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Effects of Online Collaborative Writing on ESL Learners' Writing Development: A Mixed-Methods Study

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Abstract
Although research on collaborative writing in pairs and groups in English as a second language (ESL) context has multiplied in the century, little is known about the assorted aspects in online learning, like joint scaffolding, corrective feedback, probable conflicts, and the impact of collaborative writing affecting learners' writing products. The article opens with a transitory academic validation for collaborative writing, interpreted previous research in the second language (L2) context, cognitive and sociocultural theories. We, herein, adopted a mixed-method approach to examine the aforesaid factors about collaborative writing that impacted their involvement, performance, and learning during the collaborative online writing practice. Two equivalent groups (experimental and control) were equated, and multiple bases of data (students' reflections, interaction, interviews) were analyzed to see if the above-given strategies paid off well adopting the collaborative writing approach. Both qualitative and numerical analyses of the data showed that the familiarity about collaborative writing affected students' (experimental group) interaction, partake, practice, and improved writing products at each stage. Also, the activities planned and executed well by the writing teachers raised low proficiency learners' morale by lowering anxiety and building self-confidence. The findings plug a gap in the research domain in collaborative writing to consider the vital aspects in the online learning perspectives and add new avenues for researchers in L2 collaborative writing pedagogy in the online and offline learning context.

***Keywords*:** Collaborative writing, mobile-assisted language learning, online writing assessment, second language teaching, technology-based instruction

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Introduction

The recent pandemic, global turmoil, and natural disasters have brought unprecedented adversities across educational contexts, affecting young learners most severely as they were compelled to stay home and continue their studies online. These conditions were markedly different from traditional on-campus learning, and learners experienced psychological, emotional, social, and economic challenges. English as a Second Language (ESL) learners encountered multiple difficulties when it came to writing in online classrooms, as writing tasks were often completed individually, thereby intensifying their anxiety and cognitive burden. Consequently, teachers were forced to experiment with alternative pedagogical approaches to sustain students' engagement and learning.

Recent studies confirm that online collaborative writing can mitigate learners' anxiety, enhance engagement, and improve writing performance through peer interaction and emotional support (Alqasham, 2022; Li, 2023; Saeed et al., 2021). These findings indicate that digitally mediated collaboration is not only pedagogically effective but also emotionally supportive for EFL learners in online contexts. Since learning is a social process (Vygotsky, 1978) and knowledge is socially constructed (Prawat & Floden, 1994), teachers were compelled to adopt strategies that could invite, involve, and engage students in online learning environments to reduce anxiety and build confidence. As a result, collaborative learning emerged as a practical solution to help individual, pair, and group interactions. This approach aligns with McMahon's (1997) assertion that individuals learn more effectively when they engage in social activities such as interaction and collaboration.

The abrupt closure of educational institutions during the pandemic placed the academic community in a critical situation, forcing educators to rapidly redesign instructional practices. Researchers recognized the need to develop strategies that would first persuade students to log in and participate in online classes, and then create opportunities for them to interact, share ideas, and develop a sense of belonging. Even limited initial participation often encouraged wider student engagement over time. These new learning conditions enabled students to interact, ask questions, and share concerns in pairs or small groups, behaviors they might otherwise avoid in large classroom settings. Nicol and Boyle (2003) observed that students rarely participate actively in large classes, while Caldwell (2007) noted that learners often hesitate to speak due to fear of making mistakes or facing embarrassment in front of peers.

From a social perspective, collaborative writing is a socially situated activity that emphasizes interaction and shared meaning-making within an enriched learning environment. Learners who develop an adequate understanding of collaborative writing and engage in mutual interaction prove greater knowledge transmission and improved language learning (Holbah & Sharma, 2021; Mutwarasibo, 2013). Farrah (2011) further explained that learners' diverse language proficiency levels, learning styles, and backgrounds contribute positively to collaborative processes by enhancing problem-solving strategies. Through friendly peer interaction, discussion, and constructive feedback, learners often acquire knowledge they had not previously recognized or acknowledged.

