2019; Kamaruddin et al., 2023; Kristyanawati et al., 2019; Nisa, 2016). They generally focused on the implementation of PBL as an approach that encourages students individually to identify, formulate, and find solutions to problems in writing through student practice and textbooks, without enabling teachers to also improve their teaching skills to increase students' collaboration. However, the ways in which students' collaborative writing skills have lacked attention.

In the context of implementing PBL in the classroom, Hmelo-Silver's study (2004) investigated what and how students learn in PBL. It emphasized that PBL encourages students to develop a deep understanding of the learning material through authentic problem exploration and the application of knowledge in real-life contexts (Hmelo-Silver, 2004). However, Hmelo-Silver's research focused more on students' overall understanding in PBL. Savery (2015) provided a general overview of PBL, including its definition and differences from other learning approaches. He emphasized that PBL encourages students to develop collaborative skills, problem-solving abilities, and critical thinking through problem-based activities (Savery, 2015). Nonetheless, Savery did not specifically examine the implementation of PBL in the context of improving collaborative writing abilities through Lesson Study.

Meanwhile, in the context of applying Lesson Study to Indonesian language materials, several studies have also been conducted. Another study on the implementation of Lesson Study in improving the quality of Indonesian language learning highlighted the importance of collaboration among teachers in planning learning activities that are relevant to students' needs (Rozak & Fauziah, 2013). However, Kurniawan did not specifically examine the use of PBL in Lesson Study and its impact on students' collaborative writing abilities. Herawati et al., (2014) conducted research on improving students' writing abilities through the PBL model in the Indonesian language subject. This study showed that PBL can enhance students' writing abilities through problem-based learning (Herawati et al., 2014). However, Suryadi did not specifically examine the collaborative aspect of writing. There is no specific research that examines the implementation of PBL in improving students' collaborative writing abilities through Lesson Study in the Indonesian language subject.

The gap is found on the use of PBL in improving students' collaborative writing abilities through Lesson Study in the Indonesian language subject. Therefore, this research will be an important contribution by integrating PBL into Lesson Study in the context of developing students' collaborative writing abilities.

Preliminary observations and interviews with the Headmaster of SMAN 2 Tanggul and four Indonesian language teachers showed that students had a low ability to write scientific writings, literary appreciations, short stories, even observation reports. One teacher wanted to focus on the student's ability to write scientific texts, one wanted to focus on students' skills in writing and reading literature, one wanted to concentrate on the ability of students to write observation results, and the other wanted

to focus upon students’ abilities in writing scripts, while the headmaster more interested in focusing problems on Indonesian language teachers. In the end, we agreed to focus on students’ ability to write collaboratively according to the topics that will be taught at each Indonesian language subject.

The lack of writing skills of SMAN 2 Tanggul students were caused by various factors, including the quality of meaningless learning processes and most of students who are able to solve problems with low order thinking, whereas writing skills can only be improved through continuous practice, awareness of the importance of writing to critical thinking (Dhanya & Alamelu, 2019; Kartawijaya, 2018; Perumal & Ajit, 2020). Writing is one of the highest of the three other skills, because it also combines and influences on the other skills, i.e. reading, listening, and speaking. Writing skills are higher order thinking skills that enable students to have creativity in articulating ideas logically and systematically (Hakim & Sari, 2022; Sianturi et al., 2020; Sopiani & Said, 2019).

Lesson study is an approach that focuses on teacher development and improving the quality of teaching through collaboration in three phases, *plan, do, see* (planning, implementing, and reflecting) (Asyari et al., 2016; Saito et al., 2006). In the context of a lesson study at SMAN 2 Tanggul, a group of teachers of the Indonesian language work together to design, teach, and evaluate lessons.

This approach seeks to be integrated with problem-based learning in Indonesian language subjects. Lesson study provides a strong framework for the development of PBL approaches in Indonesian language teaching (Munthe et al., 2023; Ratnaningsih et al., 2022; Wahyuni et al., 2021; Yusita et al., 2021). By collaborating, teachers can learn from each other and develop more effective teaching practices in teaching students writing skills.

METHOD

This research was conducted from July to September 2023. During these three months, three cycles of lesson study (*plan-do-see*) were conducted by Nurul Jadid University lecturer and SMAN 2 Tanggul partner teacher alternately. SMAN 2 Tanggul is an A accredited school and one of Sekolah Penggerak in Jember district. The school is located at Salak No.126, Krajan, Tanggul Wetan, Kec. Tanggul, Jember District, East Java. Table 1 describes the design of the three-stage implementation of the lesson plan during July to September 2023 at SMAN 2 Tanggul.

