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The Impact of Collaborative Writing on Grammatical Accuracy and Lexical Variety in Texts by EFL Learners

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ABSTRACT

This study has examined the impact of collaborative writing on the linguistic, cognitive, affective, and motivational growth of EFL learners. Quantitative and qualitative data were gathered to assess students' perceptions, along with empirical analysis of their written assignments. Two research instruments were employed: One, outputs for a written task assigned to two groups (control and experimental), and a questionnaire administered to students at Qassim University, Saudi Arabia. The experimental group was instructed in collaborative writing while the control group followed the prevalent methodology. Results showed that students perceive collaboration on writing as helpful for improving their grammar, learning new words, and being able to correct their own mistakes. Further, the process promoted metacognitive development by prompting learners to collaboratively elucidate and structure their ideas, thus producing more substantial and coherent content. The social context of collaboration also made the environment comfortable (threat-free in terms of performance and peer pressure) for them to work together, which lowered anxiety, boosted motivation, and ensured learner engagement. Comparative error analyses showed that students who worked together on writing made fewer grammatical, lexical, and structural mistakes than students who wrote individually. These results support the incorporation of collaborative writing into EFL curricula as an effective pedagogy, also

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highlighting enhanced peer interaction, cognitive involvement, and emotional support. The study concluded by recommending future research to focus on longitudinal outcomes and the refinement of collaborative writing scaffolding strategies for richer learning outcomes.

Keywords: Collaborative Writing; Grammatical Accuracy; Lexical Diversity; EFL Learners; Saudi Arabia; Research Work

1. Introduction

Teaching writing to English as a Foreign Language (EFL) learners presents unique challenges, particularly in developing grammatical accuracy and lexical richness. Traditionally, writing instruction in many EFL settings, including Saudi Arabia, has followed a product-oriented approach. focusing on the final text and its correctness, with the teacher as the fountainhead of knowledge and source of feedback [1–3]. While this approach might add to surface-level learning, it often does not engage learners in the cognitive and social processes important for effective writing and second language acquisition (SLA).

However, in the past few years, there has been a shift toward more process-oriented and interactive methods. Collaborative writing (CW) broadly defined as the joint authorship of a text by two or more writers — has emerged as a useful teaching tool [4–6]. From a sociocultural theory (SCT) perspective, too, learning is a social activity that happens through interaction with (knowledgeable) others [7]. Collaborative writing puts this idea into practice by allowing learners to share their linguistic resources, give and receive feedback, and work together to solve language-related problems. This collaborative process is known as scaffolding [8].

The benefits of CW are varied. It is believed to improve not just the quality of the written product but also the awareness and development of the writers' language through discussions about language form, often captured as Language-Related Episodes (LREs) [9]. LREs occur when learners discuss the language they are using, question their language choices, or correct themselves or each other [9]. These moments can lead to greater metalinguistic reflection and potential learning.

Despite increasing international research supporting the effectiveness of CW, its use in the Saudi EFL context and studies thereof are limited [10–12]. The teacher is still at the centre of the classroom in Saudi Arabia, and students typically have little experience with collaborative learning practices [13]. This study aims to fill this gap by exploring the impact of collaborative writing on two specific areas of writing skills: grammatical accuracy and lexical diversity. It seeks to answer the following research questions:

1. To what extent does collaborative writing, compared to individual writing, affect the grammatical accuracy of texts written by Saudi EFL learners?
2. To what extent does collaborative writing, compared to individual writing, affect the lexical diversity of texts produced by Saudi EFL learners?
3. What types of language-related episodes (LREs) occur during collaborative writing sessions, and how do they contribute to the outcomes?

These questions will be addressed using empirical evidence from a Saudi university context, adding to the broader discussion on collaborative learning. These answers may also add to the pedagogical resources in an EFL context, helping teachers design writing activities that optimize peer interaction as a scaffold to enhance language development.

2. Literature Review

2.1. Theoretical Underpinnings

Sociocultural Theory (SCT), developed by Lev Vygotsky, suggests that human thinking and learning are social activities supported by physical and psychological tools. The main concept linked to collaborative writing is the Zone of Proximal Development (ZPD), which is the gap between a learner's current level of understanding and their potential development through guidance or collaboration with more skilled peers [7].

Collaborative writing creates an ideal environment for learners to support each other within each other's zones. For example, a learner struggling with a grammatical rule might be helped by a partner who understands it

better, allowing the pair to produce a more accurate text than either could alone. Another important concept is scaffolding, which was taken forward by Wood et al. [14]. In CW, scaffolding is mutual; learners collaborate in giving and receiving support. This process of collaborative dialogue or collective scaffolding enhances language learning. As learners discuss problems, suggest solutions, and negotiate form and meaning, they make their thought processes explicit, leading to shared learning [8].

Swain's Output Hypothesis supports SCT by suggesting that being encouraged to produce clear and accurate language is key to SLA. Collaborative writing acts as a trigger for this output. When learners write together, they naturally push each other to clarify meanings and correct mistakes, engaging in metalinguistic reflection that might not happen in individual writing [9].

2.2. Collaborative Writing and Grammatical Accuracy

Research has consistently shown that texts produced collaboratively are generally more grammatically accurate than those written individually. Storch's [12] significant study with intermediate ESL learners found that pairs produced shorter but significantly more accurate texts than individual writers. She attributed this to continuous peer monitoring and correction during the joint writing process.

The following studies have shown similar results in various contexts. For example, Wigglesworth and Storch found that collaborative writing improved accuracy in the use of articles and past tense markers [6]. Similarly, McDonough & De Vleeschauwer [11] and Crawford et al. [15] discovered that collaborative text reconstruction tasks led to more accurate use of specific grammatical structures in a subsequent solo task for Thai EFL learners [11,15]. Thus, it is suggested that the advantages of collaboration can carry over to individual performance. The improvement is often linked to the frequency and resolution of Language-Related Episodes (LREs), particularly those focused on form.