Despite the growing body of research on collaborative writing, limited attention has been paid to technology-assisted collaborative writing in online ESL contexts, particularly about its impact on individual writing development. Therefore, this study draws on earlier research in second language (L2) learning, cognitive and sociocultural theories, and recent empirical evidence

to examine how collaborative writing influences learners' writing performance, engagement, and confidence in online environments.

Guided by sociocultural theory and informed by contemporary perspectives on pragmatic development and AI-mediated learning, this study integrates theoretical insights with empirical investigation to explore how collaborative digital spaces contribute to the development of EFL learners' writing competence. By focusing on online collaborative writing practices, the study seeks to address an important gap in current literature. The study intends to achieve the following objectives:

1. To examine the impact of collaboration on writing in online learning environments.
2. To investigate whether joint scaffolding contributes to the production of more accurate texts.
3. To determine whether corrective feedback in collaborative writing helps ESL learners improve their writing performance.
4. To explore the occurrence of conflict in collaborative writing and assess whether it facilitates or hinders writing development.

Cognitive and Sociocultural Perspectives

Step further, the current research needs equal attention to the vital aspects - cognitive and sociocultural, which hugely affect the collaborative writing process. Vygotsky (1978) from a cognitive perspective opined that language acquisition is imperative in the child's cognitive development. A child acquires his mother language (L1) at home in a family and relaxed environment, but his cognitive development depends on interactions with youths, social and ethical norms, and their ecofriendly situations. So, creating conditions conducive for learners to partake, involve, and interact freely not only widens their communication skills but also learn what they intend to, which is indispensable in the case of collaborate writing. Learners learn more when they feel free to open their hearts to share their own views as human development and knowledge is raised through social interaction with others. Teachers may plan and construct activities for learners that invite, encourage, and stimulate interest to interact and expand their knowledge that they never intend to as Storch (2005) rightly stated that students feel good to collaborate in activities, which eventually stimulates free pair or peer communication and knowledge development.

Sociocultural theory also looks at society that contributes immensely to individual development, and the theory emphasizes the interaction between developing people and the native culture. Additionally, Vygotsky (1978) claims that cognitive development takes place in a sociocultural context and cultivates from social and cultural interactions. Similarly, the learners in a classroom with multiple intelligences and upbringing differentiate their learning style, learning capacities, and interests. Their interaction with peers and in groups with mixed proficiencies learners brings perceptible changes in their mind, knowledge, and final product. Thus, sociocultural theory brings forth classroom interactions as new possibilities and prospects for learners to open their minds, discuss and share about the intended topic in language skills through mutually accepting and creating

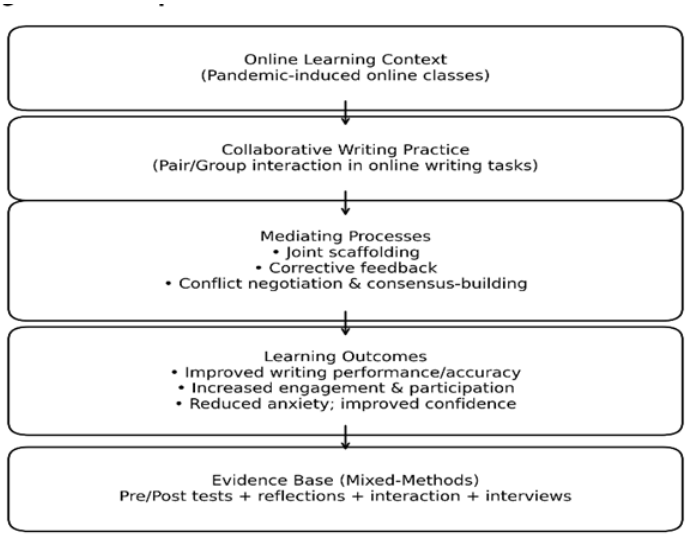


Figure 1: Conceptual framework of online collaborative writing

novel information consolidating their prior knowledge. Again, bringing learners on board is one issue that teachers should think upon using their prior experience, knowledge, research studies, etc., to lighten a spark in learners to partake in collaborative writings, which is always problematic amongst four skills to develop, especially in challenging online learning today.

