Dialogue in Enhancing EFL Writing Proficiency through Collaborative Synchronous and Asynchronous Computer-Mediated Communication

by

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Abstract

Writing is considered to be one of the most challenging skills for English as a Foreign Language (EFL) learners in China. To improve students' writing skills, this study explored a pedagogical strategy that blends collaborative writing with the use of computer-mediated communication (CMC) technology in EFL contexts. Despite solid evidence supporting the benefits of computer-mediated collaborative writing (CMCW) tasks in L2 writing, little is known about the influence of CMC modalities on the efficacy of CMCW tasks. This qualitative case study, conducted within a sociocultural framework, particularly Swain's concept of collaborative dialogue, examined how different task modalities influence the effectiveness of CMCW tasks in the Chinese EFL context. Sixteen EFL learners completed an online collaborative writing project on Tencent Docs™ via two modalities: A synchronous CMC (SCMC) modality entailing text chat in WeChat™ and an asynchronous CMC (ACMC) modality with delayed interactions on Tencent Docs™. Following the project, semi-structured interviews involving stimulated recall were conducted to investigate the learners' perceptions regarding these two patterns of communication. The analysis of these interviews, coupled with insights gleaned from the learners' reflective journals collected throughout the writing project, indicated that although both SCMC and ACMC modalities were perceived beneficial for writing development, EFL learners had more positive learning experiences in the SCMC modality than in the ACMC one. The findings revealed several challenges that require attention when implementing CMCW in EFL teaching contexts, particularly where students possess weaker English proficiency and little collaborative writing experience. EFL instructors are suggested to provide more training sessions and offer appropriate guidance and feedback throughout the collaborative writing process.

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Key Terms and Acronyms

Acronym	Full Term	Brief Description or Definition
ACMC	Asynchronous Computer-mediated Communication	Communication via computer that not occurs in real time
CET-4	The College English Test – Band 4	National English as a foreign language test in China
CMC	Computer-mediated Communication	Communication that occurs through the use of computer
CMCW	Computer-mediated Collaborative Writing	An activity in which students interact and support one another's writing utilizing online platforms
EFL	English as a Foreign Language	Learning English in a non-English-speaking country
ESL	English as a Second Language	Learning English in a country where English is dominantly spoken or the official language
FTF	Face-to-face	People who are within each other's sight or presence
IELTS	International English Language Testing Systems	An international standardized test of English language proficiency for non-native English language speakers
L1	First Language	A person's native language
L2	Second Language	A language spoken in addition to one's first language
LREs	Language Related Episodes	A segment in the learners' talk where learners reflect on the language used and negotiate meaning and form
SCMC	Synchronous Computer-mediated Communication	Communication via computer that occurs in real time
SCT	Sociocultural Theory	An emerging field of education that looks at the contributions of society and culture to individual development
SLA	Second Language Acquisition	The process by which people learn a second language
ZPD	Zone of Proximal Development	The difference between what a learner can do without help and what they can achieve with guidance from a skilled partner

CHAPTER ONE: INTRODUCTION

Background of the Study

Interaction is an essential condition for *second language* (L2) acquisition (Dobao, 2016). From the cognitive perspective, interaction provides opportunities for learners to notice gaps in language knowledge, negotiate meaning and form, receive comprehensible input and corrective feedback, as well as modify their own linguistic output, which promotes L2 development (Long, 1983, 1996). As learners engage in interaction, they employ communicative techniques like paraphrasing, repeating, and seeking clarification as they become aware of the gaps in their existing language knowledge. From a sociocultural perspective, learning is a socially constructed activity where interaction offers possibilities for learners to co-construct knowledge in collaboration with an interlocutor to pursue common goals (Vygotsky, 1978). Justified through sociocultural theory (SCT), Swain (2000) defined such interactive dialogue as collaborative dialogue "where learners actively participated in problem-solving and knowledge-building" (p. 102). Numerous studies have examined the relationship between collaborative dialogue and L2 learning by focusing on *Language-related episodes* (LREs) as a unit of analysis (Bao, 2020; Lázaro-Ibarrola & Hidalgo, 2022; Zeng, 2017). Empirical evidence has shown that the LREs generated during learners' collaborative dialogue represent ongoing progress in L2 learning (Swain & Wanatable, 2013). From this theoretical standpoint, language use and language learning occur concurrently in collaborative dialogue (Swain & Lapkin, 2002).

A large volume of recent research has emphasized the significance of writing as a meaningful and productive language use, highlighting its role in facilitating language development (Shintani, 2019; Williams, 2012). *Collaborative writing*, in particular, has been recommended by many researchers and practitioners because it involves pairs of learners sharing

responsibilities to co-create a written text, fostering optimal conditions for peer interaction and providing a social-cognitive activity for L2 learning (Storch, 2013; Swain, 1995). As an effective instructional activity widely adopted in L2 classrooms, collaborative writing improves audience awareness and learning motivation (Storch, 2012), increases attention to language forms and discourse (Lin & Yang, 2011), and provides opportunities to apply newly-acquired language knowledge (Elola & Oskoz, 2010). The co-construction of the text enhances L2 writing through joint scaffolding and languaging, enabling learners to identify gaps in their own knowledge and discuss these aspects of language (Hanjani & Li, 2014). Consequently, the process of collaborative writing promotes the sharing of new information and L2 knowledge building.

Due to the prevalence of online learning and increasing advancement of Web 2.0 technologies (e.g., Blogs, Wikis, and Google Docs™), there is a thriving interest in integrating *computer-mediated communication* (CMC) into L2 learning contexts (Zhang et al., 2021). Pedagogically, CMC has been proven to be an effective tool for creating learner-centered learning communities (Darhower, 2002). Within this context, *computer-mediated collaborative writing* (CMCW) has gained popularity as a pedagogical and research focus in L2 writing. CMCW involves two or more learners collaborating and co-constructing a single text in online settings (Storch, 2013). Due to its time/space independence, ease of use, and high interaction through synchronous and asynchronous communication, numerous studies have demonstrated that web-based collaborative writing facilitates collective scaffolding (Donato, 1994; Li & Kim, 2016) and promotes attention to form (Aydin & Yildiz, 2014; Elola & Oskoz, 2010; Hsu, 2019; Jiang & Eslami, 2021), leading to improved writing quality.

Web 2.0 collaborative writing technologies offer abundant opportunities for learners to communicate, write together, and support each other's learning beyond the time limitations of

traditional onsite classrooms. Computer-mediated collaborative dialogues bring together essential elements for L2 writing development: peer interaction and co-regulated written production. These technologies align with social and interactionist approaches to L2 writing, combining the potential for eliciting and providing scaffolding, pooling resources to resolve language problems, collectively constructing L2 knowledge, and encouraging modified output (Mohamadi Zenouzagh, 2020, 2022; Storch, 2019). Learners have more opportunities to negotiate meaning and critically analyze linguistic forms through online discussion. Experimental CMCW studies have investigated the effectiveness of CMC in enhancing writing quality, such as more complex language use (Mohamadi Zenouzagh, 2020, 2022), more accurate writing (Cancino & Panes, 2021), and fluent text (Xu & Yu, 2018). Furthermore, achievement studies have revealed CMCW's positive impacts on learners' psychological and affective factors, including increased positive perception (Cequeña, 2020), motivation (Azkarai & Kopinska, 2020), enjoyment (Zhang et al., 2021), and self-confidence (Hong et al., 2021).

Web-based collaborative writing technologies can be categorized into two types based on their collaborative features: *synchronous computer-mediated communication* (SCMC) and *asynchronous computer-mediated communication* (ACMC). An example of SCMC is Google Docs™, which plays a crucial role in enhancing learners' motivation and engagement in learning English as a Foreign Language (Liu & Lan, 2016). It offers simultaneous collaborative opportunities, facilitates the writing process, and provides great transparency and ease in the collaboration process (Kessler, 2009; Kessler et al., 2012). On the other hand, researchers primarily explore Wikis as a representation of ACMC, which has been shown to enhance self-confidence, writing quality, critical thinking, interaction, and perceptions toward L2 learning

(Elola & Oskoz, 2010; Kennedy & Miceli, 2013; Woo et al., 2011). These two modalities can exhibit significant differences that greatly impact writing activities (Olson et al., 2017).

SCMC has emerged as an alternative to *face-to-face* (FTF) communication. To date, much of the research has compared FTF modality with SCMC modality (e.g., Jiang & Eslami, 2022; Rouhshad & Storch, 2016; Torres & Cung, 2019; Zeng, 2017). Although some attention has been given to SCMC and ACMC, researchers have predominantly focused on exploring students' perceptions toward writing tasks conducted either synchronously (Abe, 2020; Bikowski & Vithanage, 2016; Hsu, 2019) or asynchronously (Cho, 2017; Krishnan et al., 2019; Liang, 2010) as separate entity. There is a lack of research comparing students' perceptions toward the effectiveness of SCMC and ACMC, two common text-based CMC modes, during online collaborative writing. The attitudes and perceptions of students regarding CMCW are diverse and remain inconclusive. Additionally, very few studies dealt with virtual collaborative writing of university students in *English as a foreign language* (EFL) context. Therefore, this study aims to provide a comprehensive comparison and examination of tertiary students' experience and perception toward SCMC and ACMC in the EFL context of China. This exploration of modalities is crucial given the increasing relevance of computer-mediated activities in today's technology-driven language classrooms (González-Lloret, 2020). The focus of this thesis is on how learners' attention to each other's language use during online collaborative writing tasks affects their language learning process.

Statement of the Problem

In the context of Chinese EFL learners, writing skill is considered to be one of the most challenging skills and its acquisition often occurs at later stages of language development, once language comprehension (reading and listening skills) has been firmly established (Ferreiro &

Teberosky, 1982). This difficulty is reflected in the *International English Language Testing System* (IELTS) average scores for writing among Chinese students. The average IELTS band score for writing is 5.5 in China, ranking among the twelve lowest scores out of 40 countries (IELTS, 2022). EFL learners generally hold negative perceptions toward writing, making it the least favored skill to be learned (Jabali, 2018). One possible cause of this issue is that the traditional teacher-centered, product-based approach to writing instruction has been prevalent for many years in China. Writing is often utilized as a medium to practice grammar and vocabulary, while teachers primarily focus on grammatical and lexical errors, paying less attention to the writing content itself. Chinese students often work on their writing tasks individually, with minimal interaction with peers. As a result, it becomes imperative to give special attention to teaching writing in EFL contexts (Alghasab & Handley, 2017).

Accordingly, attention is needed to examine whether the use of text-based SCMC and text-based ACMC in collaborative writing among EFL students can achieve improved writing outcomes. Comparing those two common modes can significantly contribute to English writing research and pedagogy, benefiting EFL instructors who are implementing CMCW projects. It would help them design tasks and select appropriate text-based CMC modes to foster effective peer collaboration. However, despite its importance, there remains a dearth of purely qualitative studies that have delved into students' perspectives and experiences regarding synchronous and asynchronous CMC modalities, particularly within EFL contexts. This study thus aims to address this gap by qualitatively investigating students' views of these two CMC modalities within a sociocultural theoretical framework, particularly focusing on Swain's (2000) concept of collaborative dialogue.

Purpose of the Study

Given that learners' perceptions about the writing activity may influence their engagement and learning outcomes (Storch & Wigglesworth, 2010), it is important to examine students' perceptions of different communication modalities in computer-mediated collaborative writing and how they impact student's participation in text co-construction and L2 writing development (Storch, 2021a). Motivated by the increasing impact of computer-mediated communication (CMC) on collaborative writing contexts, particularly the role of CMC in creating a socially supportive environment for peer interactions and language learning opportunities (Saeed et al., 2018), the first purpose of this study is to analyze learners' perceptions of the benefits and challenges of SCMC and ACMC in collaborative writing. Next, the research aims to investigate how the students themselves gauge their own improvement in the CMCW process. By examining the students' attitudes on the improvement of their writing skills as well as their perceptions toward SCMC and ACMC modalities in collaborative writing, this study endeavors to bridge the existing research gap and provide valuable pedagogical insights for EFL teachers who wish to integrate web-based collaborative writing tasks into their instructional approaches. The objective of the research is three-fold: (1) to extend EFL writing pedagogy through the use of CMC, (2) to provide EFL learners opportunities for student-centered writing, and (3) to expose EFL learners to the potential advantages of peer interaction. Specifically, two central questions were addressed in this study:

- How do EFL students perceive the benefits and challenges of SCMC and ACMC modalities in collaborative writing tasks?
- To what extent do the EFL students evaluate their writing skills improve through synchronous and asynchronous computer-mediated collaborative writing process?

