

Collaborative Writing Learning in Inquiry to Improve Critical Thinking Skills

Nurul Shofiah^{1*}, Zulmy Faqihuddin Putera², Sripit Widiastuti³

^{1*}Corresponding author. Email:nurulshofiah@uin-malang.ac.id,

¹Universitas Islam Negeri Maulana Malik Ibrahim, Indonesia,

²Politeknik Negeri Malang

³Universitas Islam Balitar Blitar

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ABSTRACT

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In tertiary education, the enhancement of writing skills is paramount. One successful method for mastering academic writing is inquiry-based collaborative learning. As a result, the purpose of this study is to outline the methods involved and assess students' impressions of inquiry-based collaborative writing's effectiveness in improving critical thinking abilities. This study uses a descriptive technique, with data collected using research tools such as observation sheets and surveys. The data explain two major points: First and foremost, the inquiry-based collaborative writing process is divided into five stages: orientation, cooperation, research, debate, and conclusion. Second, student feedback emphasizes the method's good influence on developing critical thinking abilities. Given its combination of activity-oriented learning, logical reasoning, and collaborative dynamics, inquiry-based collaborative writing emerges as an effective instrument for developing students' critical thinking abilities. As a result, its integration into the curriculum is advocated as a strategic way to improve students' cognitive capacities and academic competence.

INTRODUCTION

Collaborative writing involves co-writing a group-produced piece from beginning to end. This definition is based on the idea of individual involvement in pair or group work in composing a text or project paper (Deveci, 2018). Students gain from collaborative writing in terms of both cognitive and social development. It teaches students to take responsibility for their own learning, understand how to study, and develop critical thinking skills while analysing texts, arguments, and writing their own papers (Speck, 2002). Furthermore, through interaction with peers, students can improve their vocabulary, understand text coherence, and gain new ideas and perspectives (Talib & Cheung, 2017). Collaborative writing has also been demonstrated to assist students in reducing information in order to write more clearly (Fong, 2012), requiring them to apply critical thinking abilities. The collaborative writing experience holds them accountable, not only for their own development but also for that of their peers. They cultivate a sense of obligation to share freshly gained expertise and information with peers (Deveci, 2018).

Collaborative writing allows students to investigate, discuss, work together, and enhance learning

skills (Dobao, 2012; Noël & Robert, 2004). Collaboration offers several advantages. One advantage is being able to observe how other pupils think and model their peers' thinking techniques and writing styles. Furthermore, instructors can evaluate their writing demands by listening to the interactions that occur during collaborative sessions (Fung, 2010). Collaboration also promotes camaraderie and confidence (Fung, 2006; Wiranegara, 2019).

Collaborative writing can also help students write more easily since they work together to exchange information and produce responses tailored to their own requirements (Darmawangsa, 2016). Collaborative writing also allows for direct criticism because it is a shared obligation (Storch, 2005). Studies have also revealed that collaborative writing produces results of the suggested quality. When students work in groups, they generate superior writing in terms of task completion, grammatical accuracy, and complexity (Shehadeh, 2011; Yeh, 2014). Collaboration allows for the exchange of ideas and comments (Giacomazzi et al., 2022; Talib and Cheung, 2017).

Collaborative writing of academic texts requires building critical thinking awareness in students. Several studies have shown that collaborative writing can result in increased critical thinking during the collaborative writing process (Suwantarathip & Wichadee, 2014; Teow, 2014). As a result, it is vital that collaborative writing participants apply their critical thinking abilities during the writing process. (Campbell & Pullinger, 2013; Kessler et al., 2012; Teow, 2014).

Critical thinking is a method that enables pupils to gain information via problem solving and collaborating. Critical thinking is the act of studying and assessing ideas in order to make judgments (Paul & Elder, 2016), revealing presumptions, prejudices, viewpoints, and beliefs that affect thinking (Berg et al., 2021). The ability to think critically for each individual varies, depending on the activities that are often used to enhance critical thinking (Fakhriyah, 2014). Critical thinking can be taught to students (Ruggiero, 2009). Students are no longer passive recipients of the information provided and actively modify their thinking skills and creativity in the academic environment.