Literature Review

A substantial body of research has examined the impact of collaborative writing on L2 learners' writing development. Several scholars have proved that collaborative writing positively influences overall writing quality as well as specific components such as organization and content development (Dobao, 2012; Hosseinpour & Biria, 2014; Mulligan & Garofalo, 2011). These studies consistently report that collaboration encourages learners to negotiate meaning, reach consensus, and take ownership of their writing products through social interaction.

More recent mixed-methods studies further confirm the effectiveness of digital collaborative writing. Rahimi and Fathi (2022) found that wiki-mediated collaborative writing significantly improved learners' writing performance, self-regulation, and self-efficacy. Similarly, Pan and Teng (2025) reported that digital collaboration enhanced both writing quality and co-regulated learning, indicating that learners benefit cognitively and socially from structured online writing interventions. These findings highlight the strong pedagogical value of integrating technology into collaborative writing practices.

Scaffolding plays a central role in facilitating learning within collaborative writing contexts. Dobao (2012) and Wigglesworth and Storch (2012) showed that scaffolding practices lead to improved writing reflections and greater attention to linguistic form. Chen and Hapgood (2019) further noted that collaborative writing encourages learners to focus on language structure while engaging in meaningful interaction. Wigglesworth and Storch (2012) opined that learners often share knowledge through joint scaffolding, enabling them to teach and learn from one another. McDonough et al. (2018) similarly found that collaborative writing supports the production of more accurate texts by directing learners' attention to language structure. Donato

(1994) conceptualized this process as collective scaffolding, in which learners pool their linguistic resources to co-construct knowledge. More recent empirical evidence strengthens these claims. Fathi and Rahimi (2024) reported that electronic writing portfolios used in collaborative environments significantly improved EFL learners' writing accuracy and organization. Likewise, Ebadijalal and Moradkhani (2025) found that computer-assisted collaborative writing enhanced both writing performance and learner motivation compared to individual writing tasks.

In addition to cognitive benefits, affective variables, such as motivation, attitude, and emotion play a crucial role in online collaborative learning. Storch (2018) categorized collaborative writing research into three main areas: languaging, language gains, and technology-mediated collaboration. Chen and Yu (2019) examined how learners' attitudes and motivation influence interaction patterns and learning outcomes in collaborative writing contexts. Recent research emphasizes that learner motivation is essential for successful language acquisition, particularly in technology-mediated environments (Sharma, 2024). Alqasham (2022) found that online collaboration positively affected learners' emotional engagement and reduced writing anxiety. Similarly, Li (2023) reported improvements in writing self-efficacy and motivation among Chinese EFL learners who participated in online collaborative writing activities. These findings suggest that collaborative writing supports not only cognitive development but also learners' emotional well-being.

Corrective feedback is another key feature of collaborative writing. Swain and Lapkin (2002) observed that learners naturally provide feedback to one another during collaborative tasks, which enhances learning outcomes. Soleimani and Aghazadeh (2024) found that both teachers and learners perceive corrective feedback as essential for improving linguistic accuracy and writing confidence. Rezai (2021) equally showed that online peer feedback significantly improves IELTS candidates' writing skills through reflection and revision. Alessi and Trollip (2001) emphasized that collaborative tasks foster mutual trust and confidence, allowing learners to support one another rather than compete or disengage. Through constructive feedback, learners refined their writing while developing both social and academic skills.

Research also shows that learners' perceptions of collaborative writing are generally positive. Ajideh et al. (2016) found improvements in grammatical accuracy, while Kotb (2016) reported better organization and mechanics in students' writing. Aldossary (2021), Alkhalaf (2020), and Dobao (2012) observed that learners appreciated collaborative writing but also faced challenges such as unequal participation and varying proficiency levels. Alkhalaf (2020) noted that although learners valued collaboration, issues such as low L2 proficiency sometimes limited full participation. These findings suggest that collaborative writing is most effective when learners are provided with supportive environments, clear guidance, and balanced group structures.