This research was carried out using a participatory based qualitative approach to gain a deep understanding of the perspectives, experiences, and perceptions of the research subjects (Reason & Bradbury, 2001). In this type of research, the subjects (students and teachers) are not merely objects of observation but actively involved in the data collection, analysis, and interpretation processes. This approach was conducted in six different classes, each consisting of an average of 35 students. Data related to students’ writing skills is collected and assessed through student worksheets, while data related to students’ collaboration is collected and assessed through observation sheets. Lesson study data was analyzed descriptively and qualitatively.

Table 1
Lesson Study Cycle in the Indonesian Language Subject at SMAN 2 Tanggul

No	Cycle	Material	Model Teacher/Lecturer	Plans	Do	See
1	Cycle I	Writing a report on observation results	Citra Kartika Rini	Aug 5 th , 2023	Aug 9 th , 2023 (Class XD, 35 students)	Aug 11 th , 2023
		Writing paragraphs collaboratively	Achmad Fawaid	Aug 11 th , 2023	Aug 14 th , 2023 (XC Class, 33 students)	Aug 15 th , 2023
2	Cycle II	Writing argumentative texts	Renny Politika Dewi	Aug 21 st , 2023	Aug 25 th , 2023 (Class XI-B, 36 students)	Aug 28 th , 2023
		Writing paragraphs collaboratively	Achmad Fawaid	Aug 29 th , 2023	Aug 30 th , 2023	Aug 31 st , 2023

No	Cycle	Material	Model Teacher/Lecturer	Plans	Do	See
					(Class XB, 37 students)	
3	Cycle III	Writing historical texts	Meilinda Putri Widyawati	Sep 7 th , 2023	Sep 8 th , 2023 (Class XII 4, 35 students)	Sep 8 th , 2023
		Presenting and writing data	Achmad Fawaid	Sep 11 th , 2023	Sep 11 th , 2023 (Class XI-D, 34 students)	Sep 11 th , 2023

The assessment instruments throughout this phase use rubrics, while the assessment technique uses interval score for the entire material presented by the model teacher and development graphics techniques for all materials presented through the model lecturer (A detailed description of the assessment techniques and instruments at this stage can be seen in Table 3, Table 4, Table 5, Table 6, Table 7). All this data will be analyzed descriptively by first reducing to data that is considered unimportant.

RESULTS AND DISCUSSION

Plan

The LS team planned to draw up an action plan (Figure 1) and a problem-based learning plan (Figure 2) to enhance collaborative writing skills. There were some discussions in this learning planning, among others, regarding when to implement, focus on problems to be solved, learning models to be developed, and teaching materials/media/instruments developed. Most of these issues were discussed in the action plan planning last month. In our learning planning at that time, we focused more on determining (a) seats; (b) observers' names; (c) learning media; (d) documentation media; (e) logbook filling plans; (f) attendance lists; (g) documentation; (h) open class phases; (i) observation protocols. It was agreed that seats would be arranged in advance before learning or according to the needs of teachers. The names of the observers were taken from other students and Indonesian language teachers who were not model teachers. The learning media consisted of projectors and teaching materials. The documentation media was a camera and video recording phone. The logbook filling plan was planned. The attendance list was made by the teacher. Documentation photos were collected in the drive. Observation records were provided. Observation protocols were also designed for each observer.

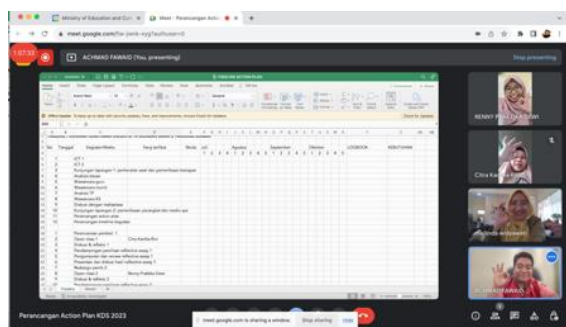


Figure 1
Plan: Designing an Action Plan



Figure 2
Plan: Designing Teaching Scenario

Students' writing skills were measured using observations from other teachers and students' worksheets according to the current topic/materials. The observation sheets (Table 2) were used to measure student collaboration, while the student worksheets (Table 3) were used for measuring student writing skills. For the observation sheets, various criteria were used to assess the quality of learning throughout the phase, ranging from perception, motivation, core activities, group activities,

closing activities, observer reflections, as well as other records related to the interaction between students in a group, interactions among groups, student-teacher interaction, student-media/learning resource interactions, and student-learning environment interactions.