Integrating critical thinking into teaching and learning is crucial for enhancing students' problem-solving, decision-making, and communication abilities, particularly in academic writing (Al Sharadgah, 2014; Alemu, 2016). This is in line with Murphy & Perkins (2006), who explained that fostering critical thinking requires a focus on the learning process, not on learning outcomes, from learning to thinking.

Critical thinking skills can be enhanced and developed with practice (Fahim & Pezeshki, 2012). Students may be unable to think critically if their teachers do not incorporate excellent critical thinking into daily learning (Choy, 2012). In this scenario, Instructors play an important role in improving students' critical thinking abilities at all levels of education. Instructors must be facilitators in helping students gain explicit knowledge of the critical thinking process. Furthermore, students are given the opportunity to practice and receive feedback.

Developing critical thinking abilities is difficult since university students are exposed to massive information flows, such as the internet (Klimova, 2013). They are offered snippets of pre-existing ideas and beliefs, but they are hardly compelled to analyze them. However, a critical thinker must remain watchful and, due to their curious nature, examine, appraise, and critically evaluate all sources. Learning activities that foster critical thinking abilities are undoubtedly attained through a well-organized and novel learning process (Wartini, 2021), which influences student motivation and learning results (Adnyani et al., 2020). Inquiry-based learning in writing programs may dramatically increase students' critical thinking abilities.

Inquiry learning is an effective technique for developing students' critical thinking abilities. Inquiry learning is learning via a series of activities that emphasize the critical and analytical thinking process to find answers to the questions posed. According to Wariyanti et al. (2019), inquiry-based learning requires students to participate in problem-solving actively. Inquiry-based learning emphasizes student engagement in construction, investigation, and discovery. Inquiry-based learning requires students to think critically and analytically (Telaumbanua, 2019). Inquiry-based activities can help students strengthen their critical thinking abilities and substantially influence them (Ghaemi and Mirsaed, 2017). In accordance with this, Wale and Bishaw (2020) claimed that inquiry-based education might be used to improve students' critical thinking abilities. Furthermore, Kusmaryono and Setiawati (2013) advised

using an inquiry-based learning strategy in the classroom to elicit positive reactions and stimulate engagement.

Inquiry-based collaborative learning in writing classrooms has shown significant promise for developing students' critical thinking abilities. However, the collaborative writing process frequently does not emphasize the development of such skills, which may hinder the development of students' critical thinking abilities. There is also a need to better understand how students may apply and perceive this learning process efficiently. As a result, this research aims to describe the procedure of inquiry-based collaborative writing learning for improving critical thinking skills in writing classes and examine students' perceptions of inquiry-based collaborative writing learning as a tool for improving critical thinking skills.

METHOD

This research approach uses qualitative research, which is descriptive, because the purpose of this study is to explain the procedures and student perceptions of the application of inquiry-based collaborative writing learning to improve critical thinking skills. The source of data in the study were 25 second-semester students of the Social Science Education Study Program, Faculty of Tarbiyah, Maulana Malik Ibrahim State Islamic University Malang. The instruments used in this research are guide interview and observation. Observation is used to check the implementation of learning in accordance with the procedures that have been prepared, while a survey is used to determine student perceptions of learning activities. The interview used is an open interview so that students can explain their perceptions freely, clearly, and in detail. On average, students took between 14 and 23 minutes to answer the interview. Specifically, students' perceptions were based on knowing their views on how inquiry-based collaborative writing can improve critical thinking skills, what aspects of the activity they liked the most, what activities were the most difficult, what their views students' perspectives on improving critical thinking skills through collaborative learning, the most enjoyable or difficult aspects of the activity, and the learning's positive impact on their learning.