Conflict is an inevitable aspect of group work in collaborative writing. Fung (2010) argued that conflict can play a constructive role when managed through mutual agreement and negotiation. Disagreements over content, structure, or ideas often lead to deeper discussion, critical thinking, and improved writing outcomes. Therefore, conflict resolution becomes a vital part of effective collaborative writing pedagogy.

Although extensive research has examined collaborative writing in traditional classroom settings, relatively few studies have focused specifically on technology-assisted collaborative writing in online ESL contexts, particularly regarding its combined cognitive, affective, and social impacts. A recent systematic review by Pardede (2025) confirmed that technology-enhanced collaborative writing improves writing quality, learner autonomy, and interaction patterns, but also

emphasized the need for more context-specific empirical studies. So, the present study addresses this gap by investigating how online collaborative writing influences EFL learners' writing performance, scaffolding practices, corrective feedback, emotional engagement, and conflict management within a digital learning environment.

Considering the aforesaid perspectives, the researchers believe that the present study differs from previous studies in terms of scope, mode of learning, and the factors it addresses by incorporating collaborative writing in the EFL/ESL context of online classes. Hence, the study seeks to explore the following research questions:

RQ1 What are the impacts of collaboration on writing in online learning environments?

RQ2 Does joint scaffolding contribute to the production of more accurate texts?

RQ3 Does corrective feedback in collaborative writing help EFL learners in writing tasks?

RQ4 Does conflict arise in collaborative writing, and does it help or hinder learners in developing writing tasks?

The given theoretical lenses offer an integrated model through which AI-mediated learning is analyzed as a socially embedded, culturally informed, and pedagogically grounded process that shapes learners' pragmatic development.

Methodology

Design of the study

A mixed-method approach was followed in the study. The engineering students of semester 2 who were studying the Academic Writing course at university, India, were the participants. The researchers planned the course content to be taught, monitored and modified with suggestions and communicated to the Indian teacher teaching the course. The teacher taught the two groups-experimental and control group (hereafter, referred to as EG and CG). Initially, the researchers (through the teacher, or online) gave two different types of pre-writing tasks to the EG to practice in collaborative writing online class. Since the students participating in the study were of intermediate level (senior secondary) in the L2 context, we considered English language proficiency as the control or regulate variable. However, we haven't explored if the interaction during online learning affects other factors like gender, communications skills other than writing, and collaborative planning, etc. This sequential exploratory design provides a profound comprehension of the experiences of learners and gives qualitative insights to guide the consequent quantitative analysis to enhance the comprehension of its study impartially.

Participants

The quantitative part of the study will be used to supplement and further extend the qualitative results and not to generalize, thus adding more depth of interpretation of the research. Two classes of semester-2 engineering students studying Academic Writing at University, India were nominated to partake in the study. The students had enrolled in a mandatory course called Academic Writing (essay). All the students have passed semester-1 with different percentages (50 to 90), which reflects their language proficiency. The sample comprised 48 students who formed two separate groups – one experimental (EG-collaborative writing) and one control group (CG). They were all multilingual and their ages ranged from 18 to 21. The participants in the EG were familiarized with the collaborative online writing practice in the second week of the online classes.

Instrumentation and Resources

The instruments and resources used for data collection in this study are interaction-discussion, assignments, and the standard rubrics for evaluation. The participants completed their writing assignments using the essay rubrics checklist at both pre-and-post tasks and followed meticulously during their essay writings. The essay writing included five main parts, namely, introduction, main content in body paragraphs, conclusion, unity and coherence, and grammar. The evaluation was done using the systematic writing measure to assess students' writings, which included five main components – Introduction (1.5 points), Body paragraphs (5 points), Conclusion (1.5 points), unity and coherence (1 point), and grammar (1 point). The total score of five components is 10. The given component was designated with four language proficiency levels – satisfactory, average, good, and excellent. The products were evaluated initially by self, peers and later by the groups to prepare the evaluative reports. The participants were familiar with the assignments and their evaluation, which were of immense help in their writing and evaluation.