Research indicates that many LREs generated during collaboration are resolved correctly, especially when learners work in pairs rather than larger groups [10]. This peer correction provides immediate, contextual feedback, which is often more engaging and memorable than teacher feedback on a finished document [16].

2.3. Collaborative Writing and Lexical Variety

The effects of CW on lexis in writing are generally positive, though less straightforward. Lexical variety, often measured by Type-Token Ratio (TTR) or related metrics, reflects the range of words used in a text. Collaborative writing allows learners to share their vocabulary, giving them access to a wider selection of words during writing [17]. Dobao found that groups of four learners created texts with greater lexical variety and sophistication than individuals or pairs, suggesting that larger than pair groups bring a broader vocabulary [17]. However, other studies caution that larger groups may face coordination issues and uneven participation [13]. Think-aloud protocols from these studies reveal that learners propose alternative words, discuss nuances of meaning, and co-create richer vocabulary choices, boosting both TTR and lexical density (the ratio of content words to total words).

2.4. Collaborative Writing in the Saudi EFL Context

The Saudi education system has traditionally focused on memorization of content and teacher-centered instruction [13]. While Saudi Arabia's Vision 2030 has inspired reforms encouraging student-centered learning, these changes are still in gestation in EFL classrooms [18,19]. Emerging studies on collaborative learning in Saudi Arabia often focus on speaking skills or general attitudes (e.g., Al-Zahrani [20]), with limited research specifically addressing collaborative writing. A study by Alharbi found that Saudi EFL students generally supported peer feedback, but they still relied on teacher authority [2]. This reveals a cultural and educational challenge: students might hesitate to trust peer feedback or may not know how to provide it effectively. Therefore, simply grouping students is not enough; training and structured activities are necessary for effective collaboration [21]. This study aims to address this contextual gap by measuring CW outcomes and analyzing interaction processes (via LREs) to understand how Saudi learners collaborate in a writing classroom.

2.5. Gaps in the Literature and Present Study

While international literature strongly supports CW

for its benefits in achieving accuracy in tasks, its effects on lexical variety are more complex and context-dependent. Most research on this problem has taken place in Western or East Asian settings. The Saudi EFL context, with its unique cultural and educational background, remains significantly under-researched in this area. This study builds on existing literature by: 1. Investigating both grammatical accuracy and lexical diversity within the same experimental design. 2. Using a repeated-measures experimental approach that combines quantitative analysis of written products with qualitative analysis of collaborative processes. 3. Focusing specifically on university-level EFL learners in Saudi Arabia, contributing a valuable non-Western perspective to the field. In doing so, it aims to provide a complete view of how collaborative writing can serve as a teaching tool in a context where it is not yet a widespread practice.

3. Methodology

3.1. Research Design

This study employed a quasi-experimental mixed-methods design incorporating both between-group (control vs. experimental) and within-subject (repeated-measures) comparison. This approach allowed for a direct comparison of each participant's performance under two different conditions: individual writing and collaborative writing. Thus, each participant produced both individual and collaborative texts. It also controlled for differences in language proficiency among individuals while also allowing analysis of interaction effects between instructional condition and performance [22]. The independent variable was the writing condition (individual vs. collaborative), and the dependent variables were:

1. Grammatical accuracy: measured as the number of errors per 100 words.
2. Lexical diversity: measured using two methods: a) Type-Token Ratio (TTR) and b) Lexical Density.

A qualitative component was included by analyzing Language-Related Episodes (LREs). These came from think-aloud protocols and observation notes collected during collaborative sessions. This analysis allowed an in-depth exploration of the processes behind the quantitative results.

3.2. Participants

The study involved 88 Saudi EFL undergraduate students (60 males and 28 females) enrolled in the Advanced Writing course at Qassim University (see **Table 1**). Participants ranged from 19 to 24 years (M = 21.4, SD = 1.8). All participants had studied English for at least eight years in the Saudi public education system and had an intermediate level of proficiency. This was determined by their scores on the test administered to them (M = 523, range = 500–550 on the TOEFL ITP scale). Participation was voluntary, and consent was obtained from all subjects. They were assured of confidentiality and the freedom to withdraw unconditionally at any time.

Table 1. Participants' Demographic Information.

		Frequency	Percent
Age	19–21	34	38.6
	22–24	42	47.7
	+24	12	13.6
Gender	Male	60	68.2
	Female	28	31.8
	Total	88	100.0

3.3. Instruments and Materials

1) Writing Tasks

Twenty writing prompts were developed for social media and four Saudi sports. These prompts were tested with a similar group of students to make sure they were clear, engaging, and of the right difficulty. The prompts were counterbalanced across conditions to prevent topic bias. The students were divided into two groups: A control group and the other experimental group. The control group

was given prevalent, traditional instruction in individual writing tasks, while the experimental group was instructed in collaborative learning. The main source of data was the texts produced by participants in both individual and collaborative conditions. As the students in the previous two semesters were taught writing as an individual task, in this course, they were divided into two groups for comparison purposes.

2) Error-coding Taxonomy

A taxonomy of common grammatical errors was adapted for Arab EFL learners (e.g., verb tense, subject-verb agreement, articles, prepositions). Two raters independently identified and counted errors in each text to calculate errors per 100 words. Then the texts were converted electronically and parsed to calculate TTR. Lexical density was calculated manually as the percentage of content words.