The data analysis will begin with a complete transcription of the interviews and observations conducted during the learning process. The data will be segmented and categorized according to relevant themes or topics. Furthermore, the data will be thoroughly evaluated to identify common patterns, trends, or noteworthy results derived from the students' replies. The analysis will look for differences or similarities in students' views, the factors that impact these perceptions, and the implications of these results for inquiry-based collaborative writing instruction. The data analysis results will be presented in a narrative format, outlining the key findings that emerge from the data and offering an in-depth assessment of their significance in the context of the research. The findings will be used to draw conclusions, including recommendations for future research in inquiry-based collaborative writing learning. By following these processes, the data gathered from interviews and observations may be carefully examined to get insight into the methods and student perspectives of inquiry-based collaborative writing learning. This analysis can help to further our understanding of how this strategy affects critical thinking abilities and influences future research and teaching initiatives.

RESULTS

Learning Procedures for Inquiry-Based Collaborative Writing to Improve Critical Thinking Ability

This inquiry-based collaborative writing learning is applied to writing class on the material of writing scientific papers (literature review articles) by paying attention to the substance, systematics, and linguistic aspects of the literature. The stages of the learning procedure are as follows:

Table 1

Inquiry-based Collaborative Writing Learning Procedure



Stages of the Inquiry Method	Learning Activities	Mechanisms to Encourage Collaboration
Orientation	<ul style="list-style-type: none"> The instructor conditions the students to be ready to carry out the learning process by discussing and identifying the form of literature review articles. Students organize collaborative writing team members In Topic Selection: The writing team should select the topic to be covered in the article. The topic should be relevant and intriguing to both readers and academics in the field. Students should explore or observe an interesting phenomenon through reading several theories to find out scientifically oriented questions. 	<ul style="list-style-type: none"> Create interest and arouse curiosity Work together to design through investigation Learning is aimed at getting students to start with a new topic to investigate. The Orientation phase identifies key domain variables and creates a problem statement
Conceptualization	<p>Questioning: Goal Setting: The writing team should determine the purpose of their literature review article. What do they want to achieve by writing this article? Do they want to provide an overview of the topic or focus on a specific aspect?</p>	The instructor refines the ideas of each group member.
	<p>Making predictions about the problem: Students make predictions to generate ideas about the stated problem. .</p>	Instructors can develop the ability to predict problems in students by asking questions that encourage formulating various estimates of possible answers to a problem question being studied.
Investigation	<p>Exploration: Source Identification: The writing team should identify literature sources relevant to the topic. These sources may include journal articles, books, reports, and other sources of information. Source Selection: After identifying literature sources, the writing team should select the most relevant and significant sources to be discussed in the article. The selected sources should be related to the purpose of the article and be of good quality.</p>	Ensure the data is found and can be accounted for.
Inference	Students make assumptions about the necessary knowledge. The act of deriving conclusions from facts. Comparing data-driven findings to research questions.	To reach accurate conclusions, the instructor should be able to show students which data are relevant.
Discussion	<ul style="list-style-type: none"> Article Writing: After analyzing the sources, the writing team can start writing the article. They should consider proper structure and format, as well as language that is easily understood by readers. Presenting the Article: Presenting and explaining the article's findings and 	<ul style="list-style-type: none"> Instructors organize presentations to help students answer questions about their designs and explain their thinking. Encourage students to share their writing with other groups and get some feedback



Stages of the Inquiry Method	Learning Activities	Mechanisms to Encourage Collaboration
	<p>conclusions, as well as accepting feedback and comments.</p> <p>Reflection: Review and Revision: After writing the article, the writing team should revise and edit the manuscript. They may also seek input from co-researchers or editors to help improve the quality of the article.</p>	<p>Encourage students to describe, critique, evaluate, and discuss the entire investigation cycle or a particular phase.</p>

Table 1 shows that during the collaborative process, each member of the writing team should actively participate in each stage of the inquiry method and provide feedback to each other to improve the quality of the article.