Procedure

The process of data collection, observations, and interaction were underway from the second semester in the academic year, while the classes were conducted online due to adverse conditions. The subject teacher had a total of eight lectures a week and all were scheduled twice a week. Initially, each student was encouraged and invited to share about their previous English learning experiences; thereafter, the experimental group was given metacognitive instruction and training (Chen and Hapgood 2019), which included adequate information about collaborative writing, its meaning, merits, and uses in online classes and how some case studies on similar subject benefited students' to develop their academic writing skills in different contexts. It truly made it easy for the researchers to plan and execute activities to invite and encourage students to understand the assignments in the different sessions, which, then, followed by writing drafts, discussions, and final writing in reflection journals. All participants took a pre-test before the intervention. In week 3, in a 40-minute writing task, students were asked to write a short essay, as a pretest, to compare or contrast their school and engineering college life. The students in each group mutually agreed to write different parts of essays. They then discussed their draft essay part, revised, and edited the writing before they passed it on to another group for evaluation. The researchers and the teacher (who taught both groups) were present for any clarification on any point online to motivate and assist students to revise their individual products and then in a group collectively.

In Week 7, during the second cycle of lectures, students were asked to complete an online comparison-and-contrast essay in pairs (of their own choice) within two hours. The activity continued until Week 12, during which students' reflective journals and written products were collected weekly, evaluated, and feedback was provided. During and after the process, the researchers were in contact with the subject teacher and all participants on WhatsApp that made the writing process and data collection easy. These topics were chosen based on course content and planned in-class writing tasks. The researchers included different topics for online class writing activities and both tests on recommendations by Elola and Oskoz (2010) to structure studies that compare "how learners work collaboratively and individually on a variety of tasks".

Results

The succeeding paragraphs provide results of the research questions given.

RQ1 What are the impacts of collaboration on writing in online learning environments?

Two paired-samples and two group-samples t-tests were calculated to know if interaction, discussion, and collaborative writing tasks had impacted the writing skills of Indian engineering Academic English learners in online learning. Table 1 shows the descriptive statistics and paired samples and two group-samples t-tests run on the data of the two groups. The participants' minimum and maximum marks recorded in the pretest and posttest were 2 and 10. As Table 1 shows, both groups displayed insignificant differences in the pretests, and the groups have almost the same writing proficiency level. However, the CG had shown the maximum variation in pre-and-posttest. Comparing the mean scores of the pre-and-posttests in both the groups, the EG, which followed collaborative writing, revealed substantial progress in the pre-and-posttests while the control group

Table 1. *Pre-test results for control and experimental groups*

Group Pretest/Posttest	*N*	*Mean*	*SD*	*Mean Difference*	*t*	*Df*
Control_Pretest	24	5.25000	1.64845	1.20833	-2.8906	47
Control_Posttest	24	6.45833	1.21509			
Experimental_Pretest	24	5.87500	1.70649	2.40398	-7.2818	47
Experimental_Posttest	24	8.270898	0.91065			
Control_Posttest	24	6.458330	1.21509	1.812568	-5.8479	2
Experimental_Posttest	24	8.270898	0.91065			

had no significant difference. The differences, whether statistically significant or not, had been calculated in paired-and-group samples t-tests applied on the statistics of both groups.

Descriptive statistics and paired-group-samples t-tests of pre-and-posttests of CG, and EG have shown the difference between pretests and posttests, which clearly illustrated the advancement in the EG's writing performance. The p-values of interaction, discussion, and collaboration in the EG were less than the significance level (i.e. 0.05). The analysis also proves the substantial statistical difference between the mean scores of the pre-and-posttest of both groups. Though the p-value of the CG was greater than the level of significance (i.e. 0.05), the difference between the mean scores of both tests of CG became insignificant. The greater t-values show a bigger difference between the pre-and-posttest marks.

An independent samples t-test was also done to see any noteworthy statistical differences between both groups' pre-test scores (see Table 2). The statistical analysis (Table 1) showed no statistically substantial differences (at $\alpha \leq 0.01$) between the CG and EG pre-test scores. This result also advocated that the groups had no substantial difference in their writing abilities at the beginning of the study.