CHAPTER TWO: LITERATURE REVIEW

Sociocultural Theory

In a language learning context, Sociocultural Theory (SCT) is a theoretical framework that emphasizes the significance of collaboration and social interaction in the process of learning and development (Vygotsky, 1978). Language serves as a mediating tool, assisting learners in co-constructing knowledge and problem-solving through their interactions with others (Vygotsky, 1978). The sociocultural perspective highlights the idea that language learning and development are deeply rooted in social events that occur during collaborative activities among learners (Powell & Kalina, 2009). Knowledge is not solely built by individuals but is shaped through group interactions, leading to transformations in individual understanding (Donato, 2004). Consequently, learners are encouraged to take an active role in group collaboration and share knowledge in order to gain meaningful learning. For language learners, this means that learning is not an isolated experience; it involves interaction with others, which enhances motivation and increases students' determination and interest in language learning. Language teachers, therefore, should adopt an approach that prioritizes interaction and combines it with theoretical justifications to effectively navigate different learning contexts, ultimately enhancing students' language skills and promoting long-term learning (Donato, 2004).

At the core of SCT lies social interaction, where individuals and their social contexts are closely connected, and various factors, such as parents, teachers, and peers, play a crucial role in language learning (Vygotsky, 1978). According to Lantolf and Thorne (2006), human cognitive growth encompasses both lower-order and higher-order mental functions. Although lower-order functions are genetically predetermined to perform basic tasks, higher-order functions, like voluntary attention and rational thinking, emerge through the interaction of biological and

cultural factors. Social interaction facilitates the transformation of potential abilities from lower-order forms into more sophisticated higher-order forms (Lantolf & Thorne, 2006).

Sociocultural theory suggests that human mental functioning is mediated by cultural artifacts and social activities, with language playing an essential part. The theory goes on to claim that cognitive development is intricately tied to how individuals interact with society and their natural environments. The sociocultural framework contains key constructs such as mediation, internalization, the zone of proximal development (ZPD) and scaffolding, which have become the building blocks for various educational pedagogies in second language learning, including peer interaction and collaboration (Lantolf & Thorne, 2006). Those theoretical concepts offer valuable insights in understanding the role of social interaction and cultural mediation in language learning and development.

Mediation

Vygotsky's (1930/1981) mediation ideas suggest that humans establish connections with the world through various forms of mediation, including physical tools (e.g., dictionaries) and semiotic systems (e.g., languages). In the field of *second language acquisition* (SLA) research, Vygotsky (1930/1981) emphasizes that the focus should not be solely on the structural facets of the language system itself, such as grammar or vocabulary, but rather on the social interaction that occurs through the mediating tool of language. The process of individual development involves a close interconnection between social culture and individual psychological activities. Individuals engage in external social and cultural activities and internalize external social speech through the mediation of language into their intrapsychological plane (Vygotsky, 1930/1981).

Mediation, as explained by Lantolf and Thorne (2007), is a form of regulation and constitutes a central aspect of Vygotsky's sociocultural theory. Vygotsky (1930/1981) proposed

three types of mediation: object-regulation, other-regulation, and self-regulation, which align with Kozulin's (1998) three categories of mediators: material tools, other human beings, and psychological tools (Kozulin, 1998; Lantolf & Thorne, 2007). Mediation involves the use of these supplemental tools to transform one's mental state, with language being a significant symbolic tool. From a sociocultural perspective, the goal of participating in collaborative dialogue is to improve learners' self-regulation of the target language (Lantolf & Thorne, 2006). When engaged in collaborative dialogue, language, as a psychological tool, does not merely facilitate mental actions that might not have happened otherwise; instead, it fundamentally alters the flow and structure of mental functions (Vygotsky, 1930/1981). As learners acquire mastery over language as a meaning-making system and become better able to employ it, learners can enhance and develop their cognitive activity, including their performance in a second language (Lantolf, 2012). Self-regulation becomes evident when learners autonomously demonstrate the acquired activities and practices, internalizing and automating them (Winne & Hadwin, 2013). This ability allows for independent linguistic performance, empowering individuals to determine correct language use and solve problems autonomously (Lantolf & Thorne, 2006).

Internalization

As discussed in the previous section, Vygotsky's (1978) notion of internalization identifies that humans can acquire new information through engaging in social interactions. In other words, *internalization* refers to the process that an individual internalizes ideas from their surroundings. Through social interaction and engagement with others or external mediation devices, an individual's knowledge undergoes a transformative process, leading to the acquisition of new knowledge. This process involves cognitive-psychological activities (e.g., analysis and problem-solving) which are developed from sociocultural activities, particularly from

collaborative practices. As a result, the newly acquired knowledge becomes internalized and becomes the individual's own possession (Stetsenko & Arievitch, 1997). Over time, learners progressively reduce their level of reliance on external mediation and increase their level of reliance on internal mediation.

Zone of Proximal Development

The *zone of proximal development* (ZPD) describes how learning entails a continual progression from the learner's present level of intellectual functioning to a higher level that approaches their maximum potential (Vygotsky, 1978). Influenced by social interaction, ZPD is concerned with the gap between what learners can do on their own (their actual development) and what they can accomplish with help (their potential development). According to Warschauer (1997), collaborative learning is essential for assisting students in progressing within their ZPD. Collaborative discussion and other mediated activities inside a learner's ZPD enable the control of linguistic characteristics to move from the interpersonal plane (between people) to the intrapersonal plane (within a person). Collaborative interactions play a critical role in promoting the establishment of the ZPD, and the support offered within ZPD helps learners bridge the knowledge gap between what they already know and what they are capable of learning (Kozulin, 2002; Ortega, 2009).

Development in the ZPD requires the establishment and maintenance of intersubjectivity. During a collaborative text revision task, De Guerrero and Villamil (2000) observed the interactions between two second language learners and claimed that intersubjectivity is necessary for the creation and maintenance of ZPD. According to Wertsch (1985), individuals may join a communicative setting with a divergent level of skills and understanding; their opinions thus need to be incorporated into a momentarily shared understanding of the work in order to engage

in collaborative conversation inside the ZPD. Intersubjectivity is described as "the point of mental integration where separate minds come to share a common perspective and an equal level of commitment to the task" (De Guerrero & Villamil, 2000, p. 55). To ensure effective collaboration, it is crucial for learners to engage in negotiation and compromise, working collaboratively towards a shared goal.

ZPD serves as the starting point for learning, with sociocultural tools playing a mediating role and language holding a particular significance. Within the realm of L2 writing education, collaborative dialogue provides learners chances to collaboratively navigate writing tasks, effectively bridging the divide between personal experiences and task-specific requirements.

Scaffolding

Scaffolding is an important concept within sociocultural theory that complements ZPD and effectively supports collaborative dialogue in the writing classroom (Wood et al., 1976). *Scaffolding* is an instructional strategy that supports learning in the ZPD, assisting students in moving to the next level of understanding with the guidance of more knowledgeable people, including teachers, peers, and adults (Powell & Kalina, 2009). Bruner (1966) highlighted the importance of providing structured assistance that adapts to the learner's developmental level to facilitate ZPD. Building on Bruner's (1966) concepts, Donato (1994) proposed the idea of "collective scaffolding" and suggested that advanced participants might, through speech, provide a supportive environment in which novices can meaningfully engage and develop their skills. According to this viewpoint, scaffolding was initially focused on interactions between experts and novices, typically adults and children, where teachers might first provide examples of learning techniques or activities before progressively handing over control to students (Antón & Dicamilla, 1999; Ohta, 2000). However, several studies have emphasized that scaffolding is not

just one-way assistance provided by an expert to a novice. Instead, it may also take place among novices, when both learners assume the role of an expert and mutually help each other through collaborative communication (De Guerrero & Villamil, 1994, 2000; Storch, 2002; Yong, 2010). Language learners, regardless of their language proficiencies, are simultaneously novices and experts who can achieve higher levels of development through group interactions rather than individual efforts. Peer scaffolding, which involves peers generating meaning together through interactive exchanges, integrates the cognitive and social components of language that stimulate learners' thinking processes and knowledge production (Zhang, 1995).

Peer interaction and collaborative activities offer effective instructional approaches to increase scaffolding in the language classroom. Effective language scaffolding, according to Hanjani and Li (2014), should satisfy three requirements: drawing peer attention to the problem sources, providing clarification or solutions, and broadening the scope of the present task to provide learners with opportunities to enhance their writing proficiency. Hannafin and Land (1997) argue that scaffolding extends beyond teacher-student or peer-to-peer interactions, with technological tools having a big impact on individual learning. In the context of language learning, Mavrou et al. (2010) and Gutierrez (2006) highlight the contribution of educational software applications and computer-assisted learning tools in fostering language conversations and the co-construction of linguistic knowledge in group projects. Learners may enhance their knowledge through support and guidance from teachers, more knowledgeable peers, or from educational tools and learning applications available in today's technology-driven world.

To summarize, sociocultural theory provides a conceptual framework that highlights the significance of collaboration and social interaction in language learning and development. It emphasizes the co-construction of knowledge through social interactions and the influence of

social events on learning. ZPD and scaffolding are crucial in facilitating learning and bridging the gap between learners' current and potential developmental levels. Collaboration and peer scaffolding in the writing classroom create opportunities for learners to collectively negotiate writing tasks and enhance their writing skills. Overall, sociocultural theory underscores the interplay between social interaction and cognitive development, offering valuable insights for effective instructional practices in second language learning.

Peer Interaction and Collaborative Dialogue

Interaction in language learning contexts has been examined through two primary approaches: the *interactionist approach* and the *sociocultural approach*. The traditional interactionist approach to peer interaction in second language learning focuses on negotiating meaning to achieve mutual understanding. It emphasizes the significance of Krashen's (1982) concept of comprehensible input, Swain's (1985) comprehensible output, and Long's (1996) interaction hypothesis. Comprehensible input is promoted when L2 learners interact and negotiate meaning during instances of communication breakdown, which further facilitates second language acquisition (SLA) (Ellis, 1997). However, comprehensible input alone is insufficient for SLA; L2 learners must also produce comprehensible output – they need to put language into use and make their output understandable (Swain, 1985). Swain (1995) introduced the concept of "comprehensible output" and identified its two functions: hypothesis testing and metalinguistic functions. In the hypothesis testing function, L2 learners start to make hypotheses about the target language through their outputs and test whether they are acceptable or not (Swain, 2005). In contrast, the metalinguistic function, known as a reflective role, is when L2 learners do not hypothesize their output but reflect their metalinguistic knowledge on their output consciously with other learners (Swain, 1995, 1997). Language acquisition, therefore, from the

interactionist perspective, is an individual's linear cognitive process that consists of input-intake-output through interaction.

However, the interactionist approach overlooks the socially constructed nature of peer interaction, leading to a limited understanding of the role of interaction in language learning (Swain, 2000, 2001). The sociocultural approach, in contrast, highlights collaboration and the co-construction of knowledge and meaning within a social context, which is best exemplified by Swain's (2000) concept of collaborative dialogue. Swain (2000) re-evaluated the output hypothesis from a sociocultural standpoint and introduced collaborative dialogue as an alternative construct. Donato (2004) considers collaboration a potent concept that recognizes the significance of mutual learning, shared goals, and collective relationships among learners. Within this theoretical framework, language learning emerges through the social mediation of collaborative activities.

Therefore, the sociocultural approach focuses on the dynamic and dialogic character of peer interaction and provides valuable insights into its influence on language learning. Swain's (2000) collaborative dialogue is especially beneficial in understanding peer collaboration and its influence on L2 learning. Learners engage in discussions about the meaning of specific linguistic items and the appropriateness of L2 forms, and provide assistance to one another during collaborative interaction (Yilmaz, 2008). Unlike the interactionalist perspective, learners' focus on L2 is not solely due to communication breakdowns or to render meaning comprehensible to others, but rather to mutually develop meaning more effectively (Swain, 2005). Learners' enthusiastic engagement in collaborative dialogue arises from their motivation and excitement in pursuing a shared goal with a sense of responsibility to accomplish the joint task successfully (Zeng & Takatsuka, 2009). This idea aligns very well with the core principles of sociocultural

theory, which posits that learning is a mediated process that employs language as a thinking tool (Lantolf & Thorne, 2006).