Students' Perceptions of Inquiry-Based Collaborative Writing Learning to Improve Critical Thinking Skills

For the second research objective, 25 students were given an interview. There were three general questions asked in the interview to answer the research objectives. The initial response demonstrated that the majority of the 17 students had a good perspective of collaborative writing and considered it useful in strengthening their writing abilities. For instance, NS 5 expressed, "My difficulty in writing stems from a lack of clarity on what to write. Through collaborative writing, I find that it sparks more ideas for me." Additionally, students recognized various advantages of the inquisitive approach, emphasizing its role in fostering student engagement. One student remarked, "Through collaboration, I can amalgamate diverse opinions within the group and make informed decisions about the relevance and utility of ideas." They highlighted the value of discussing and communicating with peers to refine the expression of thoughts and ideas. Students also reported positive transformations in their writing skills, such as an expanded vocabulary, enhanced content, improved grammatical precision, and the adoption of diverse writing styles. Moreover, three respondents noted that collaborative writing boosted their confidence in the writing process.

Furthermore, three students dispute that it has a substantial impact on their writing. One responder believes that collaborative writing has little influence, enabling all members of their group to engage in group discussions throughout the learning process. For example, NS 18 wrote, "Some friends don't pay attention when others present their ideas." Then, one respondent stated that they prefer to keep silent, even if they disagree with other group members' viewpoints, in order to avoid offending their friends and causing disputes. For instance, NS 9 said, "When we have different ideas about the assigned topic, we usually struggle to decide whose idea to choose. This sometimes leads to conflicts among us."

Furthermore, eight out of 25 participants also discussed the challenges they face during their collaborative writing. Specifically, difficulties revolved around feelings and challenges in providing peer feedback on each other's writing. The most prominent challenge with collaborating on each other's writing is the concern about hurting peers' feelings. Each participant, except for four narrators, described the dilemma of giving explicit and detailed feedback that might offend their peers and choosing not to comment on areas that need improvement. For example, "If I give critical corrections, I feel like they will be offended because they think their writing is already good," or "I tried to say that it needs to be changed, but they feel it's unnecessary." This indicates a reluctance to accept feedback from peers and a preference for not making any changes to the writing. Therefore, from these statements, they also explained that they tend to provide less corrective feedback but directly add to the deficient parts. NS6 provided a different perspective, stating that errors in writing sometimes occur because they don't know how to fix them. "When I give feedback on their writing, sometimes they just say to fix it because I don't know how to do it." Students also explained that challenges such as unfair workload distribution, differences in opinions, and learning styles can lead to conflicts. Two respondents also stated that the limits they have in collaborative writing are related to their preference

for working alone rather than together.

Similarly, interviewee seven reported challenges when revising collaborative writing at the paragraph and paraphrase level, such as "paraphrasing paragraphs needs concentration, is complicated, and sometimes it is difficult to find synonyms of different vocabulary," "usually use paraphrase applications but if friends read it sometimes it is difficult to understand," "I use the application, without considering whether, it can be understood or not, and sometimes friends also do not pay attention to it." The findings of the statement indicate that in collaborative writing, students tend not to maximize corrective feedback but rather directly add and improve parts of collaborative writing that are lacking without first discussing them with their team. This is done because they are afraid that their team will be offended and feel complicated with a lot of revisions, and it is more efficient if they immediately fix it.

DISCUSSION

The findings are based on the stages of the inquiry method based on five stages (Pedaste et al., 2015), which are further modified with collaborative writing activities in writing articles for students. The five steps are orientation, conceptualization, inquiry, conclusion, and discussion. First, orienting focuses on developing interest and curiosity regarding the subject at hand. During this step, the instructor should explain and discuss the issue statement with students to ensure they grasp it. During this phase, the environment, the instructor, or the learners introduce or define the learning subject. (Scanlon et al., 2011). Second, conceptualization is the process of comprehending a notion or concepts contained within the given problem. It is separated into two phases: inquiry and thesis creation. This questioning sub-phase is the process of creating research questions based on the stated problem, whereas the thesis creation phase is the process of developing a thesis about the given problem. Third, inquiry is the phase in which curiosity is translated into activity to answer the specified research question or assertion. (Scanlon et al., 2011). The sub-phases of research include exploration and data interpretation. In general, exploration is a methodical technique of conducting an inquiry with the objective of uncovering links between the variables involved. (Lim, 2004). The exploration phase is a methodical and planned data collection approach based on research topics. The data interpretation sub-phase focuses on making sense of the data or literature obtained and synthesizing new knowledge. (Bruce & Casey, 2012).