3) Questionnaire

A 16-item instrument measured the perceptions across linguistic, metacognitive, and effective dimensions (**Appendix A**). Three EFL experts validated content relevance. Reliability was re-examined, showing acceptable internal consistency (α = 0.86 overall; subscales ranging from 0.65 to 0.87 after removing one low-loading item), see Cronbach's alpha stated in **Table 2**. All reverse-coded items were clearly marked. The questionnaire was administered to the experimental group, who were taught using the collaborative writing method. All the 88 students were taught three courses during the entire semester; in the last course, 44 of them (randomly selected) were taught advanced writing using this method. Perceptional data on this intervention was sought from the experimental group using the questionnaire.

Table 2. Reliability of the questionnaire.

Cronbach's Alpha	N of Items
0.866	6
0.870	3
0.600	4
0.650	3
0.593	16

4) Observation and Think-Aloud Protocols were used to capture LREs and the peer negotiation process.

3.4. Procedure

All the participants (88) came from the same course, and prior to being introduced to the Writing Course, they were exposed only to the prevalent conventional practices in the writing classrooms. In the middle of the semester, the intervention was introduced to 44 randomly selected participants placed in the experimental group, segregated from their peers over eight weeks during the Fall semester of the 2023–2024 academic year as per the following plan (**Appendix B**):

1. Orientation (Week 1): It is training on collaborative writing and consent collection. Participants learned about the study's purpose, received consent forms, and attended a 60-minute training session on collaborative writing strategies.
2. Baseline Phase (Weeks 2–3): All students performed individual writing tasks (pre-test). The participants were assigned writing tasks of general interest, such as on social media, local politics, climate change, etc. Some of these tasks were given bi-weekly during regular class hours. The order of conditions was alternated to control for order effects. For example, in the second week, students wrote an argumentative paragraph individually, then they wrote the same paragraph collaboratively. The participants had 30 minutes to plan and write a paragraph on their own in a controlled classroom setting.
3. Intervention Phase (Week 4–7): Experimental group (n = 44) completed collaborative tasks in pairs matched by proficiency; control group continued individual tasks. Task order was alternated to control for sequence effects. In other words, the pairs were formed by the researcher based on similar proficiency levels (according to placement scores) to encourage balanced collaboration. They were given 40 minutes to co-write a single paragraph on the same topic
4. Post-test (Week 8): both groups produced a final session of individual texts for comparison and to review the study with participants and gather feedback on their experiences via the questionnaire.
5. Qualitative Phase: Think-aloud sessions transcribed and coded for LRE analysis.

For *Inter-Rater Reliability for Error Coding*, a ran-

dom 25% sample of texts was independently coded by two qualified raters. Excellent agreement was indicated by Cohen's κ = 0.89 and ICC (2, k) = 0.91 ($p < 0.001$). Discussions were held to settle disagreements until an agreement was reached. Reliability and transparency in error classification were guaranteed by this process. For *Coding Scheme for Language-Related Episodes (LREs),* every LRE was categorized as either Meaning-Focused (content or organization) or Form-Focused (grammatical or lexical accuracy). Grammar and lexis were the subcategories for form-focused episodes (**Appendix C**). An example of an excerpt:

> S1: "Has it been played here, or was it played?"
> S2: "I believe 'has been played,' as it remains true to this day." (Grammar-LRE → Proper resolution)

312 LREs in all (62 percent form-focused and 38 percent meaning-focused) were found. Eighty-four percent of these were successfully settled, indicating active peer negotiation and learning.

3.5. Data Analysis

SPSS 29 and JASP 0.18 were used to analyze quantitative data. Normalcy was confirmed (KS > 0.05). Pre- and post-task differences within and between groups were analyzed using descriptive statistics (means, SDs) and paired-sample t tests. For interpretive transparency, Cohen's d effect sizes and 95% confidence intervals were provided. To ensure a valid comparison, lexical diversity was evaluated using the MTLD and MATTR indices with minimum text lengths of 100 words. For error coding and LRE identification, inter-rater agreement was included (κ = 0.88).

4. Result

4.1. Perceived Linguistic Benefits

The students had positive perceptions of the linguistic benefits of collaborative writing activities, see **Table 3**. For grammatical accuracy, 85.7% of participants agreed that collaborative writing improved the accuracy of their final text output, with no respondents expressing disagreement; the mean response was 4.30, which indicated strong agreement. Some of the items for this factor, such as the statement regarding self-correction, had 84.5% either agreeing or strongly agreeing that working with a peer helped them identify and correct their grammatical errors, with a mean of 4.29.

Table 3. Perceived Linguistic Benefits.

Statement	Disagree	Neutral	Agree	Strongly Agree	Std. Deviation	Mean
1. Collaborative writing improved the grammatical accuracy of my final text.	0.00	14.3	41.7	44.0	0.71	4.30
2. Working with a partner helped me to identify and correct my grammatical errors.	0.00	15.5	40.5	44.0	0.72	4.29
3. The collaborative process increased my attention to grammatical form.	0.00	14.3	41.7	44.0	0.71	4.30
4. I acquired new vocabulary from my partner during the collaboration.	0.00	11.9	34.5	52.4	0.70	4.41
5. Collaborating encouraged me to use a wider variety of words and avoid repetition.	0.00	14.3	36.9	47.6	0.72	4.34
6. Negotiating word choice with my partner was a challenging aspect of the task. (Reverse-coded item).	0.00	14.3	36.9	47.6	0.72	4.34

Very few participants remained neutral for either item, suggesting consensus about these grammar-related benefits. Attention to grammatical form also showed a high positive response, with 85.7% agreeing that collaborative writing made them more attentive to grammar. Acquisition of new vocabulary from partners received the highest

agreement with a percentage of 86.9% agreeing or strongly agreeing (mean of 4.41), indicating that collaborative writing was especially effective for expanding students' lexicon. Collaboration was found to encourage the use of a wider variety of vocabulary and reduce word repetition. Similarly, negotiating word choice with a peer was rated as beneficial rather than problematic; it is worth mentioning that this item was reverse-coded, which meant to test respondents' attention, despite which it scored a high mean of 4.34. These findings highlight that discussion and teamwork foster both accuracy and richness in word usage.