Table 2
LS Observation Sheet

Observed	Notes
A. APPERCEPTION	
1. Does the teacher ask about students' feelings and psychological conditions today? How do students respond to this question?	
2. Does the teacher give trigger questions at the beginning of the lesson? How do students respond to this question?	
3. Apart from asking about feelings and giving trigger questions, what other apperception activities does the teacher carry out (quizzes, singing, brainstorming, icebreaking, etc.)? How did students respond to this activity?	
B. MOTIVATION	
1. Has the teacher explained the learning objectives? Is the TP in accordance with the teaching module or did the teacher modify it?	
2. Did the teacher explain the benefits of studying today's material? How do students respond to these benefits?	
C. CORE ACTIVITIES	
1. How does the teacher present media/teaching materials? How do students respond to the media/teaching materials? Are there students who have difficulty understanding the teaching material?	
2. How do teachers try to encourage inactive students to learn? Was the effort successful?	
D. GROUP ACTIVITIES	
1. How does the teacher group students (whether based on gender, learning style, intelligence level, or even distribution of numbers, etc.)? What is the condition of each group? Is it quiet or busy? Is the group permanent or pre-set?	
2. How does the teacher present the LKPD to groups of students? How do students respond to the assignment? Are there any students who don't seem to understand? Why?	
3. When working on the LKPD, are all students in the group actively involved? Are there students/groups who are idle (appear passive)? What are the characteristics? Why? How do teachers try to help those who have difficulty? How do students respond to the teacher's efforts?	
4. How did each group do the task? Are there groups working on tasks in a group without dividing roles first? Is there a group where each member focuses on carrying out individual tasks because their roles have been divided by the group leader?	
5. How does the teacher supervise student group activities? Do you just stay silent in front of the class, or do you just walk around supervising the group's work? How do students respond to teachers during this supervision process?	
6. Are there students or groups who are faster than the class average in completing assignments? How do teachers try to facilitate them? How did they respond to the teacher's efforts?	
7. During teaching, does the teacher appear to be making modifications to the teaching module/RPP? Is this modification a teacher's decision to respond to the class situation and students?	
E. CLOSING & REFLECTION ACTIVITIES	
1. What does the teacher do in closing activities (e.g., review, reflection, giving appreciation, giving homework, collecting assignments, etc.)? How do students respond to the closing activity?	
2. Other notes: Other aspects that observers can pay attention to include focusing on interaction between students in one group, student interaction between groups, student-teacher interaction, student-teacher interaction, learning media/resources, and student-teacher interaction. environment.	

Meanwhile, regarding the student's work sheet with the material of the observation results report, the criteria include the systematics of the idea of observation outcomes reports, the underlying ideas of observations results, and the grammatical accuracy in the observations outcome reports (Table

3). For paragraph writing materials, the criteria used are clarity, argumentation, causality in each paragraph-forming sentence (Table 4). For argumentation text writing materials, the criterion used is how the student writes the title, the facts in the argumentation texts, the relationship of every paragraph, and the grammatic in the arguments text (Table 5). For historical text writing material characteristics, the criteria are the use of sentences with past meanings, use of verbs with indirect sentences, use of chronological and temporal conjunctions, and use of mental verbs (Table 6). For data presentation materials from illustrations of tables and graphs, the criteria include data description structure and the use of indicative phrases (Table 7).

Table 3
Assessment Instrument for Writing Observation Reports

Grades	Score	Assessment criteria
Very less	< 20	The report written is irregular and does not reflect the main idea of the observation text
Not enough	21 - 40	The report is written regularly, but does not reflect the main idea of the observation text
Enough	41 - 60	The written report is systematic, reflects the main idea, but the grammar is not correct
Good	61 - 80	The report written is systematic, reflects the main idea, grammatically correct, but does not paraphrase
Very good	> 81	Written reports are systematic, reflect the main idea, have correct grammar and paraphrase

*Criteria of achievement:

Students can achieve the learning objectives if they get a score > 61

Table 4
Assessment Instrument for Writing Argumentative Texts

Grades	Score	Assessment criteria
Very less	< 20	The written text does not reflect the correct title, the ideas between paragraphs are incoherent, and there are many grammatical errors
Not enough	21 - 40	The written text reflects the correct title, but the ideas between paragraphs are incoherent, and there are many grammatical errors
Enough	41 - 60	The text written reflects the correct title, the ideas between paragraphs are coherent, but there are many grammatical errors
Good	61 - 80	The written text reflects appropriate titles, coherent inter-paragraph ideas, and few grammatical errors
Very good	> 81	The text written reflects the correct title, coherent ideas between paragraphs, and no grammatical errors, as well as supporting data