Collaborative dialogue represents an intersubjective space oriented toward the ZPD, where learners engage in the process of joint problem-solving and knowledge building. Kim (2008) discovered that scaffolding occurs not only between novices and experts, but also among peers in pair or group work, with both learners taking on the role of an expert and supporting each other. Since each learner possesses diverse linguistic strengths and weaknesses, their collaboration enables them to combine different types of L2 linguistic knowledge to complete shared tasks through interactive dialogues. Scaffolding through peer collaborative dialogue empowers learners to achieve higher levels of performance than they might attain working individually. As they work together toward common task goals, learners become active contributors, pooling their knowledge and resources for joint decision-making and problem-solving. Consequently, learners' mutual attention to language during collaborative dialogue is not necessarily a result of communication breakdown as suggested in the traditional interactionist approach, but rather a collaborative effort to enhance joint performance. This joint endeavor to construct knowledge collaboratively allows them to access each other's ZPD, resulting in assisted performance (Ohta, 2000). Therefore, collaborative dialogue serves as both a cognitive and social tool that mediates L2 language learning (Swain, 2000). In a longitudinal study, Shehadeh (2011) and Salem Aldossary (2021) investigated the impact of collaborative dialogue on L2 writing and revealed that learners who worked in pairs or small groups showed greater improvement in content and organization than those who worked individually.

It should be pointed out that the use of learners' native language (L1) can be valuable in handling collaborative dialogue tasks. L1 serves as a scaffold, enabling learners to generate ideas

and aiding cognitive processes in language learning (Storch & Aldosari, 2010). Establishing intersubjectivity is important when faced with challenging tasks. Antón and DiCamilla (1999) highlighted the significance of L1 as a communication tool to help establish intersubjectivity, particularly among students who share the same L1 and have low proficiency in the L2. L1 proficiency made language learning easier, enabling students to draw comparisons between their newly acquired language knowledge and existing knowledge of L1 (Brooks-Lewis, 2009). Using L1 in discussions helps mediate cognitive processes for problem-solving tasks, supporting learners to reflect on both content and language form.

Researchers so far have been analyzing the occurrence of language-related episodes (LREs) to investigate collaborative dialogues between language learners. Swain and Lapkin (1998) defined LREs as instances in a conversation where learners discuss the language they are using, question their language choices, and correct themselves or others. Generally, an LRE begins with identifying a language problem and concludes with finding a solution. LREs offer valuable units to comprehend and track the process of L2 learning because they represent in their entirety the initiation, noticing, discussion, and resolution of a language item (Swain & Watanabe, 2013). These episodes are often categorized based on their focus, such as lexis or grammar, and their outcome, whether correctly resolved, unresolved, or incorrectly resolved. Leeser (2004) further explains that LREs encompass various kinds of interactions, where learners may inquire about meaning, the correct spelling or pronunciation of a word, the appropriate grammatical form, or implicit/explicit corrections of their own and the other's word usage, forms and structures. Among these interactions, the vocabulary-focused aspects constitute a significant portion of LREs, which aligns well with the present study, as writing proficiency relies primarily on L2 learners' stored vocabulary (Susanto, 2017).

Several studies have employed LREs as a key analysis unit when exploring peer interaction and collaborative dialogue. Overall, research findings reveal that learners generate and resolve a considerable number of LREs, with a primary focus on lexis and grammar (Dobao, 2012; Hsu, 2019; Li, 2018). Additionally, studies have documented how various variables, such as learner proficiency level, task types and pair dynamics, can influence collaborative dialogues, with the majority of these studies conducted in classroom settings. Leeser (2004) examined the frequency, type and outcome of different proficiency parings and suggested that as learner proficiency increased, so did the number, variety, and successful resolution of LREs. Swain (1998) and William (2001) found that collaborative work can be particularly beneficial for higher proficiency learners. Alegría de la Colina and García Mayo (2007) investigated low proficiency learners' attention to form across various collaborative tasks and observed that when working together, lower proficiency learners not only generated numerous LREs but also successfully and correctly resolved most of them. More recently, Bao (2020) explored the nature of collaborative dialogue among complete beginners of Chinese as a foreign language. Although Bao (2020) found that some pairs with weaker linguistic abilities did not correctly resolve over half of the LREs, they suggested that most lower proficiency pairs still benefited from engaging in collaborative dialogue. This indicates that patterns of interaction may have a more significant impact on language learning than L2 learners' proficiency level.

Storch (2001, 2002, 2004) conducted investigations into the nature of pair interaction patterns among adult English as a second language (ESL) learners in classroom settings. Using two dimensions – equality (authority over the task and level of contribution) and mutuality (engagement with the contributions of others) – Storch (2002, 2004) identified four distinct interaction patterns among L2 learners: (1) collaborative (learners work together and assist each

other), (2) dominant/dominant (learners do not engage with the each other's contributions), (3) dominant/passive (one learner is authoritative, and the other is subservient), and (4) expert/novice (the more knowledgeable learner provides other-regulation to the less knowledgeable learner). Storch (2001, 2002, 2004) found that collaborative and expert/novice interaction patterns were more beneficial to language learning compared with the other two patterns. Similar findings were reported by Li and Zhu (2013, 2017) in a web-based environment where pairs demonstrating collaborative pair/group dynamics (high mutuality in collective and expert/novice patterns) produced higher writing quality and had more learning opportunities. Furthermore, Storch and Aldosari (2013) explored pair work in a Saudi context and observed that pairs with similar proficiency levels were more inclined to form collaborative relationships compared to pairs with a significant proficiency gap. Collaborative dialogue offers all task participants, regardless of their proficiency, opportunities to use language as a cognitive tool to enhance aspects of their L2 that are not fully self-regulated. In addition to language proficiency, Walls (2018) indicated that personality traits could influence peer interactions. Extroverted students often display leadership qualities and take on more active roles, while shy students tend to become passive members, resulting in less equitable relationships within peer groups.

Collaborative tasks such as form-focused dictogloss and meaning-focused jigsaw are instrumental in promoting collaborative dialogue. Dictogloss activity is a type of supported dictation where learners listen to a brief text twice at regular speed and then write down words to assist them remember it. After that, the dyad collaborates to rebuild and compose the text. This task helps students detect interlanguage gaps, reflect on their output, and discuss form and meaning in the writing process (Kowal & Swain, 1997). Jigsaw task, on the other hand, is an information gap task in which participants exchange information and knowledge to build a

cohesive and coherent text collaboratively. It is an activity designed to promote negotiation on meaning. These two common collaborative tasks involve dyadic interaction and creation of a final product that encompasses both language form and content (Swain, 2001). Collaborative writing is one such activity that strongly relies on learners' output. For the current study, written output in the form of text-based dialogues is utilized in SCMC and ACMC settings.

Collaborative Writing

Over the past decade, collaborative writing has seen a significant surge in theoretical and empirical studies (Lazaro-lbarrola, 2023; Storch, 2021). Collaborative writing, as defined by Storch (2019), involves two or more authors jointly producing one single text, where all writers have control over the content, structure, and language of their written product. Studies focusing on adult students writing together and individually have revealed that learners produce higher-quality texts when writing in pairs. Specifically, learners tend to produce texts of greater accuracy (Dobao, 2012; Teng & Huang, 2021; Wigglesworth & Storch, 2009) and increased lexical and grammatical complexity (Villarreal & Gil-Sarratea, 2020). In addition to examining the writing outcomes, collaborative writing also provides insights into the writing process through the analysis of students' oral conversations while writing. Overall, researchers have specifically focused on the learners' production of LREs and indicate that learners usually generate and resolve a considerable number of LREs, with a primary focus on lexis and grammar, and occasionally on punctuation and spelling (Lázaro-Ibarrola & Hidalgo, 2022).

Findings from several studies have demonstrated the effectiveness of collaborative writing in L2 classrooms (e.g., Al Tai, 2015; McDonough et al., 2018; Mohamadi Zenouzagh, 2020) as well as learner attitudes toward collaborative writing (e.g., Alkhalaf, 2020; Dobao, 2020; Dobao & Blum, 2013). In general, these studies have consistently highlighted the

numerous benefits of collaborative writing on L2 learning. According to Manchón (2020), L2 writing activities facilitate L2 learning through their slower pace for reflection on language and their demand for greater precision and accuracy compared to oral output. Collaborative L2 texts exhibit better syntactical complexity and lexical and grammatical accuracy when compared with individual writing (Dobao, 2012; Shehadeh, 2011; Wigglesworth & Storch, 2009). Such improvement is attributed to the reciprocal support and scaffolding that L2 learners provide each other through collaborative dialogue, such as advising, instructing, and offering solutions to problems (Hanjani & Li, 2014). Research reveals that in the process of writing together, learners focus not only on grammar and lexis accuracy but also on discourse (Storch, 2002; Swain & Lapkin, 1998). Collaborative dialogue leads to enhanced written products by directing learners' attention to certain linguistic problems, sharing knowledge about the target language, and offering learners solutions to the problems. Learners are given opportunities to seek advice from peers, inquire about uncertainties, and accept advice. Consequently, they often express positive attitudes about collaborative writing tasks (Calzada & García Mayo, 2021; Lázaro-Ibarrola & Villarreal, 2021; Storch, 2013), suggesting that collaborative writing may positively impact students' task motivation, counterbalancing the inherent challenges of individual L2 writing (Lázaro-Ibarrola, 2023).

However, limited research up until now has explored the occurrence of collaborative dialogue during pair/group activities in less structured contexts outside the classroom, like self-access learning environments where teacher feedback and modeling are not likely to happen. The current research seeks to fill this gap by investigating the occurrence of collaborative dialogue within informal learning contexts where students have more autonomy over their learning. It may

shed light on the potential benefits and challenges of self-access learning environments in promoting collaborative learning and facilitating students' acquisition of L2 writing skills.

Collaborative Writing Activities

Collaborative writing in previous research has been mainly categorized into two types: task-based activities typically conducted in the classroom (Dobao, 2012; Storch, 2019) and project-based activities involving a series of tasks completed both in and outside of class (Chao & Lo, 2011; Krauss & Boss, 2013; Laur, 2013). Storch (2013) defines task-based collaborative writing activities in class as focusing on both the meaning (e.g., jigsaw activity) and language aspects of writing (e.g., dictogloss activity). Several other researchers use terms such as "collaborative writing project" (Zhai, 2021, p. 2) or "collaborative project" (Caple & Bogle, 2013, p. 198) to refer to project-based collaborative writing, which spans several weeks and involves in-class and after-class tasks for a writing project. While both types of collaborative writing entail substantive student interactions at all writing stages and shared decision-making power in producing a single written text, the key difference lies in the timing and place of activity completion. Instructors are encouraged to incorporate authentic group projects to enhance students' motivation and promote active participation among group members. An illustrative instance is Mak and Coniam's (2008) study, where ESL students worked in small groups and collaboratively produced a school brochure for distribution to their parents.

Over the past three decades, collaborative writing has garnered significant research interest, and its benefits have been identified across different learning contexts. Numerous studies have demonstrated L2 learning and development opportunities in task-based collaborative writing among young (Daiute, 1986), secondary (Villarreal & Gil-Sarratea, 2020; Villarreal et al., 2021), and college-level learners (Chen & Yu, 2019; Elola & Oskoz, 2010). With

the rapid development of Web 2.0 technological tools, synchronous and asynchronous online writing made project-based collaborative writing receive renewed attention (Caple & Bogle, 2013; Chao & Lo, 2011).

However, the practical implementation of collaborative writing faces challenges, including students' reluctance (Storch, 2013) and teachers' lack of knowledge and skills in incorporating collaborative writing tasks (Zheng et al., 2021). Collaborative writing tasks generally take longer because students need more time for interaction while composing (Dobao, 2016). In contexts with limited class time and multiple learning objectives in China, these tasks may not be feasible due to time constraints with group assessment. Moreover, although many studies report positive feedback on collaborative writing, questions remain about whether it truly benefits individual writing development, and concerns are raised about fairness and reliability when assigning group grades based on co-constructed text quality (Bissoonauth-Bedford & Stace, 2015). Nevertheless, these challenges might be mitigated by wider and more effective adoption of collaborative writing. There is a growing need for deeper insights into L2 students' lived experiences to enhance the understanding of collaborative writing as a potentially promising tool for achieving successful language learning and writing outcomes (Storch, 2019; Villarreal & Gil-Sarratea, 2020). This study, hence, seeks to make learner voices heard by focusing on learners' own perceptions of collaborative writing in EFL contexts and provide useful pedagogical implications for EFL writing instructors.