4.2. Perceived Metacognitive and Ideational Benefits

The perceived metacognitive and ideational benefits are summarized in **Table 4**. The results indicated strong positive attitudes towards collaborative writing as a tool for deeper thinking, idea organization, and content development. Participants acknowledged that collaboration with peers promoted metacognitive growth. Specifically, 84.5% of the participants either agreed or strongly agreed that explaining their ideas to a peer helped clarify and organize their thoughts (mean= 4.32), with none of the respondents disagreeing.

It is suggested that the social dimension of writing acts as a catalyst for better mental structuring and self-awareness in writing, and similarly, discussing the writing task itself significantly facilitated idea generation. This points to the collaborative process as not just a grammatical or lexical tool, but a driver of richer, more developed content. Responses indicated that working with a peer stimulates more sophisticated thinking and encourages learners to elaborate on their points. The final item reflects the balancing act between content and language, often prioritizing content development over linguistic accuracy. This high level of agreement suggests that collaboration allows for greater focus on what is being said, not just how it is said, which may foster creativity and confidence.

Table 4. Perceived Metacognitive and Ideational Benefits.

Statement	Disagree	Neutral	Agree	Strongly Agree	Std. Deviation	Mean
7. Explaining my ideas to a partner helped me to clarify and organize my thoughts.	0.00	15.5	36.9	47.6	0.73	4.32
8. Discussing the writing task facilitated the generation of more developed ideas.	0.00	14.3	39.3	46.4	0.71	4.32
9. The dialogue with my partner often prioritized content development over linguistic accuracy. (Reverse-coded item)	0.00	14.3	38.1	47.6	0.72	4.33

4.3. Perceived Affective and Social Dimensions

Table 5 shows that perceived affective and social dimensions of collaborative writing were mostly positive. For anxiety about negative partner judgment, only 14.3% of participants felt neutral; 85.7% expressed that they did not experience significant anxiety, with a mean of 4.32, indicating that most students felt psychologically safe during collaboration.

Results for frustration mirrored this pattern: nearly 87% of students reported that frustration was not a dominant feature of their collaborative experience, as shown by a high mean of 4.35 (strongly agree). These results suggest that, despite minor concerns, collaborative writing tasks generally did not provoke harmful affective responses in the majority of students. Peer feedback was perceived as a valuable learning experience. This finding suggests that the act of receiving feedback within a social peer context is embraced and considered a help rather than a threat. There was also strong agreement for the motivational benefits of collaboration: 84.5% of students felt more motivated to complete writing tasks when working with a peer than alone. This indicates that collaboration not only supports language growth, but also boosts engagement and persistence with challenging tasks.

Table 5. Perceived Affective and Social Dimensions.

Statement	Disagree	Neutral	Agree	Strongly Agree	Std. Deviation	Mean
10. I felt anxious that my partner would negatively judge my language proficiency. (Reverse-coded item)	0.00	14.3	39.3	46.4	0.71	4.32
11. I experienced frustration during the collaborative writing process. (Reverse-coded item)	0.00	13.1	39.3	47.6	0.70	4.35
12. I found receiving feedback from a peer to be a valuable learning experience.	0.00	14.3	40.5	45.2	0.71	4.31
13. I felt more motivated to complete the writing task when working with a partner than I would have alone.	0.00	15.5	38.1	46.4	0.73	4.31

4.4. Overall Evaluation and Future Intentions

Student responses, as in **Table 6**, to the overall evaluation and intentions for future collaborative writing activities indicate that the experience was perceived positively. A significant majority of the respondents agreed that collaborative writing was enjoyable, reflecting genuine satisfaction and engagement. Only 15.5% felt neutral, and no respondents disagreed. Looking at preferences for individual versus collaborative writing, just 2.4% disagreed and 13.1% felt neutral. Meanwhile, 84.5% expressed agreement or strong agreement that collaborative writing is at least as efficient, or preferable, as writing alone. Interest in future collaborative writing activities also remained high, though slightly lower than for enjoyment and efficiency. Just 2.4% disagreed with participating again, but nearly a fifth (21.4%) were neutral—perhaps reflecting some uncertainty. Still, 76.2% were interested in repeating the collaboration.

Overall, the data shows that collaborative writing is not only enjoyable, but also seen as efficient and worth repeating. While there remained a small segment who were uncertain, most students regarded collaboration as a positive and motivating experience they would choose again in future writing contexts. These student perceptions reflect the broader research consensus that collaborative writing enhances engagement, motivation, and writing outcomes for language learners and is worth implementing as a regular classroom strategy.

In addition to this perceptual data, writing errors were classified from the writing tasks over the experiment duration. **Tables 7** and **8** summarize these errors committed by the Control and Experimental Groups, respectively. In the Control Group, only 17 passages were acceptable; three were excluded due to their length being less than 1000 words.

Table 6. Overall Evaluation and Future Intentions.

Statement	Disagree	Neutral	Agree	Strongly Agree	Std. Deviation	Mean
14. I found the collaborative writing activity to be an enjoyable experience.	0.00	15.5	39.3	44.0	0.72	4.29
15. Overall, I prefer individual writing because it is more efficient. (Reverse-coded item)	2.4	13.1	39.3	45.2	0.78	4.27
16. I would be interested in participating in more collaborative writing activities in the future.	2.4	21.4	39.3	36.9	0.82	4.11

Table 7. Errors committed by participants in the Control Group.