*Criteria of achievement:

Students can achieve the learning objectives if they get a score > 61

Table 5
Assessment Instrument for Writing Historical Texts

Grades	Score	Assessment criteria
Very less	< 20	Do not use sentences with past meaning Do not use verbs in indirect sentences Do not use chronological and temporal conjunctions Does not use mental verbs
Not enough	21 - 40	Use sentences with past meaning Use few verbs in indirect sentences Slight use of chronological and temporal conjunctions Little use of mental verbs
Enough	41 - 60	Use sentences with past meaning Using verbs in indirect sentences Slight use of chronological and temporal conjunctions Little use of mental verbs
Good	61 - 80	Use sentences with past meaning

Grades	Score	Assessment criteria
		Using verbs in indirect sentences Using chronological and temporal conjunctions Little use of mental verbs
Very good	> 81	Use sentences with past meaning Using verbs in indirect sentences Using chronological and temporal conjunctions Using uses mental verbs

*Criteria of achievement:

Students can achieve the learning objectives if they get a score > 61

Table 6
Assessment Instrument for Writing Paragraph

Indicator	Starting to Develop	Develop	Developing as Expected	Proficient
Contents of the report	Not yet able to write paragraphs well, the results of observations and experiences are not clearly stated in the writing. The ideas and information in the report are mixed up and the relationships between paragraphs are unrelated.	Able to write paragraphs well, observations and experiences clearly. The report shows clear relationships in some paragraphs.	Able to write paragraphs well, observations and experiences clearly. The report explains logical causal relationships accompanied by logical arguments so that it can convince the reader.	Able to write paragraphs well, observations and experiences clearly. The report explains logical causal relationships accompanied by logical arguments so that it can convince the reader and there are relevant supporting facts.
Grammar	Have not used punctuation and capital letters or most of them are not used correctly.	Some punctuation and capital letters are used appropriately.	Most punctuation and capital letters are used appropriately.	All punctuation and capital letters are used appropriately.

*Criteria of achievement:

Students are considered to have achieved the learning objectives if the two criteria above reach at least the Developing as Expected (BSH) indicator.

Table 7
Assessment Instrument for Writing and Presenting Data from Tables/Graphs

Indicator	Starting to Develop	Develop	Developing as Expected	Proficient
Description structure	The data description contains no minimal structure: averages, lows, highs, spikes, and drops	Data descriptions contain minimal structure: averages, lows, highs, spikes, and drastic drops	Data descriptions contain minimal structure: averages, lows, highs, spikes, and drastic drops	Data descriptions contain a complex structure: validity, theory of the data, problems arising from the data, accompanied by analysis of the problems
Indicative phrase	Data descriptions do not use indicative phrases in the correct order, for example <i>Table 1 shows, Graph 12 shows</i> , etc., and there are still many grammatical errors found	Data descriptions do not use indicative phrases in the correct order, for example <i>Table 1 shows, Graph 12 shows</i> , etc., and there are still many grammatical errors found	Data descriptions use indicative phrases in order, for example <i>Table 1 shows, Graph 12 shows</i> , etc.	Data descriptions use indicative phrases in order, for example <i>Table 1 shows, Graph 12 shows</i> , etc.

*Criteria of achievement:

Students are considered to have achieved the learning objectives if these two indicators are at the Developing According to Expectations (BSH) stage.

Do

At this stage, there were three open class activities alternated by the model teacher and model lecturer. Regarding the open class cycle I, the model teacher, Citra Kartika Rini, performed an open class by applying problem-based learning, giving a task to a group of students to find objects around to be observed, and the results were written in the report of the observation results. It gave students the opportunity to search, observe, and analyze surrounding objects potentially to enhance students' high-level thinking skills (Figure 3). The model lecturer, Achmad Fawaid, implemented problem-based learning by assigning students to supplement the subject sentences with clarifying sentences. It gave an opportunity to groups of students to explore ideas on explanatory sentences allowed them to think critically (Figure 4).



Figure 3
Open class I: model teacher



Figure 4
Open class I: model lecturer

Second, the open class cycle II, the model teacher, Renny Praktika Devi, applied problem-based learning by assigning a group of students to write arguments based on YouTube videos about food sustainability in Indonesia. By watching videos, it allowed students to think critically (Figure 5). The model lecturer, Achmad Fawaid, implemented problem-based learning in the same way as cycle I, supplementing the subject sentences with clarifying sentences, so that students' thinking abilities and creativity would be improved (Figure 6).