Computer-Mediated Collaborative Writing (CMCW)

With the help of technological tools, computer-mediated communication (CMC) in language learning environments combines two crucial components: peer interaction and L2 output (Abrams, 2016). Sociocultural theory (STC) emphasizes the significance of peer

interaction and meaningful L2 written production in CMC settings (Vygotsky, 1978). It suggests that language development occurs through social interactions where language serves both as a means for mediating communication and as a cognitive tool for co-constructing meaningful L2 knowledge (Swain & Lapkin, 1998). Participating in computer-mediated collaborative writing tasks, learners can seek and offer scaffolding, collaborate to resolve linguistic challenges, and collectively build L2 knowledge (Li & Kim, 2016; Storch, 2019). Research aligned with STC has consistently demonstrated the value of learner interaction and coregulation in L2 development (Mohamadi Zenouzagh, 2018, 2020, 2023). As students engage in collaborative learning processes, they develop epistemic agency by taking on individual and shared responsibilities to foster a study environment that encourages information negotiation and problem discussion from diverse perspectives (Yücel & Usluel, 2016). The flexible and comprehensive support available in CMC, encompassing technical, communicative, and cognitive aspects, empowers learners to negotiate and find common ground on how and what they learn (De Backer et al., 2022; Karaoglan Yilmaz & Yilmaz, 2019).

The prevalence of CMC in higher education has grown significantly to facilitate interaction among individuals. CMC has garnered praise for its ability to boost student motivation, cooperation, and the dynamics of participation in class (Bowers, 2001; Cummings et al., 2001). It is seen as an effective means of connecting learners and developing a sense of community (Warschauer,1997), bridging the gap between spoken and written language, and empowering students with opportunities for expression, interaction, reflection, problem-solving, and critical thinking (Chapelle, 2001). The advantages of CMC extend to enhancing communication and collaboration between learners (Côté & Gaffney, 2018; Hirvela, 2007; Kim, 2014). Recent advancements in information and communication technology have made it more

convenient for learners to engage in social networking spaces and online discussion forums, offering opportunities for continuous communication. Technological progress has expanded the scope of CMC beyond traditional class hours, allowing for online writing and communication to be accessible anytime and anywhere beyond temporal and physical constraints of the onsite classroom (Warschauer, 1997). The versatility of CMC extends course engagement and makes it possible for students to write and communicate beyond the boundaries of traditional class schedules. These communication technologies have made learning more fun and convenient.

Computer-mediated collaborative writing (CMCW) has been studied to result in significant improvements in learners' writing performance (Althaus, 1997; Vakili & Ebadi, 2019). The interactive nature of CMC promotes collaborative dialogue and facilitates the use of more complex language compared to face-to-face (FTF) communication (Matsuda, 2003). Such peer interaction leads to higher quality of language output than what individual learners can achieve alone. Strobl (2014) corroborated these findings in their study of advanced German learners at a Belgian university. They found that collaborative work led to significantly better-quality syntheses than individual writing, which can be attributed to the in-depth discussions conducted before the composition stage. In addition, CMC also supports the process approach of L2 writing, with research demonstrating that L2 writers tend to plan while composing on screen (Li & Cumming, 2001). Collaborative writing provides unique opportunities for language development, including joint responsibility for the quality of the written product and mutual feedback to enhance task accomplishment (Storch, 2005). The shared web space technically supported by CMC offers opportunities for students to give feedback to each other, fostering an increased awareness of writing as a process to continuously write and revise. Furthermore, online collaborative writing tasks have been recognized as beneficial for developing writing strategies

and improving content and organizational quality in writing (Elola & Oskoz, 2010; Kessler & Bikowski, 2010). However, some studies have examined students' perceptions obtained through interviews and the results indicated their reluctance to provide peer feedback (feeling insecure and uncomfortable) (Lee, 2010; Li & Zhu, 2013).

CMCW offers students the opportunity for artifact mediation, such as utilizing online searches to enhance the accuracy of their co-constructed texts (Hsieh, 2017). Online searches (e.g., dictionaries and writing websites) serve as valuable resources that aid collaborative knowledge construction and bridge proficiency gaps, especially for beginning-level students (Hsieh, 2017). Corpora and concordancers provide authentic contexts that may raise awareness of how linguistic items are used and serve as reference tools that students can use for solving language problems autonomously. Corpora helps facilitate the discovery and incorporation of collocation patterns during pattern-hunting and refining activities, leading to improved accuracy and complexity in writing (Wu, 2021). Online concordancers, acting as problem-solving tools, help learners elicit, compare, verify, and confirm information while writing (Yoon, 2016).

Apart from artifact mediation, language and social mediation are also evident in CMCW, such as the use of first language (L1) (Bao & Du, 2015; Wells, 2006), repetition (DiCamilla & Anton, 1997), online chatting (Elola & Oskoz, 2010), interaction patterns (Li & Kim, 2016), and error correction (Vakili & Ebadi, 2019). Language mediation plays a crucial role in drawing learners' attention to specific L2 structures and generating potential solutions to resolve writing issues (Wells, 2006). SCT-oriented researchers proposed that L1 use supported L2 learning by fostering shared understanding, identifying language-related problems and reflecting on L2 use (Bao & Du, 2015). The use of L1 enables learners to elicit more language production and generate more ideas to solve linguistic problems than the tasks required. In addition, when

writers work together to complete writing tasks, repetition of what others have said or self-repetition provides scaffolding and facilitates the establishment of intersubjectivity of a task to co-construct knowledge (DiCamilla & Anton, 1997). Online chatting enables learners to overcome their developmental errors through exchanging opinions, organizing writing tasks, and gaining agreement from group members (Elola & Oskoz, 2010). Interaction patterns encourage scaffolding strategies, revising and editing, and problem-solving in the writing process (Li & Kim, 2016), and error correction assists learners in actively engaging with their writing products, placing more emphasis on challenging aspects and exploring their nature (Vakili & Ebadi, 2022). Consequently, language mediation through CMCW proves to be instrumental in facilitating the problem-solving process and increasing the depth of language learning.

CMC fosters a social and interactive atmosphere encouraging students to take responsibility for their learning and have a sense of control over tasks. In CMC, everyone has the responsibility to collaborate and contribute as writers, making the process of writing more than just a means of sharing work, but a dynamic and meaningful experience that involves self-monitoring and peer interaction. According to Beatty and Nunan (2004), effective online courses prioritize interaction, emphasizing a student-centered approach rather than being teacher-led, and promote a friendly learning environment where all learners are encouraged to respond to one another. Warschauer et al. (2000) revealed that students tend to express more complex thoughts and emotions in CMC contexts compared to other forms of writing approaches. Learners' participation increases due to the context's disregard for pragmatic aspects like turn-taking and interrupting, making the interaction more fluid and inclusive in CMC environments (Cummings et al., 2001; Sullivan & Pratt, 1996).

In addition, CMC creates a less face-threatening atmosphere than FTF interaction, allowing students to express their opinions more freely and openly (Cummings et al., 2001). The CMC environment feels less intimidating because the audience, including both teachers and peers, remains invisible under text-based CMC contexts (Cummings et al., 2001). Students who are shy or have reservations about participating in traditional in-person classrooms may find virtual classrooms more comfortable in which to engage. CMC has been shown to reduce anxiety and enhance learners' communication skills (AbuSeileek, 2012; Côté & Gaffney, 2018). For instance, two experiments were conducted by Côté and Gaffney (2018) to compare learners' anxiety levels and the quality of their output in synchronous CMC and FTF settings. The findings revealed that learners in the synchronous CMC environment experienced significantly lower levels of anxiety and increased participation than in oral FTF communication. It was found that students produced significantly more words in the CMC environment.

Researchers have extensively investigated the potential of CMCW in language learning through experimental studies. One line of research mainly employed quasi-experimental studies to explore the impact of CMCW on writing improvements and other aspects of L2 learning. For example, Bikowski and Vithanage (2016) analyzed learners' pre- and post-test scores over one semester and found significant positive effects of using Google Docs™ in collaborative writing on L2 writing proficiency. Another encouraging evidence was presented by Hsu and Lo (2018), who reported that EFL learners working in dyads showed significantly greater improvements in content, organization, language accuracy, and complexity in their writing than individual learners. Strobl (2014), on the other hand, found no difference in the complexity, accuracy, and fluency of the texts between the individual writing group and the CMCW group. However, they observed positive effects of CMCW on content selection and organization of the written

products. Wang (2015) explored English for specific purposes (ESP) learners and found that CMCW had a considerable impact on enhancing learners' business writing skills, fostering their interests in L2 learning, and promoting collaboration skills.

Another line of empirical surveys has examined the effect of CMCW on written products and interaction, comparing it with FTF collaborative writing (Elabdali, 2021). FTF communication is considered as a rich medium, allowing the conveyance of meaning both verbally and paraverbally through cues like gesture and body language. The two-way communication engages both speaker and listener in a deeper and more meaningful conversation. On the other hand, email is considered as low in media richness because it only conveys textual information (El-Shinnawy & Markus, 1997). Short, Williams, and Christie (1976) introduced the concept of "social presence" and defined it as the degree of salience of the other person in the interaction to establish communication effectiveness. They reported that FTF communication is highly salient and thus possesses high social presence; whereas CMC, involving messaging between people via computers, is low in saliency and thus has low social presence. However, due to the widespread adoption of social media in today's context, boundaries between FTF and CMC become increasingly blurred. The physical and digital elements incorporated in social media has added complexity in understanding social presence in communication, which thus requires further investigation in the modern era. In a study conducted by Zeng (2017), participants engaged in computer-mediated learning outperformed those in FTF discussions, producing a significantly larger number of LREs and higher-quality text in terms of overall quality (language appropriateness and grammatical accuracy). Rouhshad and Storch (2016), however, compared CMCW and FTF collaborative writing and indicated learners are more likely to pay attention to language and collaborate more in FTF interaction than text-chat.

Despite the many benefits that CMCW offers, several disadvantages of CMCW were discussed, such as (1) disjointed and incoherent conversational flow due to the rapid addition of new messages (Hyland, 2019), (2) less meaningful learning as a result of unstructured collaborative activities and internet distraction (Wheeler et al., 2008; Wu, 2015), (3) difficulty in determining co-authorship and unequal participation (Ducate et al., 2011; Kessler & Bikowski, 2010; Wheeler et al., 2008), and (4) students' lack of sufficient skills in L2 and CMCW. Since there has been no conclusive evidence yet that CMC actually leads to an improvement in written products, Hyland (2019) cautioned that CMC needs to be carefully studied before being implemented in language classrooms.

Moreover, conveying emotions and feelings in CMC poses challenges for users. In CMC environments, textual forms such as emoticons and emojis are emerging to express emotions; for example, a colon followed by a right parenthesis represents eyes and a smiling mouth, and typing in all capitals is the written equivalent of shouting or screaming. However, users in CMC contexts still lack the full expressiveness of FTF conversations despite these attempts to convey emotions. The emphasis on strong opinions expressed in CMC may not always be clear, which creates an environment where group members feel less pressure from strong opinions, leading them to offer opinions more freely (Barile & Durso, 2002). Such increase in opinions has two consequences. First, it results in a greater number of different and unique ideas being expressed, as demonstrated in idea-generation tasks compared to FTF environments (Dennis & Valacich, 1993; Gallupe et al., 1992). Second, it makes reaching a consensus more difficult since the inability to convey strong opinions may prevent dissenting group members from being shut down (Straus & McGrath, 1994). Collaborative writing is a multitask process that includes brainstorming and consensus reaching. While idea generation may be facilitated in CMC due to

the openness of opinions, consensus reaching may be hindered due to the lack of full expressiveness typical in FTF settings.