Fourth, conclusion is the phase in which the study's key results are conveyed (De Jong, 2006). During this step, students answer questions and analyze whether the review findings answer or support them (Scanlon et al., 2011). This can yield fresh theoretical insights. The conclusion stage generates a conclusion on the findings of the inquiry-based learning, which addresses the issues identified. Fifth, discussion encompasses the sub-phases of communication and reflection. Communication is an external process in which students express their findings and conclusions to others, get feedback and comments, and occasionally listen to others and explain their expertise (Bruce and Casey, 2012). Reflection is described as reflecting on anything in learners' thoughts, such as the success of the inquiry process or cycle, while presenting new challenges for the next inquiry cycle and recommending methods to enhance the inquiry-based learning process (Lim, 2004). Guided inquiry (Runnel et al., 2013) can help students reflect on four levels of quality: description, justification, critique, and debate (Leijen et al., 2012). Thus, reflection encourages inquiry-based learning and communication.

Furthermore, things to consider in implementing inquiry-based collaborative writing lessons with modifications of Bikowski & Vithanage's (2016) findings and views on collaborative writing are as follows.

Benefits of iterative inquiry-based collaborative writing in the classroom	<ul style="list-style-type: none">• can increase interest, confidence, and motivation to write in class.• learning becomes more fun• Build stronger relationships with peers and plan ahead of time while writing.
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	<ul style="list-style-type: none">● Improved individual peer review skills and engagement.● Improve writing skills by sharing and soliciting criticism.● build understanding and enjoy the writing process
Observations about students' collaborative process.	Need for support: One group is not collaborating well, perhaps due to personality differences and a lack of mutual trust.
Processes that teachers use to help students succeed	Processes that are likely to contribute to success: <ul style="list-style-type: none">● close monitoring of group behaviour and student writing so that students feel the presence of the instructor, the instructor can solve problems, and the instructor can answer questions.● Supporting students and providing problem-solving for less participative groups through a collaborative process● keep groups to no more than four students.● keep groups in line with areas of writing interest.● incorporate collaborative writing assignments into the course in terms of helping students see their value and providing useful critiques to each other.
Ideas for inquiry-based collaborative writing activities in the classroom.	Lecturer should consider: <ul style="list-style-type: none">Provide students with a clear explanation for their expertise at the start of the course.Allow students to select subjects from a list if time allows.Identify students' personality types and use this knowledge for group placement.Encourage students to reflect on their collaborative efforts, whether through presentations or writing, following each writing assignment and/or at the end of the semester.

Students' perceptions of collaborative writing instruction indicate that most students perceive that inquiry-based collaborative writing can help and improve academic text writing in writing class. This study's findings are consistent with earlier studies confirming that inquiry-based writing education improves students' academic writing skills (Arauz, 2014; Godbee, 2016; Lee, 2014; Milatasari, 2013; Smith, 2017). Research undertaken to analyze student feedback on the efficiency of inquiry-based learning in second language education revealed that the strategy developed students' grasp of the topic. (Lee, 2014).

Despite the fact that inquiry-based collaborative writing learning encourages students to be engaged, problem solvers, autonomous, and lifelong learners, it does have limitations and obstacles. In principle, inquiry-based writing teaching increases engagement and allows students to better comprehend the meaning and purpose of their education. However, it changes in execution owing to student understanding, instructor unpreparedness, goal of increased engagement, and time (Awada et al., 2020; Demircioglu & Ucar, 2015). The findings indicate that the challenges in collaborative writing learning are concerns about hurting the feelings of peers, reluctance to receive feedback, unfair division of labor, differences in opinions, learning styles, and students' preference for writing individually rather than collaboratively. Furthermore, these challenges are in line with the research of Iqbal et al. (2016), who discovered that passivity, irresponsibility, and unreliable behavior frequently generate anger among group members, resulting in negative impacts on learning.