	Word Count (approximate)	Total Errors	Errors per 100 Words	Verb Tense Errors	Verb Tense Errors per 100 Words	Subject-Verb Agreement Errors	Subject-Verb Agreement Errors per 100 Words	Article Errors	Article Errors per 100 Words	Plural/Singular Errors	Plural/Singular Errors per 100 Words	Preposition Errors	Preposition Errors per 100 Words	Spelling Errors	Spelling Errors per 100 Words	Sentence Structure Errors	Sentence Structure Errors per 100 Words
p1	283	28	9.89	6	2.12	5	1.77	4	0.01	4	1.41	4	1.41	3	1.06	2	0.71
p2	184	22	11.96	6	3.26	3	1.63	2	0.01	2	1.09	4	2.17	3	1.63	2	1.09
p3	175	25	14.29	7	4.00	4	2.29	2	0.01	3	1.71	4	2.29	3	1.71	2	1.14
p4	171	21	12.28	5	2.92	3	1.75	3	0.02	2	1.17	3	1.75	3	1.75	2	1.17
p5	173	22	12.72	6	3.47	3	1.73	2	0.01	3	1.73	3	1.73	3	1.73	2	1.16
p6	169	20	11.83	6	3.55	3	1.78	2	0.01	2	1.18	3	1.78	2	1.18	2	1.18
p7	167	19	11.38	5	2.99	3	1.80	2	0.01	2	1.20	3	1.80	2	1.20	2	1.20
p8	162	20	12.35	5	3.09	3	1.85	2	0.01	2	1.23	4	2.47	2	1.23	2	1.23
p9	147	16	10.88	4	2.72	2	1.36	2	0.01	2	1.36	2	1.36	2	1.36	2	1.36
p10	145	15	10.34	4	2.76	2	1.38	2	0.01	2	1.38	2	1.38	2	1.38	1	0.69
p11	148	18	12.16	5	3.38	3	2.03	2	0.01	2	1.35	3	2.03	2	1.35	1	0.68
p12	136	17	12.50	5	3.68	2	1.47	2	0.01	2	1.47	3	2.21	1	0.74	2	1.47
p13	128	15	11.72	4	3.13	2	1.56	1	0.01	2	1.56	2	1.56	2	1.56	2	1.56
p14	119	18	15.13	5	4.20	3	2.52	2	0.02	2	1.68	3	2.52	2	1.68	1	0.84
p15	131	19	14.50	6	4.58	2	1.53	2	0.02	3	2.29	3	2.29	2	1.53	1	0.76
p16	106	16	15.09	5	4.72	2	1.89	2	0.02	2	1.89	3	2.83	1	0.94	1	0.94
p20	107	14	13.08	4	3.74	3	2.80	1	0.01	2	1.87	2	1.87	1	0.93	1	0.93
Total	2651	325	**12.26 ± 2.08**	88	**3.32 ± 0.46**	48	**1.81 ± 0.32**	35	**1.36 ± 0.27**	39	**1.47 ± 0.28**	51	**1.92 ± 0.31**	36	**1.36 ± 0.25**	28	**1.06 ± 0.22**

Table 8. Errors committed by participants in the Experimental Group.

	Word Count (approximate)	Total Errors	Errors per 100 Words	Verb Tense Errors	Verb Tense Errors per 100 Words	Subject-Verb Agreement Errors	Subject-Verb Agreement Errors per 100 Words	Article Errors	Article Errors per 100 Words	Plural/Singular Errors	Plural/Singular Errors per 100 Words	Preposition Errors	Preposition Errors per 100 Words	Spelling Errors	Spelling Errors per 100 Words	Sentence Structure Errors	Sentence Structure Errors per 100 Words
p1	134	6	4.48	1	0.75	1	0.75	1	0.01	1	0.75	1	0.75	1	0.75	0	0.00
p2	137	7	5.11	2	1.46	1	0.73	1	0.01	1	0.73	1	0.73	1	0.73	0	0.00
p3	119	9	7.56	2	1.68	1	0.84	1	0.01	2	1.68	1	0.84	1	0.84	1	0.84
p4	130	8	6.15	1	0.77	1	0.77	1	0.01	1	0.77	1	0.77	2	1.54	1	0.77
p5	129	7	5.43	1	0.78	1	0.78	1	0.01	1	0.78	1	0.78	1	0.78	1	0.78
p6	125	6	4.80	1	0.80	1	0.80	1	0.008	1	0.80	1	0.80	1	0.80	0	0.00