Figure 5
Open class II: model teacher



Figure 6
Open class II: model lecturer

Third, the open class cycle III, the model teacher, Meilinda Putri Widyawati, applied problem-based learning by assigning a group of students to write historical texts from readings “East Java Countries”. By giving them the opportunity to produce historical text, it enabled students to have creativity in writing historic texts according to a specific structure (Figure 7). Model lecturer, Achmad Fawaid, implemented problem-based learning by commissioning groups of students to write

descriptions and arguments on data in the form of tables and graphs. In this way, students were able to think high-level to compile, collect information, and analyze data to be re-produced in systematic writing (Figure 8).



Figure 7
Open class III: model teacher



Figure 8
Open class III: model lecturer

Of the scenarios above, three cycles have been passed. Each cycle of model teachers and model lecturers taught in the open class. This was done so that teachers and lecturers had experience in improving their teaching and were able to identify the major weaknesses in teaching writing skills. Based on the assessment of the writing tasks assigned to the students, there was an increase from cycle I, to cycle II, to the cycle III, both carried out by the model teacher and the model lecturer. An overview of these learning results can be seen in the Table 8.

Table 8
Results of student writing competency at the *do* stage of model teachers

No	Value Range	Cycle I: Citra K.R.	Cycle II: Renny P.D.	Cycle III: Meilinda P.W.
1	0 – 20	2	1	1
2	21 – 40	5	7	3
3	41 – 60	16	18	14
4	61 – 80	7	7	12
5	81 – 100	4	4	1
Total		34 students	36 students	35 students

Table 8 shows that there is an increase in the number of students in the grade range 41-60, with a respective increase of 2 students. Meanwhile, in the rating range 61-80, the increase is relatively high in cycle III, with 12 students compared to only 7 students in cycles I and II. Nevertheless, continuous improvement is needed because in cycle III, only one student has an above-average score, while there are 4 students in cycles I and II.

Table 9
Results of student writing competency at the *do* stage of model lecturer

No	Developmental Criteria	Cycle I: Ah. Fawaid	Cycle II: Ah. Fawaid	Cycle III: Ah. Fawaid
1	BB = Undeveloped	9	7	3
2	MB = Starting to Develop	12	8	3
3	BSH = Developed as Expected	11	21	23
4	SB = Highly Developed	1	1	5
Total		33 students	37 students	34 students

Table 9 indicates an increase in the number of students who have the ability to write according to the criteria of the BSH development chart (*Berkembang Sesuai Harapan/* Developed as Expected). In Cycle I, there were only 11 students, while in Cycles II and III, there was almost a doubling of the

increase, with 21 students and 23 students respectively. Similarly, in the SB criterion, there was an increase of 5 students in Cycle III, whereas in the previous cycles I and II, there was only 1 student.

See

In this phase, lecturers and teachers engaged in discussion and reflection on the learning outcomes of the three previous cycles (Figure 9). The focus of the reflection was on learning activities, especially student learning dynamics in groups. Three cycles, experienced by model teachers, were attended by the students, while the model lecturers cannot attend since at that time there were other activities on campus.



Figure 9
Reflection with teacher

Nevertheless, it was generally seen that there was an improvement in the quality of learning and student focus when working in groups as shown in the following tables.

Table 10
Cycle I reflection: Citra K. Rini

No	Observer	Reflection Results	Corrective action
1	Achmad Fawaid	There was 1 group, where 2 male members seemed to just smile. When asked the reason, they answered that the group leader did not give him the opportunity to be involved in working on group assignments.	The teacher needs to convey to the other members that these two people will later be asked to make a presentation.
2	Imam Sujai	Of the 34 students, 20 students looked active and 14 looked sleepy and lacked enthusiasm, because class time was in the afternoon	Teachers need to occasionally give quizzes and non-cognitive questions.
3	Renny Praktika Dewi	24 out of 34 students were quite active and responsive, 2 were sleepy, 4 were chatting and joking, and 4 seemed unfocused	Teachers need to approach and provide treatment to students like this more often.
4	Meilinda Putri W.	Of the 34 students, 5 students were still far from learning, 2 students were too enthusiastic, and the LKPD given was still a more active role for the female students in completing their group assignments.	Teachers need to consider grouping homogeneously or based on learning styles.
5	Eri Sutatik	Some students were not very enthusiastic, because the teacher only asked cognitive questions. There were 5 students who looked confused because of the brief explanation of the material and immediately formed groups.	Teachers need to approach students who are confused more often and start to be sensitive to the classroom atmosphere.