Therefore, teachers should pay special attention to their students' learning styles and attitudes while using collaborative writing exercises. Students who feel collaborative writing discussions are beneficial may be able to take advantage of the learning possibilities they bring (Winarti, 2019). However, if students need to understand how collaborative conversation might help them develop their writing

abilities, they may be less likely to participate actively in pair and group projects. It may be good to present students with a choice of pair or group prewriting tasks.

Limitations, Implications, and Recommendations for Future Research

The consequences of this discovery may be evaluated from both a theoretical and practical standpoint. First, using an inquiry-based learning strategy in collaborative writing can help students enhance their critical thinking abilities. Furthermore, collaborative writing has been underlined as a key aspect of developing the habit of exchanging ideas. Second, for some students, the efficacy of inquiry-based collaborative writing may vary. The study's weakness is that the number of individuals who received the intervention was quite limited. However, this does not imply that the study's findings are unrepresentative because the individuals picked are similar to other students. Furthermore, it does not imply that the intervention was wholly ineffective, as the kids practiced the full inquiry process. This conclusion suggests that a larger sample size might make the study more representative and compelling.

This research is useful for instructors to implement alternative approaches to make learning more active and encourage cooperation among students. Overall, while the results of this study indicate that student responses are positive, the inquiry-based learning format provides more opportunities for students to engage in project-based learning and effectively improves their critical thinking skills. As a result, more research into the use of inquiry-based learning design and instruction for collaborative writing using materials in diverse writing classes for varied learning settings is required. Also, since the focus of the study was more on student responses, future researchers can focus on considering the stages of inquiry-based collaborative writing learning that can effectively improve critical thinking skills, as seen from the writing project scores.

Several recommendations for further study may be made to overcome the current design's limits and problems and investigate the implications for future studies. First, while the present study focuses on critical thinking abilities, future research might examine how inquiry-based collaborative writing affects the quality of written output. This might include evaluating grammatical precision, coherence, and the level of analysis in written outputs. Second, with the growing integration of technology in education, future studies might look at the influence of introducing digital tools and platforms into inquiry-based collaborative writing activities. This might uncover new methods to improve this strategy's collaborative and critical thinking features. Third, the function of peer input in the collaborative writing process should be investigated further. Future studies might examine how peer feedback affects the development of critical thinking abilities and how it can be adjusted to improve learning outcomes. By addressing these recommendations, future research can expand on the existing findings and gain a more thorough knowledge of the advantages and limitations of inquiry-based collaborative writing in improving critical thinking abilities. This might eventually help to build more effective teaching and learning tactics in educational environments.

CONCLUSION

In inquiry-based collaborative writing learning, students can find writing themes, research information about them, explain their discoveries, and expand on their ideas by applying their knowledge to real-world circumstances. As a result, students' critical thinking abilities grow during the writing process, which enhances their capacity to examine, synthesize, and evaluate numerous ideas. This strategy enables individuals to choose their own writing themes, create ideas, acquire and analyze material, compose drafts with proof, collaborate with peers, and write.

Inquiry-based learning helps students build thinking abilities, collaborative work, and connections to real-world situations. Students' critical thinking abilities, developed through inquiry-based writing instruction, are applicable to the demands of following writing tasks, which include composing persuasive texts and critically evaluating what others have written. The capacity to understand, analyze, assess, draw conclusions, and explain. As a result, inquiry-based writing teaching is recommended as a method of improving students' critical thinking abilities since it blends activity-based learning, logical argumentation, and teamwork. This shows that inquiry-based learning—which is founded on a discovery

approach and involves students primarily in locating, gathering, examining, combining, and assessing information relevant to their interests—needs to be encouraged.

To improve students' critical thinking skills, teachers should include inquiry-based learning into their language curricula. Furthermore, inquiry-based learning ideas must be addressed while creating instructional materials to help students develop critical thinking skills. Students should also use inquiry-based learning methodologies to generate high-quality academic texts, improve critical thinking abilities, and become lifelong learners.

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