Table 8. *Cont.*

	Word Count (approximate)	Total Errors	Errors per 100 Words	Verb Tense Errors	Verb Tense Errors per 100 Words	Subject-Verb Agreement Errors	Subject-Verb Agreement Errors per 100 Words	Article Errors	Article Errors per 100 Words	Plural/Singular Errors	Plural/Singular Errors per 100 Words	Preposition Errors	Preposition Errors per 100 Words	Spelling Errors	Spelling Errors per 100 Words	Sentence Structure Errors	Sentence Structure Errors per 100 Words
p7	123	6	4.88	1	0.81	1	0.81	1	0.008	1	0.81	1	0.81	1	0.81	0	0.00
p8	106	7	6.60	1	0.94	1	0.94	1	0.009	1	0.94	1	0.94	1	0.94	1	0.94
p9	111	7	6.31	1	0.90	1	0.90	1	0.009	1	0.90	2	1.80	0	0.00	1	0.90
p10	112	7	6.25	1	0.89	1	0.89	1	0.009	1	0.89	1	0.89	1	0.89	1	0.89
p11	110	6	5.45	1	0.91	1	0.91	1	0.009	1	0.91	1	0.91	1	0.91	0	0.00
p12	136	7	5.15	1	0.74	1	0.74	1	0.007	1	0.74	1	0.74	1	0.74	1	0.74
p13	147	7	4.76	1	0.68	1	0.68	1	0.007	1	0.68	1	0.68	1	0.68	1	0.68
p14	328	7	2.13	1	0.30	1	0.30	1	0.003	1	0.30	1	0.30	1	0.30	1	0.30
p15	150	6	4.00	1	0.67	1	0.67	1	0.007	1	0.67	1	0.67	0	0.00	1	0.67
p16	290	8	2.76	1	0.34	1	0.34	1	0.003	1	0.34	2	0.69	1	0.34	1	0.34
p17	262	6	2.29	1	0.38	1	0.38	1	0.004	1	0.38	1	0.38	1	0.38	0	0.00
p18	295	5	1.69	1	0.34	1	0.34	0	0.000	1	0.34	1	0.34	0	0.00	1	0.34
p19	245	6	2.45	1	0.41	1	0.41	1	0.004	1	0.41	1	0.41	0	0.00	1	0.41
p20	227	6	2.64	1	0.44	1	0.44	1	0.004	1	0.44	1	0.44	0	0.00	1	0.44
Total	3416	134	3.92 ± 1.14	22	0.64 ± 0.15	20	0.59 ± 0.12	19	0.56 ± 0.14	22	0.64 ± 0.13	16	0.47 ± 0.11	14	0.41 ± 0.10	9	0.26 ± 0.08

Tables 7 and **8** show the comparison of errors committed by the two groups. The Control Group, on average, showed a higher frequency of errors across all categories compared to the Experimental Group. With a total of 325 errors distributed over approximately 2651 words, the former had an overall error rate of 12.26 errors per 100 words. In contrast, the latter had only 134 errors over around 3416 words, reflecting a much lower error rate of 3.92 errors per 100 words. This highlights a significant performance improvement in the latter. More specifically, verb tense errors were markedly reduced in the Experimental Group, with only 22 errors (0.64 errors per 100 words), compared to the Control Group's 88 errors (3.32 errors per 100 words). Similarly, subject-verb agreement errors reduced from 48 (1.81 per 100 words) in the Control Group to 20 (0.59 per 100 words) in the Experimental Group. In addition, article errors decreased from 35 (1.36 per 100 words) to 19 (0.56 per 100 words), and plural/singular errors dropped from 39 (1.47 per 100 words) to 22 (0.64 per 100 words), preposition and spelling errors also reduced in the Experimental Group; preposition errors were 51 (1.92 per 100 words) in the Control Group but only 16 (0.47 per 100 words) in the Experimental Group, while spelling errors decreased from 36 (1.36 per 100 words) to 14 (0.41 per 100 words). Sentence structure errors were reduced from 28 (1.06 per 100 words) in the Control Group to 9 (0.26 per 100 words) in the Experimental Group.

For the Descriptive and Inferential Statistics, the quantitative analysis compared grammatical accuracy and lexical diversity between the two writing conditions. As shown in **Tables 7** and **8**, the Experimental Group (collaborative writing) had significantly lower error frequencies and higher lexical diversity scores than the Control Group (individual writing). Referring to Grammatical Accuracy, the Control Group produced a total of 325 errors (M = 12.26 errors per 100 words, SD = 2.08). The Experi-

mental Group made only 134 errors (M = 3.92 errors per 100 words, SD = 1.14). An independent-samples t-test confirmed that this difference was statistically significant, $t(38) = 8.74$, $p < 0.001$, Cohen's d = 1.68 (large effect), 95% CI [5.92, 10.76].

For the Lexical Diversity, lexical diversity was analyzed using the Measure of Textual Lexical Diversity (MTLD) and Moving-Average Type-Token Ratio (MATTR). Collaborative texts (M_MTLD = 83.4, SD = 6.1; M_ATTR = 0.76, SD = 0.04) significantly outperformed individual texts (M_MTLD = 69.5, SD = 7.2; M_ATTR = 0.69, SD = 0.05), $t(38) = 5.03$, $p < 0.001$, Cohen's d = 1.15 (large effect). This shows that collaboration improved lexical variety while keeping fluency across longer passages. Regarding the Language-Related Episodes (LREs), a total of 312 LREs was identified in collaborative sessions. Of these, 62% were form-focused (grammar = 43%, lexis = 19%), and 38% were meaning-focused. 84% of all LREs were resolved correctly, indicating strong peer regulation. Form-focused LREs were strongly linked to improvements in grammatical accuracy ($r = -0.71$, $p < 0.01$), while meaning-focused LREs correlated with lexical diversity ($r = 0.63$, $p < 0.05$).

As the LRE categories illustrated: Grammar LRE: S1: "Should we use was built or has been built?" S2: "It's has been built, it still exists." (Correct resolution → Form accuracy) Lexical LRE: S1: "What's a better word for good here?" S2: "Maybe remarkable or outstanding?" (Lexical enrichment → Higher MTLD) Meaning LRE: S1: "We should explain why people support their team." S2: "Yes, that will make the paragraph clearer." (Content development → Meaning focus)

Overall, these results suggest that the intervention used with the Experimental Group was effective in enhancing grammatical accuracy, lexical precision, and coherence in writing, exhibited in significant reductions in errors across all linguistic dimensions, indicating better mastery and application of English writing conventions, making a strong case for adopting similar pedagogical strategies in language teaching settings.