Writing with the CMC tools is similar to writing in word processors (e.g., Microsoft Word™) because it does not require any prior knowledge of programming language (Richardson, 2010). Learners can collaboratively discuss their ideas through CMC tools like Google Docs™, discussion forums (e.g., Wikis), and conferencing tools (e.g., Zoom ™). With the aid of Web 2.0 digital tools, learners can engage in either synchronous co‑writing with real time communication or contribute to a collaborative text at different times with delayed interaction in an asynchronous modality. Over the past two decades, collaborative writing tasks have been increasingly adopted in both modalities by language learners (Zhang et al., 2021).

Communication Modalities in CMCW Tasks

Communication modality refers to the medium by which communicative intent is conveyed (Pereira, 2010). These channels can be written (e.g., text chat and wikis), visual (e.g., video meeting), and audio formats (e.g., podcast), or a combination of text, audio, and visual elements in multimodal forms. Multimodal CMC, which includes both text and audio/video options, can lead to more effective collaborative L2 learning compared to using either one exclusively (Dalgarno & Lee, 2010). However, Mohammadi Zenouzagh (2023) highlighted the higher psychological and emotional pressures experienced by language learners in multimodal CMC. Some studies have suggested that due to its less teacher-centered nature, text-based CMC may enhance students' verbal participation compared to FTF classroom settings because it allows L2 learners to maintain their self-images, express themselves freely, and boost their willingness to communicate (Freiermuth, 2001; Freiermuth & Jarrell, 2006). Vetter and Chanier (2006) observed that EFL beginners communicated more in text-based chats than in voice-based chats,

with a higher average number of transmitted words. Cho (2017) suggested that text chat might benefit lower proficiency learners due to the slower pace of interaction and the visual aspect of text chat output. Liao (2018) found that the text-based chat mode resulted in more equal participation among learners. Kessler et al. (2020) observed that FTF planning resulted in more language production, while text-based CMC resulted in more equal and balanced interaction, despite some learners finding it slower, more awkward and demanding compared to the FTF context. Additionally, the similarity between written text chat and essay writing, both being textual output modes, allows learners to retrieve planned ideas and language more easily for use in their writing process (Cho, 2017). This visual access in text-based modalities facilitates information processing and retention, potentially easing attentional demands during L2 writing.

Text-based communication modalities can be further classified based on the timing of message transmission, distinguishing between synchronous and asynchronous modes. Synchronous modalities involve real-time communication, where messages are sent and received simultaneously, such as Google Docs™ or Moodle™ with synchronous "chat" function (Aubrey & Shintani, 2021; Yim & Warschauer, 2017). Asynchronous modalities, on the other hand, allow the transmission of messages at different times, as seen in emails, wikis, blog platforms, or the "comment" feature within applications like Google Docs™ (Abe, 2021). These modalities have the potential to impact L2 learners' attention toward specific writing outcomes, with different CMC platforms prioritizing different language points over others (Cho, 2018; Nguyen, 2008).

Research on CMCW studies has predominantly focused on online platforms that facilitate learner interaction in planning, drafting, and revising texts collaboratively (e.g., Elola & Oskoz, 2010; Kennedy & Miceli, 2013; Liu & Lan, 2016). The key distinction between synchronous and asynchronous CMC lies in their lapse in time between messages. Asynchronous communication

allows for interruptions and breaks in the message-response sequence, which may potentially disrupt the flow of communication. In contrast, synchronous communication avoids such disruptions and ensures smooth interactivity, which is especially crucial for open-ended problem-solving tasks where continuous and unhindered communication is essential (Li, 2018).

Learners' language learning experiences and outcomes can be significantly impacted by the choice of modality in CMC platforms (Hsu, 2022). According to sociocultural theory, peer interaction offers beneficial opportunities for second language acquisition primarily because it enables learners to engage in substantial language production (Storch, 2002; Swain et al., 2003). In synchronous text-based interactions, L2 learners collaborate through computers and convey their intended messages effectively (Wigham & Chanier, 2015). Synchronous tools play a pivotal role in enhancing learners' motivation, peer-scaffolding, and knowledge co-construction in EFL contexts (Liu & Lan, 2016). It enables many-to-many and simultaneous collaborative opportunities, fostering transparency and ease in the writing process (Kessler, 2009; Kessler et al., 2012). On the other hand, asynchronous environments offer distinct advantages in improving confidence, work qualities, critical thinking, interaction, participation, and perceptions (Elola & Oskoz, 2010; Hsu, 2022; Kennedy & Miceli, 2013).

Text-based SCMC in CMCW Tasks. Text-based SCMC brings with it instant messaging, which exhibits discourse functions and negotiation sequences similar to FTF communication (Blake, 2000; Smith, 2003). Nevertheless, there are some notable differences between the two modalities. First, instead of nonverbal cues (e.g., gestures and facial expressions) or paralinguistic features (e.g., pitch and intonation), technical actions like emoticons, emojis and punctuations are employed (Negretti, 1999). Second, the little time delay in responses allows learners to better identify and correct errors in a less intimidating

environment (Lee, 2001). Third, the absence of turn-taking encourages L2 students to utilize various communicative strategies to manage discourse (Sotillo, 2000). In a study conducted by Fitze (2006), advanced L2 students in SCMC groups were found to use a broader range of vocabulary and communicative strategies, such as clarification requests, dis/agreement statements, social formulations, and topic management, compared to FTF communication. SCMC, which involves real-time interaction through technological tools, has been found to promote equal and active participation (Warschauer, 1996), create a less intimidating learning environment for peer interaction (Chun, 1998; Côté & Gaffney, 2021), and lead to improved L2 learning outcomes (Abrams, 2016; Ziegler, 2016).

Text-based SCMC is considered a valuable framework for promoting peer collaboration in language learning contexts (Liang, 2010). It allows for timely peer feedback to address linguistic misconceptions and writing issues, making learners' writing more meaningful and comprehensible to readers (Al Qunayeer, 2020; Yeh, 2014). Al Qunayeer (2020) implemented collaborative writing activities using a synchronous chat function through Facebook groups, providing opportunities for learners to have real-time interactions and consultations with peers. The findings indicated that text-based SCMC fostered knowledge co-construction and a sense of community because participants had to negotiate language form and meaning to assist each other in achieving mutual comprehension. Similarly, Yeh (2014) revealed that text-based SCMC interactions led to collaborative efforts in correcting grammatically incorrect and revising semantically inaccurate sentences.

Scholars have maintained keen interests in exploring the impact of synchronous text on EFL teaching and learning, largely due to its popularity among students (Satar & Özdener, 2008). Students are drawn to chat platforms because of their real-time nature, which replicates FTF

conversations and offers an informal setting for communication (Godwin-Jones, 2003). The casual exchanges and the language used in these interactions resemble oral conversation, which can potentially contribute to the improvement of EFL skills. As Guerra (2012) points out, real-time communication closely resembles oral interaction that enable students to focus on form and meaning at the same time. However, a few scholars have called attention to some potential disadvantages to text-based SCMC, including problems of reduced coherence, and absence of critical and independent thinking (Cho, 2017; Zhang & Liu, 2023). Specific learning goals in writing such as maintaining formal accuracy, achieving consensus, and enhancing stylistic elements may not be effectively achieved through chat-based communication (Kern, 1995).

 Text-based ACMC in CMCW Tasks. Text-based ACMC, on the other hand, has been acknowledged for allowing students to provide feedback at their own pace. Message senders within an asynchronous medium can utilize interactive resources that remain inaccessible in FTF conversations or SCMC settings. The time delay in text-based ACMC interaction has been studied to yield several positive outcomes, including the creation of less anxiety-provoking environment (Sotillo, 2000; Tu & Mcisaac, 2010), the promotion of higher-order thinking abilities (Johnson, 2006), enhancement of the syntactic complexity and academic style in the L2 output (Sotillo, 2000), and increased possibilities of accomplishing required writing tasks (Schwienhorst, 2003). It creates opportunities for learners to reflect on their language use and carefully compose their contributions to discussions (Lapadat, 2002). According to Warschauer (2006), asynchronous discussions are believed to amalgamate the interactive essence of written conversations with the contemplative nature of composing. It allows learners to evaluate their texts, make revisions, clarify their ideas, and propose alternatives (Bradley, 2014). Learners are engaged in seeking and dispensing advice, eliciting opinions, and asking questions on language

form during collaborative writing (Saeed & Ghazali, 2017). To summarize, text-based ACMC facilitates profound, in-depth, and well-considered discussions (Chen, 2016).

In a study conducted at an American university, Lee (2010) focused on wiki-mediated collaborative writing in Spanish as a Foreign Language context. The findings indicated that learners' writing process was facilitated by collaboration and scaffolding at different stages, which positively impacted their writing development. Kessler and Bikowski (2010) revealed that students benefited from the opportunities for autonomous language learning while working collaboratively in the wiki-based ACMC environment. They were given opportunities to use language to express personal meanings and employ appropriate communication strategies in the flexible learning environments.

L2 learners generally perceive ACMC as a positive experience, appreciating the authentic learning opportunities, the less stressful asynchronous environment, and the convenience of using technology to discuss ideas and decisions in written form. However, due to the collaborative nature of the writing tasks, L2 learners express their concerns about losing individual ownership of their writing (Bradley et al., 2010). Learners also worry about collaborating with individuals who display either dominant or passive behavior during collaborative writing tasks (Meishar-Tal & Gorsky, 2010). Furthermore, the time lag between messages in text-based ACMC contexts has also been criticized because it hinders learners from receiving prompt feedback and limits opportunities for tailored assistance (Kitade, 2008). This could potentially result in a lower response rate compared to text-based SCMC exchanges (Kitade, 2006). Kitade (2006) conducted an experiment with twenty-four learner dyads who engaged in text-based ACMC interaction for a jigsaw task. The study revealed that half of the participants' requests for solving linguistic issues were disregarded by their partners. Kitade

(2006) explained that the long interval in text-based ACMC exchanges might diminish the urgency for participants to respond to the negotiation signals, leading them to easily forget or ignore the requests and ultimately resulting in a low response rate. Moreover, the lack of instant response in ACMC may cause misunderstandings in discussion (Kitade, 2008). Negotiation routines may be negatively affected due to unclear comments and inefficient task completion in text-based ACMC.

In summary, the tool in each CMC modality functions as a cognitive enhancer, facilitating participants' collaborative efforts towards achieving better writing performance (Ajabshir, 2019). the distinct interaction characteristics in the two text-based CMC modes offer differing affordances of CMC environments, which can further significantly impact the collaboration process (Elola & Oskoz, 2017). There is a possibility that learners' LREs can be affected when engaging in collaborative writing through the two text-based CMC modalities. However, research on asynchronous interactions in text-based CMC has been comparatively limited compared with studies on synchronous text-based CMC. Researchers, thus far, have primarily focused on comparing the FTF modality with the SCMC modality, and what remains underexplored is whether the two common yet different modalities (SCMC and ACMC) may impact the effectiveness of computer-mediated collaborative writing in EFL language classrooms. There is very little published research on L2 online asynchronous communication, and even less research has been conducted to compare the effects of both SCMC and ACMC in collaborative writing tasks.

Additionally, most studies discussed (Arnold et al., 2012; Lee, 2010; Li & Kim, 2016) have reported collaborative writing activities within small groups consisting of three to five members per group, leaving little research on pairs (Elola & Oskoz, 2010), especially regarding

how Chinese EFL learners engage in computer-mediated collaborative writing tasks. Since learners nowadays are increasingly engaged in various CMC modalities, answering these questions is crucial for informing pedagogic decisions regarding the design and implementation of collaborative writing tasks in language classrooms (Mackey, 2012). This study thus specifically aims to focus on Chinese EFL learners in investigating the role of CMC modality in computer-mediated collaborative writing tasks.

Learners' Perception toward CMCW

The majority of L2 students expressed positive feedback about their experiences in computer-mediated collaborative writing. Several advantages have been documented, such as gaining enriched writing perspectives, developing communication skills, improving writing proficiency, enhancing awareness of the audience, and experiencing higher motivation in learning (Chen & Yu, 2019; De Saint Léger & Mullan, 2014; Dobao & Blum, 2013). Elola and Oskoz (2010) surveyed Spanish learners' perception of ACMC collaborative writing tasks and found that most learners considered the tasks beneficial for enhancing the content and organization of their written work, but they felt it was less helpful for improving L2 grammar. Bikowski and Vithanage (2016), who focused on ESL learners participating in SCMC collaborative writing tasks, and Strobl (2014), who examined German learners working on Google Docs™ in a hybrid modality, also reported similar positive perceptions. Learners believed CMCW tasks could help develop their writing skills and suggested the use of these tasks in future L2 writing classes. Li and Zhu (2013) studied postsecondary Chinese EFL learners and found that students recognized a variety of benefits associated with asynchronous wiki-based collaborative writing tasks, including the convenient sharing of writing perspectives, enhanced motivation for language learning, and improved L2 development. The high percentage

of student satisfaction indicated in Chao and Lo's (2011) questionnaire survey results also demonstrate positive perceptions toward the ACMC collaborative writing project.