Table 2. *One-way ANOVA test of the two posttests*

Source of variance	*Df*	*R*	*F*	*Sig.*
Between groups	1	0.8795	75.16541187	0.00000001514
Within group	23			
Total	24			

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To find some important differences between CG and EG writing performance in the post-test, the study moved further with another independent-samples t-test (shown in Table 2). On the post-test, the EG (M = 8.27, SD = 0.91) proved purposely better (at $p < 0.05$) than the CG (M = 6.46, SD = 1.22). Looking at the means' difference (M = 1.81), we proved that the proposed collaborative writing had brought substantial improvements to students' writing.

Figure 2 and Figure 3 show the pre- and post-test scores of the control and experimental groups.

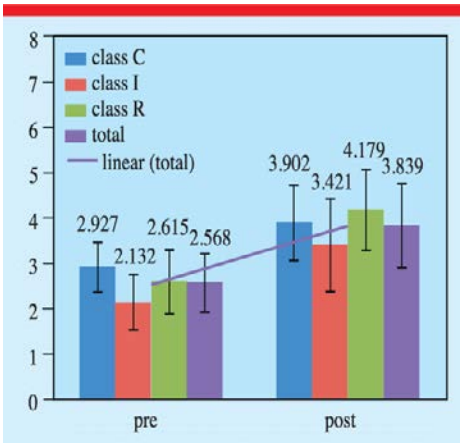


*Figure 2***.** Pre/Post test scores

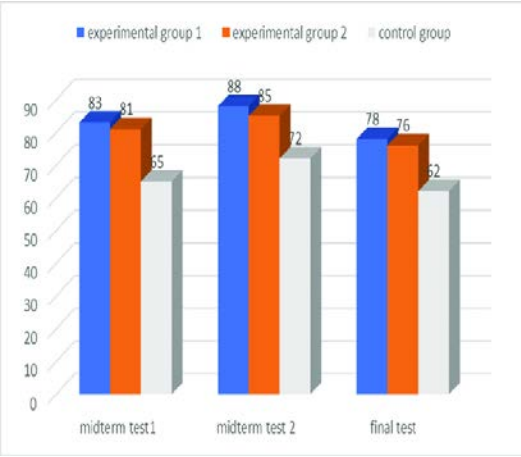


*Figure 3***.** Test scores

Results from the statistical analysis from the one-way ANOVA test of the two posttests show that there is a positive relationship between collaborative writings and EG students, r (22) = 0.8795, and $p< 0.05$ (alpha = 0.05) or $p< 0.001$.

RQ2 Does joint scaffolding contribute to the production of more accurate texts?

To explore whether joint scaffolding is a contributing factor in the production of more accurate texts in writing, the data for the individual component was analyzed. There have been substantial variances between the mean scores obtained in the pretest (M = 5.87, SD = 1.71) and posttest (M = 8.52, SD = 0.91) in the EG; conversely, there is no substantial improvement in the mean scores obtained in pretest (M = 5.25, SD = 1.65) and posttest (M = 6.45, SD = 1.21) of the control group. The researchers after the pretest thoroughly planned to incorporate scaffolding at each stage in the writing for the experimental group. The significant improvement in post scores had shown the vitality of scaffolding especially in collaborative writing texts.

Figure 4 presents the performance improvement plan used in the study, and Figure 5 illustrates the scaffolding strategies adopted for collaborative writing.