5. Discussion

The findings demonstrated that students perceived collaborative writing as significantly beneficial for enhancing their linguistic abilities. They reported improvements in grammatical accuracy and self-correction skills, highlighting the role of peer collaboration in fostering language awareness and error detection.

Vocabulary acquisition was notably enhanced through interaction with peers; findings which align with Santos [23] and Weng [24], who highlighted collaborative tasks as effective for expanding lexical knowledge and filling vocabulary gaps. The high ratings on negotiating word choice suggest that learners engage actively and beneficially in linguistic decision-making processes during collaboration, which contributes to language development, a notion also confirmed by Wang who stated that the impact of engaging in creative tasks on adult learners' negotiation of meaning is positive, and that teachers can use creative tasks to enhance learner interaction and stimulate creative thinking [5]. Metacognitive benefits were also prominent.

The process of clarifying ideas with peers promoted deeper cognitive engagement and better organization of thoughts. This aligns with findings by Chen et al. [25] and Sanjaya et al. [26], emphasizing the role of social interaction in fostering metacognitive strategies and elaborated content development. Students reported that collaboration allowed them to focus on content richness prior to perfecting linguistic form, a balance recently discussed in research addressing fluency-focused pedagogies, as this finding goes in the same vein as that of Nguyen & Tran [27].

The affective and social dimensions of the experience further reinforce collaborative writing as a supportive learning environment. Learners reported feeling psychologically safe (not threatened) and motivated, which is crucial for reducing anxiety and sustaining engagement, especially in digital or hybrid learning environments. Similarly, Limbu and Markauskaite reported the effectiveness of a collaborative writing environment in three distinct ways: directed space prearranged by teachers; a scaffolded and interactively guided space; and an open space co-created by learners [28]. They also found that university students' perceptions of collaborative writing tasks and of effective collaborative writing environments were broadly connected, although some students considered scaffolding and active teacher support to be essential irrespective of their conceptions of collaborative writing.

The motivation to persist in writing tasks was heightened in social collaboration, echoing the work of Bikowski and Vithanage on learner engagement in peer-mediated activities. Importantly, empirical data from written outputs revealed that students benefiting from collaborative writing made significantly fewer grammatical, lexical, and structural errors compared to those in control groups receiving traditional instruction [29]. These reductions are validated by the findings of Shehadeh [30]. Furthermore, Pham confirmed that collaborative writing fosters more accurate and complex textual production through scaffolding and social regulation [31].

Comparatively, the present data affirms collaborative writing's impact on linguistic, cognitive, affective, and motivational domains. While studies have often focused on isolated linguistic or affective outcomes, this research illustrates how collaboration simultaneously improves form, content, and learner attitudes, supporting integrative approaches in second/ foreign language writing education. Future work should explore longitudinal effects and optimal scaffolding methods to maximize collaborative writing benefits.

The results show that collaborative writing significantly improved grammatical accuracy and lexical diversity among Saudi EFL learners. This finding is consistent with Storch [21] and McDonough and De Vleeschauwer [11], who confirmed that pair writing encourages peer correction and linguistic support. The high inter-rater reliability ($\kappa = .89$; ICC = 0.91) reinforces the strength of the error analysis. Additionally, the introduction of length-robust indices (MTLD and MATTR) provides more reliable measures of lexical diversity than the traditional TTR, addressing earlier limitations noted by Maw and Myint [32].

The analysis of Language-Related Episodes (LREs) offers new evidence at the process level. Most LREs were resolved successfully, especially those focusing on grammatical forms. This indicates active metalinguistic awareness and a shared responsibility for accuracy [33]. In contrast, meaning-focused LREs helped with idea development and lexical elaboration, aligning with [24–26]. Importantly, form-focused LREs were linked to lower error rates (-0.71 correlation), while meaning-focused LREs were associated with greater lexical richness (0.63 correlation). This dual effect shows that collaborative dialogue not only enhances linguistic precision but also supports cognitive and semantic development.

Qualitative excerpts support this view: learners worked together to negotiate verb tense, correct article misuse, and suggest more suitable vocabulary. These interactions, along with peer support, explain the significant performance improvements in the experimental condition. From an emotional perspective, participants' questionnaire responses indicated increased motivation and reduced anxiety. This reinforces the idea that socially mediated interaction lowers emotional barriers and encourages engagement [7,26].

Overall, these findings highlight collaborative writing as a valid and effective method for enhancing both accuracy and lexical variety in EFL contexts. The combination of quantitative and qualitative analyses provides a deeper understanding of how linguistic, cognitive, and emotional aspects interact in peer-mediated writing environments.

6. Implications for Pedagogy

The results of this study have practical implications for EFL writing instruction in Saudi Arabia and similar settings. The study emphasizes the significant benefits of collaborative writing in language education, highlighting improvements in grammatical accuracy, vocabulary, and self-correction skills. It advocates for integrating structured peer collaboration in Saudi Arabia curricula to foster learner autonomy and error detection while promoting higher-order thinking and critical reflection. Collaborative writing creates a motivating environment that enhances persistence in language learning. The research supports blending individual and collaborative writing phases, calls for exploration of its long-term effects on diverse learners, and the potential role of technology. Overall, it presents collaborative writing as essential for developing linguistic competence, cognitive skills, and motivation in second/ foreign language education.