On the other hand, L2 students acknowledged encountering certain challenges in computer-mediated collaborative writing. Bikowski and Vithanage (2016) found that participants reported difficulties in managing time constraints and merging divergent opinions from group members. Another significant challenge reported by students is achieving co-ownership of the writing tasks (Arnold et al., 2012; Kessler & Bikowski, 2010). Students expressed concerns about unequal participation from group members and instances of social loafing and free riding (Arnold et al., 2012; Kessler & Bikowski, 2010). In Roskams' (1999) study on Chinese college EFL students, it was found that students possessed strong collectivist motivations and adopted an achievement-oriented approach to peer collaboration, which might be influenced by the cultural emphasis on academic excellence in Chinese societies. These students tended to prefer individual assessments over group assessments because they feared getting lower grades when being evaluated along with their group members. Additionally, students may be hesitant to engage with other members' written texts due to limited language proficiency or lack of confidence in their own writing ability (Lee, 2010).

To date, much less has been known about whether learners exposed to both synchronous and asynchronous CMC modalities might hold different perceptions toward the collaborative writing process. The present study thus aims to bridge this knowledge gap by examining how students perceive and engage in collaborative writing within both synchronous and asynchronous CMC contexts. Investigating these two modalities may contribute valuable insights to the field of collaborative writing research in EFL contexts.

Chapter Summary

This section of the literature review concentrates on analyzing previous research in the field of computer-mediated collaborative writing. The existing literature thus far predominantly indicates that collaborative dialogue has a positive impact on students' writing performance and that learners generally possess positive attitudes toward incorporating computer-mediated collaboration into the L2 writing process. Although some drawbacks exist, the utilization of CMC modalities employed in collaborative writing results in improved writing achievements and positive learner perceptions. However, there is a lack of comparative studies conducted within the Chinese EFL context between text-based SCMC and ACMC conditions, the two common modes in CMC settings, in L2 collaborative writing. There is an urgent need to contribute to the literature in this area since writing is regarded as an essential yet challenging language skill to be acquired in China. With the aid of educational technologies, CMC provides opportunities for dialogues to occur at any time that are not limited to the traditional class schedule, which may potentially enhance the writing performance of Chinese EFL students. This study aims to offer valuable pedagogical insights to EFL teachers who are interested in integrating web-based collaborative writing tasks into their instructional approaches. The following chapter will provide a detailed description of the research design and methodology.

CHAPTER THREE: METHODOLOGY

Research Paradigm and Study Design

The research paradigm is the philosophical framework and foundation upon which the research is based (Creswell, 2014). It guides research and practice in a field and consists of four philosophical elements: ontology, epistemology, axiology, and methodology. This study adopted a constructivist paradigm that focuses on the close partnership between the researcher and the participant, allowing participants to share their stories (Crabtree & Miller, 1999). These stories empower participants to articulate their perceptions of reality, thereby aiding the researcher in gaining deeper insights into the participants' actions and behaviors (Lather, 1992). The ontology of constructivism conceptualizes social reality as being generated and shaped by people and existing primarily within the realm of people's minds (Creswell, 2014). Based on the ontological viewpoint that researchers recognize multiple realities and aim to understand these subjective perspectives, the epistemology of constructivism conceives knowledge as context-dependent, socially constructed, and emerging from peoples' social practices (Merriam & Tisdell, 2015). In that sense, researchers emphasize the importance of understanding participants' perspectives and their personal, cultural, and historical experiences. The axiology of constructivism underscores the importance of researchers acknowledging their own values and biases and making efforts to maintain transparency about them (Merriam & Tisdell, 2015). It helps prevent the imposition of researchers' values onto the research findings.

Based on the constructivist philosophical worldviews that incorporate the qualitative paradigm's points of view, this study particularly adopted a qualitative case study methodology that gathered the perspectives from the people within authentic real-world contexts to explain human social behaviour (Yin, 2011). Considering that a case study provides a vivid, detailed, and

highly contextualized illustration of a phenomenon from multiple perspectives (Duff, 2020), the qualitative case study approach utilized in the present study helps provide a more complete and in-depth understanding of improving EFL learners' writing skills through the computer-mediated collaborative writing process. The methodology used for the study is explained under sample characteristics, data collection instruments, procedure, and data analysis parts below.

Sample Characteristics

The participants in the study were recruited through a purposive sampling method from a major university in northeast China, where English courses are mostly teacher-centered and test-oriented. The reason for employing this sampling approach is to choose cases rich in information, as highlighted by Cohen et al. (2017), that purposive sampling is effective in capturing in-depth information from individuals who possess relevant knowledge. The main objective is to get data saturation rather than to represent the population or generalize the collected data to the entire population. A total of sixteen first-year undergraduate English as a Foreign Language (EFL) learners enrolled in an English course were selected to participate in this study. The students were selected according to predetermined criteria assigned by the researcher depending on the essential characteristics relevant to the study. These criteria were English proficiency level, familiarity with computer programs, and students' voluntary desire to take part in the research. Students were asked for informed consent in this research for ethical considerations. A background questionnaire was administered to the students to provide demographic information about their age, gender, previous English learning experience, experiences with collaborative writing, familiarity with technology (e.g., Tencent Docs™ and WeChat™), whether they have a computer or not, and frequency of being online via computer. This sample selection process guaranteed that participants in the study possessed key

characteristics that were related to the research purposes, thereby increasing the precision and credibility of the findings.

In terms of English proficiency level, all the participants recruited were intermediate-level students who had been assessed by a diagnostic placement exam completed by the university prior to their enrollment in the mandatory English classes. The participants' English proficiency, classified as B2 according to the Common European Framework of Reference for Languages, signified a level of competence essential to engage in meaningful collaborative discussions and co-creation of written content in the research. During the period of data collection, participants were learning and improving their essay-writing skills following the English course curriculum. The intermediate-level writing courses aim to enhance students' proficiency in academic writing and essay composition. Students had received instruction in academic writing prior to the research, focusing on fundamental skills like constructing grammatically correct sentences and organizing paragraphs into cohesive academic essays. The participants had also received guidance on providing peer reviews and responding to peer feedback for revising and editing. Though they had no prior experience on collaborative writing, they had had experience learning collaboratively on group discussion and assignments.

Regarding computer literacy, students who possessed a personal computer and were familiar with online text-based messaging were recruited. Given that computer-mediated English learning is an increasingly prevalent practice in higher education in China, selecting participants with computer proficiency aligned with real-world practices and ensured that the findings of the research were representative of contemporary scenarios. All the participants in the study had experience of using online chat platforms and demonstrated a high level of familiarity and ease with computer-mediated communication. Internet is fairly accessible on and off campus in

China. Owing to the COVID-19 pandemic restrictions, all the Chinese high schools conducted courses online, and thus, participants had some recent experiences using CMC tools and felt sufficiently confident in computer use. This potentially led to more insightful findings of the current research because participants engaged more fluently in the chosen technology and delved deeper into the collaborative writing process.

The study was carried out in the Fall/Winter semester of the school year 2023-2024 when participants were preparing for the upcoming National College English Test 4 (CET-4) in June 2024. CET-4 is designed specifically for college English learners and serves as a mandatory prerequisite for obtaining a bachelor's degree in China. The sixteen intermediate-level EFL participants with a high level of computer familiarity were randomly divided into two groups, with each having the same number: synchronous computer-mediated communication (SCMC) group and asynchronous computer-mediated communication group (ACMC), forming four pairs per condition. This arrangement was not meant to facilitate a quantitative comparison but rather to create a varied experiential basis for a deeper qualitative investigation. Random pairing of participants in this study accurately reflected the normal pairing process in actual Chinese EFL classroom settings, which enhanced the credibility of the findings to real-world educational contexts (Creswell, 2014). The participants' informed consent was collected prior to data collection, and it was made clear that they could withdraw from the study whenever they wish, in which case their data were erased accordingly. For analytical purposes, all data were labeled with students' pseudonyms and were subsequently destroyed to ensure anonymity.

Data Collection Instruments

To achieve the purpose of the study, a computer-mediated collaborative writing project was constructed to investigate participants' perceptions toward the effectiveness of peer

collaborative dialogue in SCMC and ACMC modalities. Data for this research were collected from two instruments, namely semi-structured interviews and students' reflective learning journals, to gather the required data for answering the research questions. Since one danger associated with the analysis phase of case study is treating each data source independently in isolation (Baxter & Jack, 2008), the data collected in the present study were converged to gain a comprehensive understanding of the overall case. Learners' perspectives collected from the interviews were cross-verified and enriched by their insights obtained from the reflective learning journals. Employing these distinct yet complementary methods facilitated a more comprehensive exploration of the phenomenon to triangulate the data gathered. Although the findings may not be suitable for broad generalization to a larger population, the data collected in the study were sufficiently detailed to inform the application of computer-mediated collaborative writing in similar EFL tertiary teaching contexts.

Writing Tasks

Project-based collaborative writing activities, which extends over several weeks and involves both in-class and after-class tasks for a writing project, were employed in the current study to boost students' motivation and active participation (Caple & Bogle, 2013). Acknowledging the essential role of essay writing in empowering students to organize ideas coherently through the application of language knowledge (Nation & Macalister, 2021), this study specifically integrated the problem-solution essay, a form of academic writing that was suggested by previous research to be with a high level of conceptual difficulty, which in turn, could stimulate learner interaction (Németh & Kormos, 2001). Problem-solution essay writing in this research could be regarded as authentic since it was a common writing task of the CET-4 exam that the participants were preparing for. Moreover, the report writing skills developed from

the writing task might extend their applicability beyond the classroom, proving invaluable in various professional roles after participants' graduation from university. The high-quality report writing skills cultivated from the problem-solving project helped students to think critically, encouraged teamwork, and prepared them for the future.

Participants in this writing project completed the computer-mediated and problem-solving writing project in pairs (See Appendix A). Real-world problems related to social, environmental, political, or economic concerns were selected by the participants themselves to motivate their engagement in collaborative writing. The writing project involved two writing tasks: *Identifying Causes* and *Proposing Solutions*. In the first writing task, students collaboratively wrote a 500-word essay introducing the problem they were interested in and pinpointing the root causes responsible for the problem's existence with evidence. In the second writing task, students built on the analysis conducted in the first task and proposed practical and well-reasoned solutions to address the identified problem. Again, they wrote a 500-word essay presenting the solutions of the problem with justification, analyzing potential benefits and limitations of the solutions, and concluding with a call to action.

Students were allocated two weeks to complete the writing project, encompassing the two writing tasks with a designated one-week timeframe for each task. The researcher did not participate in the online writing process but monitored students' interaction as a third-party observer providing help on technical issues. To fulfill the curriculum's objective of enhancing students' English proficiency in managing social interactions in an online language learning context, participants were instructed to use English for both communication with their partners and for composing essays online. Nevertheless, students were not prevented from using Chinese in discussions because of their extremely limited competence in conducting metatalk in English.

This helped accommodate their learning needs and fostered a supportive English learning environment.

Computer Software

Regarding computer software, Tencent Docs™ (https://docs.qq.com), a domestic collaborative platform, was chosen for the study due to problems with the Google™ suite, such as slow and unstable connection from China. Tencent Docs™, similar to Google Docs™, provides a real-time document editing environment with detailed edit records that is considered a useful tool for collaboration and knowledge co-construction (Bikowski & Vithanage, 2016; Strobl, 2014). The editing toolbar within the document space provides basic word-processing functions like entering text, modifying the size, font, and color of the text, editing the text (deleting, copying, and pasting), and inserting tables, figures, and images. This resembles a common word processing style (e.g., Microsoft Word™) that provides a user-friendly writing experience without the need for any computer programming language. One notable characteristic of the platform is that all modifications of a document are noticeably highlighted in red in chronological order (the most recent to the oldest), which helped students in this research identify the revision efficiently to the exact time and the original author. The system automatically saved changes as students worked on the document, reducing the risk of data loss. Given these functional features, Tencent Docs™ provided a well-suited online learning environment for the computer-mediated writing project in this study.