Table 11
Cycle I reflection: Achmad Fawaid

No	Observer	Reflection Results	Corrective action
1	Citra Kartika Rini	Some students seemed confused by the presence of a new teacher from the lecturer element.	Model lecturers need to introduce themselves more first so that students are not idle
2	Imam Sujai	There were 2 students who could not answer the trigger question, but the rest were able to answer well.	The model lecturer should wait for the 2 students to answer, there is no need to immediately give it to another student.
3	Renny Praktika Dewi	There are 3 people in 1 group who are not involved in doing the task in the group.	The model lecturer needs to approach him and ask the cause.
4	Meilinda Putri W.	Some students seemed idle while doing their assignments, perhaps because they were all new and class was in the afternoon	Model lecturers need to ask the subject teacher about the characteristics of the students before entering class so they can better condition their teaching.
5	Eri Sutatik	Students seemed unfocused when the model lecturer faced problems in presenting the PPT slide material.	Model lecturers need to be familiar with the general sequence in the learning process, and also need to be more familiar with the basic things during PPT presentations.

Table 10 and Table 11 shows that there are still many issues in student group discussions, such as inactive students, idle, unfocused, etc. The main factor is because it's still the first experience for model teachers and model lecturers to do open class practices observed by others. They are not really familiar with the patterns of effective learning and teaching. Another factor is because in this Cycle I, the class that is accepted is Class X, the students are still new students in SMAN 2 Tanggul, so they can not be connected well with each other. A lot of hardships seen. Technical questions, such as PPT questions that did not show up to make classes delayed, were also early experiences in cycle I.

However, at cycle II, there began to be improvements and improvements in student learning group discussions. The issues faced were not more varied than cycles I, suggesting that the quality of student learning collaboration began to improve slowly. It can be seen in Table 12 and Table 13 below.

Table 12
Cycle II reflection: Renny P. Dewi

No	Observer	Reflection Results	Corrective action
1	Achmad Fawaid	Some students are busy, because the Bluetooth sound is not too loud. Some students became unfocused, because the video presentation was also hampered because the network was not good. In the kinesthetic group, 1 person seemed dominant, because the man was alone. Auditory group, each engrossed in listening to recordings and working on their own. The visual group discussed more with each other, but no one started working on the task.	The model teacher needs to ensure that each group quickly completes the assignment, and gives tips on how to do the assignment as a group in a short time.
2	Imam Sujai	36 students are active, enthusiastic about listening to the teacher, focused on doing their assignments. 1 student looked nervous, but the presentation still went well due to positive support from his friends and the teacher.	Model teachers need to provide more positive appreciation than just continuing to provide instructions for completing assignments.
3	Citra Kartika Dewi	Some students were idle, because the teacher gave trigger questions that were not in accordance with the learning objectives. Some students seemed to be having difficulty, but the teacher approached them and helped them. It's just that, some are successful, some are not.	Teachers need to choose appropriate trigger questions. Motivation is important, but focusing on the material is also no less important.
4	Meilinda Putri Widyawati	Students appear idle when distributing assignments. Teachers divide groups and tasks according to learning styles. Visual with writing, kinesthetic with presentation, auditory with interpretation. However, this grouping seems to make it difficult for students to do their assignments.	Teachers do not always have to focus on dividing groups based on learning styles if they feel that it is not very effective in giving group assignments.
5	Eri Sutatik	Some students were confused about doing their assignments, because it turned out that the group divisions were different based on learning styles, but the learning media was the same, namely video recordings on YouTube.	If from the start the groups are divided based on learning styles, then the ideal learning media will also be different and adapted to different learning styles.

Table 13
Cycle II reflection: Achmad Fawaid

No	Observer	Reflection Results	Corrective action
1	Citra Kartika Rini	Only 2 students in the class seemed not paying attention, they seemed to be sick.	Model lecturers need to ask questions and approach students who appear sick and ask how they are.
2	Imam Sujai	Students enjoy the teaching, but the lesson time is only 45 minutes, so working on assignments in groups feels very fast.	Model lecturers need to simplify group assignments according to the remaining time.
3	Renny Praktika Dewi	Some students were confused about which group they should join, because previously there had been no patent grouping.	Model lecturers need to form groups more quickly according to seat numbers, without needing students to move places so that time is efficient.
4	Meilinda Putri Widyawati	There was 1 group consisting of 4 students and 2 female students, but the involvement of 2 female students was less active.	The model lecturer needs to approach and provide treatment for the passivity of students in the group.
5	Eri Sutatik	Students in this class tend to be active, different from the first cycle. The model lecturer seems to have demonstrated mastery of the classroom and appropriate teaching patterns even though his time is very limited.	Model lecturers must be early and not late to class so that time is not wasted.