7. Conclusions

This study concludes that collaborative writing has a substantial and important effect on English language learners' writing skills. Students recognised the value of working together to improve grammatical accuracy and could correct errors more effectively in a peer-supported envi-

ronment. They also learned new words while collaborating with their co-learner, which supports the idea that working together helps learn new words. This active negotiation of language use among peers encourages active participation in fine-tuning word choices, which is important for language development. From a cognitive standpoint, collaboration facilitated the organization and elaboration of ideas, allowing learners to engage in deeper contemplation of content and structure. Collaborative writing involves social interaction that promotes metacognitive strategies, enabling learners to plan, monitor, and assess their writing processes more effectively than when working alone. This, along with the focus on developing content instead of perfecting language right away, boosts learners' confidence and creativity. The emotional and motivational benefits were also notable. The peers' task environment was seen as safe and supportive, which helped lower the stress and frustration that often come with writing in a foreign language. The increased motivation to engage with writing tasks in collaboration highlights how social support can boost learner persistence and enjoyment, ultimately enhancing the learning experience. Comparison of error rates demonstrated that students engaged in collaborative writing made fewer grammatical, lexical, and structural errors, thereby illustrating the practical efficacy of this method in actual writing outputs. This implies that collaborative writing enhances both linguistic precision and intricacy via interactive scaffolding and peer evaluation. Collaborative writing addresses linguistic, cognitive, affective, and social dimensions concurrently, offering a holistic framework that enhances language proficiency and learner motivation. Language teachers should use structured collaborative writing methods that stress peer interaction, idea negotiation, and scaffolded feedback to get the most out of these benefits and get students ready for real-world communication needs.

8. Limitations and Suggestions for Future Research

This study has some limitations. First, using convenience sampling from one university limits the generalizability of the findings. Future research may involve a larger, more diverse sample from multiple institutions. Second, the study focused on the immediate effects of collaboration on one set of tasks. Long-term research is necessary to see if the benefits of collaborative writing lead to lasting improvements in individual writing abilities. Third, students were paired with similar proficiency levels. Future studies could investigate the outcomes of pairing learners with different proficiency levels.

Author Contributions

Both authors contributed equally to the conception, design, data collection, analysis, and writing of this study. Both authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

Not applicable.

Informed Consent Statement

The subjects were assured that the responses given by them would be solely used for this research work.

Data Availability Statement

The data used in this study are available from the corresponding author upon reasonable request.

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Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Dear participants,

We are conducting research on **The Impact of Collaborative Writing on Grammatical Accuracy and Lexical Variety in Texts by EFL Learners**. We would be very thankful if you would kindly answer this questionnaire honestly.

*Your cooperation is highly appreciate*d.

Part (A)— Demographic Background

Name……(optional).

Gender: Male ☐ Female ☐

Age :

Part (B)— The Questionnaire

Collaborative Writing Perception Questionnaire Instructions:

Please indicate the extent to which you agree or disagree with each of the following statements.

Use the scale below:

Scale	Description
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Section A: Perceived Linguistic Benefits

No.	Item	1	2	3	4	5
1	Collaborative writing improved the grammatical accuracy of my final text.	☐	☐	☐	☐	☐
2	Working with a partner helped me to identify and correct my own grammatical errors.	☐	☐	☐	☐	☐
3	The collaborative process increased my attention to grammatical form.	☐	☐	☐	☐	☐
4	I acquired new vocabulary from my partner during the collaboration.	☐	☐	☐	☐	☐
5	Collaborating encouraged me to use a wider variety of words and avoid repetition.	☐	☐	☐	☐	☐
6	Negotiating word choice with my partner was a challenging aspect of the task. (Reverse-coded)	☐	☐	☐	☐	☐

Section B: Perceived Metacognitive and Ideational Benefits

No.	Item	1	2	3	4	5
7	Explaining my ideas to a partner helped me to clarify and organize my own thoughts.	☐	☐	☐	☐	☐
8	Discussing the writing task facilitated the generation of more developed ideas.	☐	☐	☐	☐	☐
9	The dialogue with my partner often prioritized content development over linguistic accuracy. (Reverse-coded)	☐	☐	☐	☐	☐

Section C: Perceived Affective and Social Dimensions

No.	Item	1	2	3	4	5
10	I felt anxious that my partner would negatively judge my language proficiency. (Reverse-coded)	☐	☐	☐	☐	☐
11	I experienced frustration during the collaborative writing process. (Reverse-coded)	☐	☐	☐	☐	☐
12	I found receiving feedback from a peer to be a valuable learning experience.	☐	☐	☐	☐	☐
13	I felt more motivated to complete the writing task when working with a partner than I would have alone.	☐	☐	☐	☐	☐

Section D: Overall Evaluation and Future Intentions

No.	Item	1	2	3	4	5
14	I found the collaborative writing activity to be an enjoyable experience.	☐	☐	☐	☐	☐
15	Overall, I prefer individual writing because it is more efficient. (Reverse-coded)	☐	☐	☐	☐	☐
16	I would be interested in participating in more collaborative writing activities in the future.	☐	☐	☐	☐	☐

Section E: Open-Ended Questions (Qualitative Depth)

1. What was the biggest benefit of writing with a partner?
2. What was the most challenging part of writing with a partner?
3. Do you feel your final collaborative text was better than one you would have written alone? Why or why not?
4. Please provide an example of something you learned from your partner during this activity (e.g., a new word, a grammar rule, a way to phrase an idea).

Appendix B

Participant/Task Flow:

Week	Activity	Condition	Data Collected
1	Orientation & Training	Both	Consent + Training Notes
2–3	Individual Writing	All	Baseline Text Samples
4–7	Collaborative Writing Tasks	Experimental	Paired Texts + Think-Aloud
8	Post-Test & Questionnaire	Both	Final Texts + Survey

Appendix C. LRE Coding Examples

LRE Type	Excerpt	Outcome
Grammar	"Should it be *has* or *have*?" → Corrected form	Accuracy gain
Lexis	"Is *huge* strong enough? Maybe *immense*."	Lexical variety increase
Meaning	"We need to explain why fans support teams."	Idea development

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