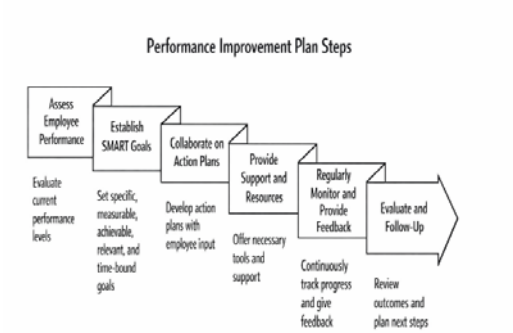


Figure 4. Performance improvement plan

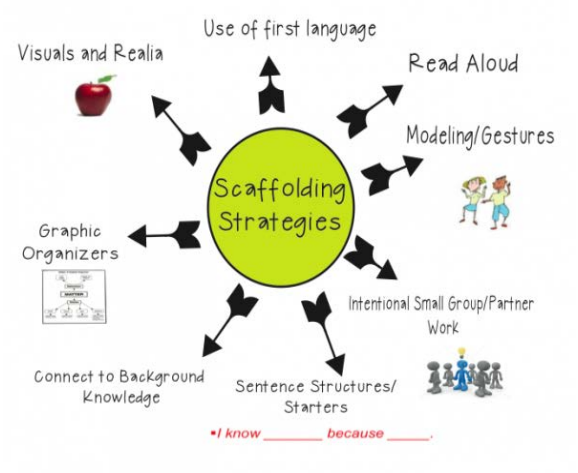


Figure 5. Scaffolding strategies

RQ3 Does corrective feedback in collaborative writing help EFL learners in writing tasks?

The differences between the pre-and-posttest results also show a substantial improvement in drafting good content, well organized and correct essays. The consistent and prompt feedback provided has proved that students develop and learn more with the corrective feedback, which was seen in the writing products in week 7 onwards.

Figure 6 shows the learning loop followed during corrective feedback in collaborative writing tasks.

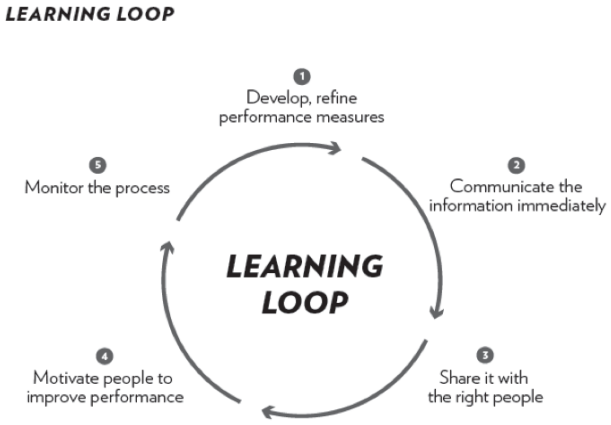


Figure 6. Learning loop

RQ4 Does conflict arise in collaborative writing, and does it help or hinder learners in developing writing tasks?

Students, on many occasions, approached the teachers and the researchers on matters where they weren't on the same page and on disagreements. It happened in writing the thesis statement, content in the body paragraphs, and conclusion. This brought a major transformation in students who developed social skills to deal with such conflicts in scheduled writing tasks. The researchers found that learners' formal and informal discussions of disagreements on an issue led to mutual negotiation and consensus, which largely occurred in a friendly, sociable, and healthy environment, thereby facilitating easier and more effective learning.

Discussion

The present findings are consistent with earlier studies (Dobao, 2012; Hosseinpour & Biria, 2014), which showed the positive impact of collaborative writing on learners' writing performance and its various components (Hosseinpour & Biria, 2014). The current research question specifically examined the effect of collaborative writing on Indian ESL students' writing abilities, and the results corroborate earlier evidence highlighting the pedagogical value of collaborative learning.

These outcomes also align with Farrah (2011), who emphasized the importance of collaborative activities in the writing process and noted that such practices encourage students to adopt new learning styles by providing ample opportunities for interaction and the exchange of views, values, and ideas. Further support comes from Rahimi and Fathi (2022) and Pan and Teng (2025), who found that digital collaborative writing enhances learners' self-regulation, writing quality, and peer engagement. In addition, Al-Yafaei (2024) reported significant improvements in writing proficiency among Omani EFL students engaged in online collaborative writing. Collectively, these findings indicate that collaborative learning positively influences students' knowledge, comprehension, creative thinking, and motivation, while promoting the exchange of information, skills, and experiences. This process fosters a cooperative, communicative, and supportive learning environment in which students recognize their potential and assume greater responsibility for their learning.