Table 12 and Table 13 shows that the issue of group dynamics has begun to decrease. Each of the partner teachers/lecturer began to learn from the elementary mistakes they experienced during cycle I. The group dynamics began to appear strong, students also started to be active. The main factor is that in addition to the teacher/lecturer model has already begun to find effective teaching patterns, also because the class hosted by the teacher model is class XI, which generally has started to know each other after 1 academic year. It would make it easier for the teacher to manage the class.

By the third cycle, the student learning group began to increase, along with their writing competence also increasing. It can be seen in Table 14 and 15 below.

Table 14
Cycle III reflection: Meilinda Putri W.

No	Observer	Reflection Results	Corrective action
1	Achmad Fawaid	Students are generally very enthusiastic, but their enthusiasm is a bit loud.	Model teachers need to pay attention to the comfort of other classrooms. Enthusiasm is important, but don't let it disturb the class next door.
2	Imam Sujai	2 students looked sleepy, but the rest were enthusiastic.	Model teachers must be more observant in seeing students in the corner of the classroom who have the potential to be sleepy, idle and unfocused
3	Citra Kartika Rini	On average, students are enthusiastic, even though the teacher has not given specific assignments related to writing this material.	Model teachers can focus on students' comfort in learning, but writing material as the core of the learning objectives must also be considered.
4	Renny Praktika Dewi	Almost all students looked focused and happy, but they looked busier than usual.	Model teachers must be able to condition student excitement.
5	Eri Sutatik	Students enthusiastically and competitively look for linguistic features in historical texts, but there has been no effort to focus on writing skills	Model teachers need to occasionally pay attention to students' writing abilities, because this was one of their concerns during the previous action class discussion.

Table 15
Cycle III reflection: Achmad Fawaid

No	Observer	Reflection Results	Corrective action
1	Citra Kartika Rini	One group and another group were very enthusiastic, because the model lecturer gave challenging material, about describing table and graph data.	It needs to be improved, but with modifications to different materials to improve writing skills
2	Imam Sujai	There were only 2 students who didn't seem enthusiastic, because they were very sleepy, but in the end they became enthusiastic again when they were asked to make a presentation	Model lecturers need to be more active in seeing students throughout the room so that they are more involved in group activities and presentations.
3	Renny Praktika Dewi	Each group worked hard to write, some wrote by copying on Google, but generally they were able to finish on time	Model lecturers need to simplify questions and group assignments so that they can be completed more efficiently and on time.
4	Meilinda Putri Widyawati	Some students were disappointed because the lights went out several times and were idle, but the model lecturer was able to provide good icebreaking	Model lecturers need to ensure there is a plan B when technical problems like this occur.
5	Eri Sutatik	It went out several times, making students busy and unfocused, but students generally enjoyed being competitive. The model lecturer looks more familiar than the previous two cycles.	Model lecturers can bring portable LCD devices to anticipate problems with sudden power outages.

Table 14 and Table 15 shows that there are almost no issues of student learning group dynamics. They are commonly passionate, enthusiastic, and competitive. It's offset by two main factors. First, the class hosted by the model teacher/lecturer is class XI and class XII, in which the students are more familiar with each other, there is no rigidity, the friendship relationship is strong, and the teacher has also begun to understand their character, the model lecturer has also discovered the teaching patterns in the partner schools. Except the problem of crowds and dead lights alone that seemed to be dominantly reflected by the observer on this cycle III, other than that, nothing was fatal. Classes went very smooth and efficient.

Discussion

The results of this study show that the lesson study process (plan, do, see) can improve the quality of learning in training the writing skills of SMAN 2 Tanggul students. In other words, the application of lesson studies has an impact on the professionalism of teachers in teaching. The application of lesson studies also significantly improves students' collaborative writing skills as shown in Cycle II (Table 2) and Cycle III (Table 3). The more the LS team is able to discuss, share knowledge, and observe, and reflect, the more they understand how to improve their professional teaching skills as demonstrated in Reflection II (Table 6 and Table 7) and Reflection III (Tabel 8 dan Tabel 9). This finding is consistent with previous studies that the increasing professionalism of teachers in teaching gradually will improve the quality of learning and student learning outcomes in writing (Mas, 2008; Muizzuddin, 2019; Oktavia & Zaim, 2023).