Collaborative Writing via Text-based SCMC. Given no "chat" function is included in the Tencent Docs™, WeChat™, a popular China-based instant messaging social media platform with millions of registered active users (Li et al., 2021), was employed in this research to facilitate communication inside the SCMC group. Figure 1 presents an example of text-based

SCMC collaborative writing in this study. WeChat™ was used together with Tencent Docs™ to share and exchange opinions synchronously during the collaborative writing process. The widespread user familiarity was the primary rationale for choosing WeChat™ as the synchronous online communication tool in this study. Similar to WhatsApp™, WeChat™ enabled participants to send text messages, emojis, images, etc. The name of the sender and the time sent were displayed with the message when a message had been sent. All the participants recruited were competent everyday users of WeChat™ and displayed a high level of familiarity with its built-in functions. With this assumption, no further instructions on how to use WeChat™ were provided to the participants.

The researcher created groups for the SCMC members to communicate on WeChat™ and invited them to join in via invite links. After setting up the WeChat™ groups, students planned and discussed their writing using instant text messages, such as sharing content ideas and checking language forms simultaneously. Since writing in the text-based SCMC modality requires two learners to be online at the same time, participants in the SCMC group discussed and decided on the day and time they were available to participate in the project and informed the researcher of their schedule. Students' text messages were shown and stored in the dialogue box as an interaction history. Group members could navigate through the current and past messages by scrolling up and down. The researcher monitored the whole synchronous collaborative writing process and checked the time stamp on Tencent Docs™ history pages.

Figure 1. A Screenshot of Text-based SCMC Writing Showing the *WeChat*™ Chatroom on the Left Side and Document Being Edited on the Right Side
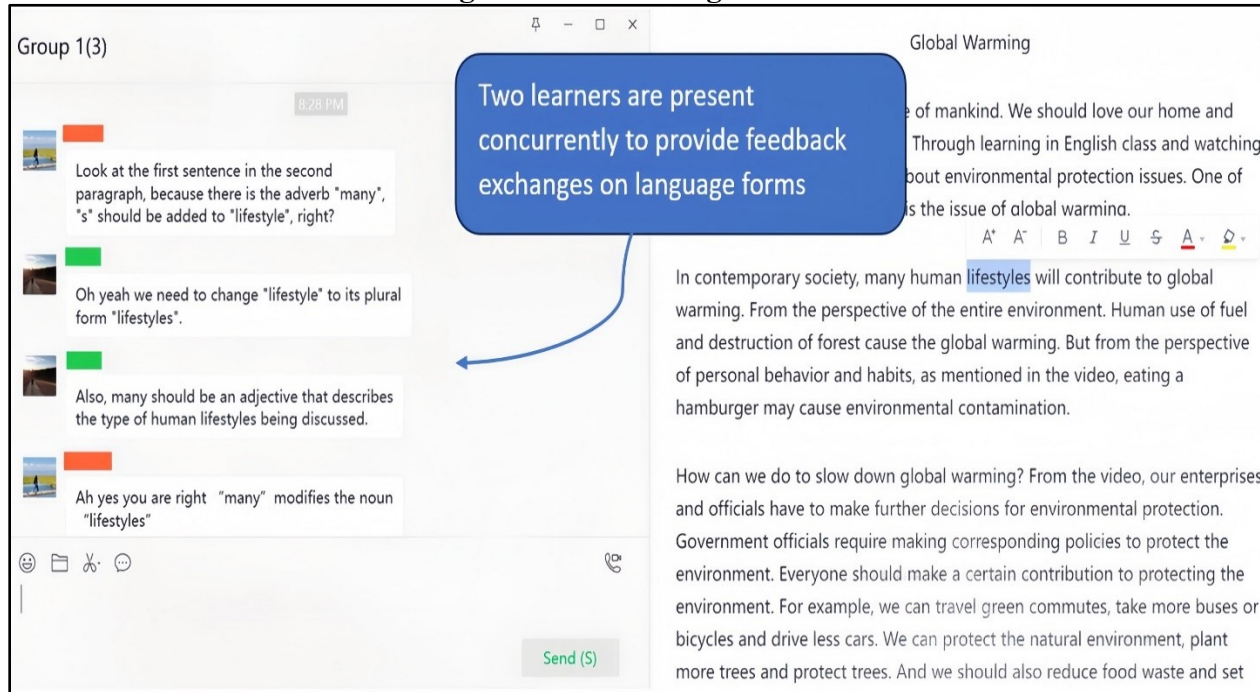
Note. Different colors represent different learners

Collaborative Writing via Text-based ACMC. Unlike text-based SCMC, participants engaged in the writing task via text-based ACMC exchanged their opinions, wrote, edited, and gave/responded to comments whenever they wanted throughout the allotted weeks. They were encouraged to make use of the "comment" function in a shared *Tencent* document to discuss and edit their composition collaboratively at different times. Figure 2 presents an example of text-based ACMC collaborative writing in this study. The "comment" function built in Tencent Docs™ was the only means through which the ACMC group members interacted. In text-based ACMC, writing started with two learners developing individually their content ideas, composing, leaving the page, and returning to exchange ideas and further composed. Likewise, the researcher monitored the asynchronous collaborative writing process by checking the comments and time stamp history pages on Tencent Docs™.

Figure 2. A Screenshot of Text-based ACMC Writing Showing Learners' Comments on the Document

Note. Different colors represent different learners

Semi-Structured Interview

To investigate how the participants perceive synchronous and asynchronous computer-mediated collaborative writing, data from post-task semi-structured interviews were analyzed as the primary data source. To ensure a well-balanced selection of participants for the research interviews after the writing project, four students were randomly chosen from pairs who wrote via text-based SCMC mode first and an additional four students were randomly selected from pairs who wrote via text-based ACMC mode first. The participants selected were individually invited to express their general opinions toward collaborative writing, their satisfaction with the CMCW project, their thoughts on their writing progress and development, and challenges they encountered throughout the writing process. Guiding questions for the in-depth interviews were provided for each student (see Appendix B). Each interview was audio-recorded and lasted 20-30

minutes. To achieve maximal contribution, the researcher provided enough time for the participants to elaborate on their opinions. Participants were encouraged to speak in English, but Chinese was allowed to express their thoughts more easily and fluently. The audio recordings of the interviews conducted in Chinese were transcribed and subsequently translated into English. To secure semantic and idiomatic equivalence, effort was made by the researcher to keep the translation as close to the original as possible.

Reflective Learning Journal

Interview data alone cannot accurately measure the students' perceptions of CMC technologies; a higher degree of measurement credibility was ensured through the use of students' reflective learning journal as an additional data collection instrument. This dual-faceted approach offered a more holistic understanding of EFL students' perceptions towards SCMC and ACMC modalities. All participants were asked to continuously record their feelings, collaborative writing experiences, perceptions, and encountered challenges immediately after each writing task throughout the project (see Appendix A for guiding questions). A total of sixteen copies of learning diaries, one from each participant, were collected at the end of the writing project. This comprehensive compilation of reflective narratives served as a robust complement to the interview data, collectively providing a deep and multifaceted view of the students' attitudes towards CMC in their collaborative writing endeavors.

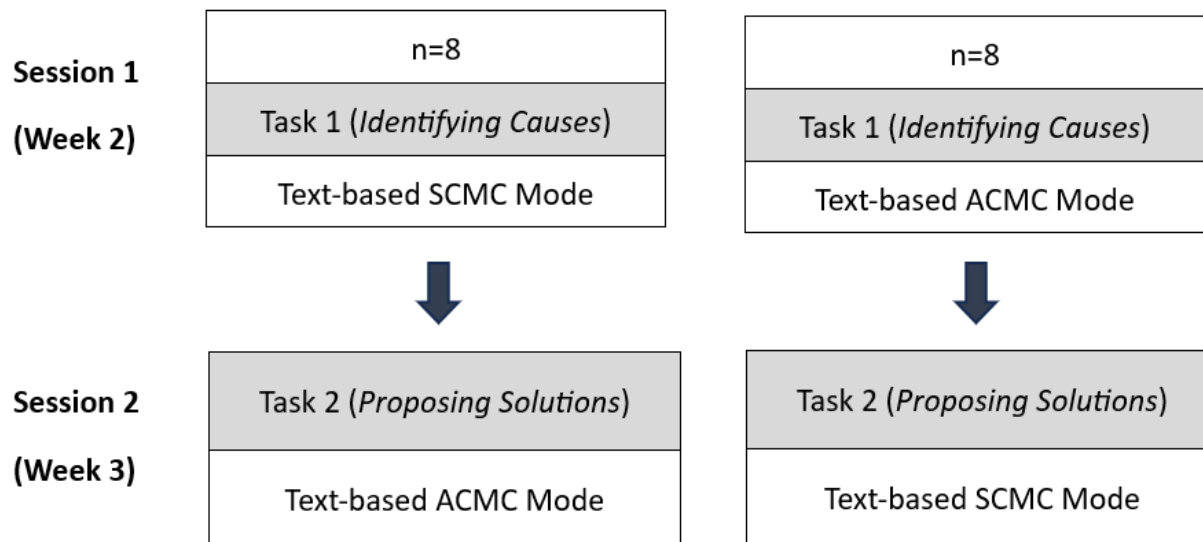## Data Collection Procedures

The collaborative writing project spanned four weeks. To familiarize the participants with Tencent Docs™ writing, pretreatment orientation sessions were conducted in the first week. The researcher created separate Tencent Docs™ pages for participants and demonstrated its basic functions, including how to write, edit, and give/respond to comments. The researcher also

created a trial Tencent Docs™ page to provide students with further practice. Students were instructed to create accounts on Tencent Docs™, sign into their accounts, and write on the pages with their partners. They were provided with opportunities to ask any clarification questions they might have. Learners' interaction produced through this practicing phase were not included in the data set.

Once all participants expressed a sense of comfort in writing on Tencent Docs™, two treatment sessions were scheduled in the following two weeks (week 2-3). To minimize the effect of order and task type, communication modalities (text-based SCMC and text-based ACMC) were counterbalanced between the writing tasks (see Figure 3). Each pair collaboratively completed the two tasks (*Identifying Causes* and *Proposing Solutions*) of the problem-solving writing project, one via text-based SCMC mode and the other via text-based ACMC mode. The two task modes were counterbalanced; that is, half of the pairs wrote via text-based SCMC mode first, followed by the text-based ACMC mode. The other half wrote the other way around. After completing the writing task for each week, students wrote an approximately 200-word reflective learning journal entry. To fulfill the research objective of assessing students' perspectives regarding the impact of different communication modalities on their interaction and writing progress, the researcher maintained a monitoring role without intervening in the collaborations: students were instructed to complete the writing project collaboratively and independently, seeking assistance only in the case of technical issues. Participants were provided with guidelines of what they were expected to do in the study (Appendix A), instructing them on how to write on Tencent Docs™ pages synchronously and asynchronously in pairs. They were asked not to complete their writing in other computer software and copy and paste their essays onto Tencent Docs™, so that all writing processes were captured within the collaborative

software. Throughout the sessions, the researcher frequently reminded participants to work collaboratively on the whole writing process of each writing task. At the end of week 3, each pair completed two essays, and each participant created two reflective learning journal entries. In week 4, participants were invited to conduct semi-structured interviews as the end of the study.