The significant improvement seen in post-test scores also highlights the importance of scaffolding, particularly in collaborative writing contexts. This result supports earlier research by Dobao (2012), Storch (2005), and Wigglesworth and Storch (2012), who affirmed the crucial role of scaffolding in developing learners' writing skills through collaboration. Moreover, these studies, together with McDonough et al. (2018), proved a clear preference for collaborative writing over individual writing, as learners actively engage in knowledge sharing and peer support. Wigglesworth and Storch (2012) further argued that joint scaffolding enables students to teach and learn from one another effectively. The present findings also reveal that joint scaffolding enhances textual accuracy, as learners focus more on content development, essay organization, and syntactic structure. However, collaborative writing does not appear to significantly improve fluency or syntactic complexity (McDonough et al., 2018; Wigglesworth & Storch, 2009).

Corrective feedback, which naturally emerges from collaborative writing, plays a vital role in supporting learners' development. Swain and Lapkin (2002) asserted that through discussion and collaboration, learners correct their mistakes and apply this knowledge in subsequent writing tasks. This process provides opportunities for students to express individual viewpoints, offer constructive corrections, and accept alternative perspectives. Similarly, Alessi and Trollip (2001) noted that students working on shared projects support one another without hindering, competing with, or ignoring their peers. In addition, Fung (2010) found conflict as an essential component of collaborative writing, while Storch (2018) emphasized that the sense of consensus inherent in collaboration allows conflict to play a constructive role. Furthermore, Kalan (2014) argued that the post-process approach views writing as a collaborative and social activity rather than a rigid method that can be taught in isolation to individual learners.

Conclusion

The present study is distinctive in that it examines the potential impact of collaborative writing in an online classroom on ESL learners' writing development while learning alongside peers. The investigation involved 48 undergraduate engineering students enrolled in second-semester academic writing courses. Students in the experimental group completed six in-class collaborative writing essays in addition to other assigned tasks, while the control group completed similar essays individually in online classes.

Recent empirical evidence reinforces the present findings. Studies by Alqasham (2022), Ebadijalal and Moradkhani (2025), and Li (2023), confirm that online collaborative writing enhances writing performance, learner motivation, and self-efficacy, particularly when supported by structured scaffolding and feedback mechanisms. Although both groups showed statistically significant improvement from pre-test to post-test, the experimental group achieved substantially higher gains in their individual writing scores than the control group. This improvement may be attributed to increased learner confidence and reduced anxiety resulting from the opportunity to share and refine ideas collaboratively.

Joint scaffolding also appeared as a key factor in producing more accurate texts, as it actively engaged and motivated students to participate in online collaborative writing tasks. Furthermore, the provision of timely and corrective feedback played a crucial role in helping students develop well-organized and academically sound essays. While disagreements occasionally arose during collaborative tasks, the continuous support provided by the researchers and the instructor through WhatsApp helped constructive discussions. These interactions reduced students' hesitation, reshaped their perceptions, and strengthened their social and communicative skills, which, in turn, supported their individual writing development.

The findings suggest that adopting a collaborative writing approach in online learning environments, particularly when supported by social media tools, can lead to meaningful improvements in students' academic writing and learning behavior. This approach promotes learner autonomy, responsibility, and accountability, while also encouraging interaction, idea generation, discussion, and shared learning. Consequently, collaborative writing not only enhances linguistic competence but also nurtures essential academic and social skills. It may therefore be concluded that "writing it through" is most effectively achieved through collaborative practices, which remain central to meaningful learning in contemporary online educational contexts.

Future Perspectives

In the light of the non-significant mixed-method results, the researchers place a few suggestions: First, students in the study accomplished six collaborative writing tasks, which, however, may not be sufficient to produce significant effects in refining students' writing performance. Secondly, in collaborative writing, students need sustained motivation and clear instructional support, clubbed with the development of writing, social, and digital skills. This approach is more productive when applied to engineering students in an ESL context who are homogeneous in aptitude and are given the freedom to engage in discussions at their convenience. These findings also hold relevance for EFL contexts and encourage further empirical research involving EFL learners across diverse instructional settings. The results may also fluctuate in altered contexts using diverse modes of learning at changed times, places, and technology-supported applications.

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