The implementation of lesson study should be simultaneous. SMAN 2 Teachers' efforts in applying problem-based learning through lesson study showed a significant impact on students' writing skills, whether it was writing paragraphs, reporting observations, writing argumentation texts, and writing characteristics of historical narrative text, or writing descriptions of graphic data or tables. Therefore, the application of problem-based learning through lesson study can help students learning goals in writing scientific texts. This is in line with some previous research that mentioned that problem-based learning not only improves critical thinking skills, but also writing skills (Dastgeer & Afzal, 2015; Hima et al., 2021; Palupi & Subiyantoro, 2020; Safi'i et al., 2022; Sari et al., 2021).

A systematically planned and applied lesson study makes the learning process of writing skills more efficient, especially in the design of a lesson plan. Model teachers also get a lot of constructive feedback related to material, time allocation, teaching techniques, assessments, assignments, as well as evaluations related to student learning group dynamics. The similar results were obtained from several previous studies, related to the influence of lesson study on student collaboration in learning (Nuzalifa, 2021; Oktaviani, 2022; Salasiah et al., 2022). This case shows that there are important benefits that the lesson study team has gained in relation to a gradual improvement in terms of content, strategy, and learning media, along with classroom management.

The implementation of problem-based learning carried out through several phases of lesson study, namely plan, do, see, becomes very effective in classroom learning with material writing skills. Several feedback obtained regarding the material during the implementation of the lesson study shows that lesson studies can effectively improve students' skills in writing paragraphs, arguments, historical texts, and data descriptions from tables and graphs. Students' teamwork skills and critical thinking skills are also improved, along with the teaching improvements made by the model teacher/lecturer during the lesson study. It can be seen, among other things, from less student idle during the discussion process to the arguments they deliver in their presentations and their work on the worksheet.

The implementation of problem-based learning that is systematically monitored through lesson study activities can be effective feedback to improve teacher teaching and student learning quality. This is in line with some previous research that problem-based learning can enhance student creativity, collaboration, and thinking skills over other learning, such as lectures and expositors (Fitriyani et al., 2019; Hasanah et al., 2019; Riskayanti, 2021). On the other hand, problem-based learning allows students to have more than one answer. Students are better able to write paragraphs

by first exploring them through specific writing structures. Teachers are no longer the primary source of learning, and this is what can enhance their skills in writing more exploratively.

The LS team and students are aware of the impact of this lesson study. As previous research has stated, lesson study can build conducive situations in improving the quality of learning and teaching through sharing both teaching practices and the psychological condition of students in groups (Firman, 2007; Nurwidodo et al., 2021; Suratno, 2012). This was acknowledged, among other things, by one of the observers who mentioned that the lesson study provides important information about the small details that teachers should pay attention to and anticipate during the teaching process, ranging from technical issues of using projectors or learning media to the student's facial rays during interaction with other students, teachers, media, and tasks. Students are also more proactive and engaged in the learning process as the presence of other teachers becomes more motivating for them to learn.

CONCLUSION

Research results show that the application of problem-based learning to improve collaborative writing skills in SMAN 2 Tanggul can be enhanced through a series of processes plan, do, see. In terms of writing skills performed by model teachers in three open classes, there was an increase in students in the range of 41-60 respectively there was a 2 increase in the number of students, while in the 61-80 range the improvement was relatively high in cycles III, 12 compared to cycles I and II with only 7 students. As for the open class conducted by model lecturers, there has been an increase of students who have the ability to write on the criteria of BSH development chart (Developing As Expected). In cycle I, there were only 11 students, whereas in the cycles II and III there was almost a double increase, 21 students and 23 students. On the other hand, an increase can also be observed in the process of inter-student collaboration in writing, for example, begins to decrease the students who are idle in the classroom, starts to structurize the teaching phase of teachers, beginning to increase the student's activity in group dynamics. Thus, it can be concluded that problem-based learning practiced through study lessons has improved students' writing skills collaboratively at SMAN 2 Tanggul.

The future research is recommended to focus on experimental methods and surveys of 2 classes (experimental class and control class) in order to obtain the more precise result. Furthermore, research is needed on students' psychological factors regarding learning through lesson study, because one of the focuses of lesson study is how students learn, not merely teachers learn. It is also recommended that the future research is carried out on the comparison of learning outcomes between schools and universities with the similar content and methods through lesson study in order to obtain a comprehensive description of the lesson study for the development of the Indonesian language. The implication of this research is a fact that lesson study will be 'methodological supplement' for any learning method to increase the language skills at schools or universities.

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