Figure 3. Counterbalancing of Writing Tasks and Modes

Session 1 (Week 2)	n=8	n=8
	Task 1 (*Identifying Causes*)	Task 1 (*Identifying Causes*)
	Text-based SCMC Mode	Text-based ACMC Mode

Session 2 (Week 3)	Task 2 (*Proposing Solutions*)	Task 2 (*Proposing Solutions*)
	Text-based ACMC Mode	Text-based SCMC Mode

Measures and Data Analysis

The data collected from the semi-structured interviews and students' reflective learning journals were identified as the main data sources analyzed in the study, serving as a demonstration of learners' meaningful collaboration experience and perceptions toward SCMC and ACMC collaborative writing. Upon completion of the writing project, the interview data and students' learning diaries were collected and then transcribed for qualitative content analysis. Content analysis of participants' words has been demonstrated by Henri (1992) as a useful approach to study human behavior in an indirect manner in computer-mediated communication. To answer the research questions regarding learners' perceptions toward SCMC and ACMC modalities in collaborative writing, a first-round open coding was performed to inductively analyze the interview transcripts and learners' learning diaries. Data were read thoroughly to

identify learners' evaluation of their writing development as well as the benefits and challenges identified for text-based SCMC and ACMC modalities. To reduce the impact of the researcher's personal viewpoints or potential biases on data interpretation, participant-generated words were extracted as *vivo codes* to provide a precise depiction of participants' perspectives. The codes were then systematically merged into categories to derive themes representing the main idea and patterns. A constant comparison approach to data analysis was adopted in the study to identify emergent themes regarding potential commonalities and distinctions between SCMC and ACMC. Following the principles of the constant comparative method, categories and themes derived from the data were meticulously and constantly cross-checked by the researcher to ensure consistency and accuracy. The researcher carefully translated the quotations originally expressed in Chinese in the interviews and reflective journals into English. To maintain the readability of the quotations, the translation process included making necessary grammatical and syntactical adjustments while preserving the original meaning conveyed by the participants. Participants were invited to check the researcher's comprehension and interpretation of the qualitative data to confirm the credibility of the study (Merriam & Tisdell, 2015).

CHAPTER FOUR: RESULTS

Guided by a qualitative case study design, this chapter presents detailed results collected from eight one-on-one interviews and sixteen students' learning journals. The chapter aims to empirically investigate the pre-established research questions that focus on students' perceptions towards the use of synchronous computer-mediated communication (SCMC) and asynchronous computer-mediated communication (ACMC) in collaborative writing.

In general, based on the interview results depicted in Figure 4, three-quarters of the participants (75%) expressed a preference for the enjoyable SCMC mode and advocated for its continued use in future cooperative writing activities. When considering the enhancement of writing skills, about half of the students favored SCMC, suggesting that while SCMC was more beneficial for most, ACMC was also recognized for its role in advancing writing competencies. This finding suggests that each communication mode offers unique benefits for enhancing EFL writing skills. However, these two modalities support learning in varied manners and prepare students for different types of collaborative writing processes. A thorough content analysis of the interview transcripts and students' reflective learning journals were analyzed and categorized into several themes that elucidated the students' preferences, feelings, and thoughts. These themes are systematically discussed in the following three main sections to offer a comprehensive examination of the research questions.

Figure 4. Learners' Preferences for CMC Modalities in Collaborative Writing

Questions	SCMC	ACMC	Both Are Equal
Which modality is more enjoyable?	6 Students (S1, S3, S6, S7, S11, S16)	2 Students (S10, S14)	0
Which modality is preferred for future collaborative writing tasks?	6 Students (S1, S3, S6, S7, S11, S16)	1 Student (S14)	1 Student (S10)
Which modality is more beneficial for improving English writing skills?	4 Students (S1, S3, S7, S11)	2 Students (S10, S14)	2 Students (S6, S16)

Perceived Merits and Drawbacks of SCMC

The first research question seeks to understand participants' views on the advantages and challenges associated with SCMC and ACMC modalities in collaborative writing tasks during writing instruction in EFL classrooms. To begin with, learners' perceived benefits and drawbacks of SCMC obtained from the individual interviews and students' learning journals are presented first. A significant majority, 14 out of 16 students (87.5%), acknowledged that SCMC enhanced the joint creation of knowledge, encompassing both linguistic and content-related aspects, ultimately contributing to their production of higher-quality written work. As an illustrative case, student S6 praised the immediate exchange of ideas via SCMC and highlighted its value for idea development:

> I am really satisfied with how we communicated in real-time on WeChat™. It was great
> because whenever we got stuck, my partner would come up with ideas, and when I
> shared my thoughts, she would respond right away to help figure out the best way to

express them. Our chat helped us refine ideas and put them across better in our essays. (student S6, interview 3)

Similarly, student S3 reported that SCMC afforded more chances to pool and evaluate ideas from different perspectives. This process facilitated the accumulation of collective strengths, the identification and adoption of good elements from peers, and the enhancement of their written work's overall quality:

I enjoy writing with others synchronously because it lets me see different ideas and learn more. More people involved in the brainstorming stage of writing means we get more ideas, which makes our essays more creative and interesting. Usually, in traditional writing, it's just what I think. Getting to hear what my classmates think is helpful to see things from other angles. (student S3, reflective journal 3)

Students S6 and S7 noted that involvement in real-time communication aided in detecting and decreasing linguistic errors related to grammar, vocabulary, and spelling. It benefited the joint retrieval and application of grammatical structures and lexical knowledge:

Most of all, real-time communication helps us look over and fix mistakes in each other's writing. It was surprising how many grammatical and spelling errors my partner found in my work that I hadn't seen. I'm quite grateful they pointed them out because I wouldn't have spotted these mistakes on my own. (student S6, reflective journal 6)

I think the immediate feedback we gave to each other helped us learn new words and use them in the right way. Everyone has their own set of words they prefer to use, and my partner's "word bank" has been great at helping me choose the appropriate ones. Plus, her

pointing out my grammar and spelling errors made me less likely to make the same

mistakes again. (student S7, interview 4)

Student S7 also expressed that SCMC modality helped her learn vocabulary, valuing the

importance of communicative effectiveness in writing:

I'm super grateful for this cool experience because it's the first time I've actually used

English to have conversations. We used English while chatting on WeChat™ and used the

high-frequency words we've learned in real situations. This is the first time I've seen

language as a tool for communication, not just something for tests. I hope we can do

more activities like this to improve my writing skills. (student S7, reflective journal 7)

Another key advantage of the SCMC modality was the availability of instant peer

feedback, as identified by 87.5% of students (14 out of 16). The immediate feedback, both given

and received, was viewed as a form of active communication, making the writing task more

enjoyable and approachable. For example, student S11 expressed a preference for the SCMC

condition for its capacity to allow instant corrections by her partner. Student S4 appreciated the

on-the-spot feedback and the ease of direct replies in SCMC tasks. Student S16 noted that the

rapid response times during WeChat™ live discussions fostered a high level of cognitive

involvement and improved the efficiency of task completion:

I prefer text chatting because my partner can quickly reply to me or answer my questions.

This quick back-and-forth helps avoid any confusion between us and makes sure we can

share ideas smoothly. I found it easier to concentrate on real-time chat and picked up a lot

from our lively interactions compared to the asynchronous approach. It just makes the

writing task simpler to handle, and we can finish it more efficiently. (student S16, interview 8)

Likewise, student S9 highlighted that the benefit of using WeChat™ to communicate is not only ease of access but also that it contributes to enhancing his communication skills:

I don't find anything inconvenient with WeChat™ since I use it almost all the time. I felt comfortable using it and could check all messages and respond right away. Compared to dropping comments on Tencent Docs™ where things can get a bit confusing, talking straightforwardly to someone on WeChat™ feels simpler and clearer. Chatting in real-time helps get my ideas across faster, and I think it improved my English communication skills at the same time. (student S9, reflective journal 9)

Additionally, ten students (62.5%) reported their preference for the SCMC writing style was partially attributed to its capacity to enhance their interpersonal relationships. Text chat supports intimate interaction among learners and increases their sense of community. In particular, learners stated that the SCMC task provided more opportunities for them to better know each other (student S7), foster stronger connections with peers (student S12), and promote a shared sense of responsibility in writing (student S11):

Interacting with my friend in real time made me feel less lonely when writing. We appreciated the opportunity to know each other better and enjoyed the friendly social vibe in the project that was conducive to learning. We worked together with cooperative spirits; something might not have been possible without the chance to write together in the WeChat™ group. (student S7, interview 4)

This project was more than just writing; it was a way to get closer to my friend and build strong friendships. We helped each other in different ways and I felt a real connection with my partner. I was very happy with this synchronous writing task. (student S12, reflective journal 12)

We both liked this activity and had a deep passion for learning English, so we actively participated and talked a lot in the WeChat™ group. I felt like my partner and I were at the same English level, so we understood each other better. I thought I had commitments to be there for my friend and keep responding to her until the activity was over. This made me feel like I was playing a bigger part in learning English, not just passively taking in knowledge. (student S11, reflective journal 11)

In summary, the social dimension of SCMC collaboration can be beneficial for students because text chat sustains the level of interaction among them. The chat environment facilitates the exchange of social support and promotes the sharing of personal experiences. WeChat™ groups help nurture students' writing abilities within a more relaxed and less intimidating environment. For instance, student S12 reported that SCMC modality helped alleviate her fear and pressure associated with traditional writing exercises in face-to-face classroom settings:

Before, I always felt nervous and pressured with the writing tasks in class because I wasn't too sure about my English writing skills. But in this project, I had an awesome partner who worked very well with me. Writing together synchronously helped me get better at using English for interaction. I definitely felt more confident and motivated to write in English. Our partnership will continue – we plan to keep helping each other out in our future studies and everyday life, not just within this writing project. (student S12, reflective journal 12)

Although most learners held favorable views regarding the SCMC modality, three students voiced their concerns. Specifically, students S6, S10, and S14 expressed their challenges to discuss simultaneously on WeChat™ and edit essays in Tencent Docs™. As an illustration, student S14 felt it hard to type quickly in WeChat™ when using L2 English for communication:

> Honestly, I would much rather just talk with my partner face-to-face instead of doing it online. Chatting through text took a lot of time because I had to spell everything out. Writing everything down just feels like a burden for me, and it can really slow down our conversations. Sometimes I couldn't use English to reply as quickly as expected in a chat. (student S14, interview 7)

However, except for student S14, who expressed a preference for the face-to-face (FTF) mode, the other two students showed a reluctance to conduct this synchronous task in person. They felt more at ease to express their views freely in SCMC compared to in-person feedback scenarios, attributing to aspects like convenience and flexibility. Specifically, student S6 stated practical considerations and student S10 reported her limited English oral skills as the primary obstacle for FTF interaction:

> I feel like text chat and talking FTF are about the same. Using social media like WeChat™ saves us a lot of time. We don't have to find places to meet up or try to adjust our busy schedules. Also, the chat history on WeChat™ is super helpful. It keeps track of what we've talked about so we don't forget anything important. In FTF chats, we have to take notes, which takes time and effort. (student S6, interview 3)

> Of course, talking in person might be easier and faster to explain ideas and finish writing, but I actually prefer texting. Texting in real time feels a lot more comfortable and easier

for me to organize thoughts and get things done. It can be an excellent exercise to practice English writing. I guess the situation could be really awkward if we were talking in person. I'm kind of shy and not too confident speaking English. I don't think my partner and I would use as much English as we do in texts. (student S10, interview 5)

It is worth noting that a few students (e.g., students S1 and S3) mentioned they resorted to their L1, Chinese, during SCMC discussion, particularly when they encountered challenges in expressing complex ideas. Students S1 and S3 reported in the interview that occasionally reverting to Chinese served as a motivational tool, helping reduce frustration, increasing willingness to participate, and facilitating communication for task management and clarification:

I understand that improving our English writing skills means we should ideally communicate in English. However, the reality is that instant conversations in English can be quite overwhelming for us at this stage. Using Chinese sometimes actually helps; it keeps our motivation up and makes us more inclined to engage in the discussions. (student S1, interview 1)

It wasn't about avoiding English, but more about using Chinese strategically for specific purposes like managing our tasks more efficiently or clarifying points that were lost in translation. Shifting to our native language at times didn't just make communication smoother; it was like having a supportive tool that ensured we were all on the same page and could proceed with a clear and mutual understanding. (student S3, interview 2)

Furthermore, five students (31.25%) reported that SCMC condition limited their abilities to think critically and address problems independently. As exemplified by student S10, immediate peer feedback might diminish learners' retention of knowledge acquired from the

activity, which highlights the significance of individually testing out language use hypotheses for better retention and deeper understanding of L2 knowledge:

> In the synchronous task, when someone keeps pointing out your mistakes and helps you fix them, I don't think that's very helpful. You won't remember your mistakes. You end up making changes right away based on what they say without really thinking and understanding your errors. But if you make a mistake and then figure out how to fix it on your own, I believe you'll remember it better and avoid making the same kind of mistake again in the future. (student S10, reflective journal 10)

Student S15 echoed a similar concern. Although she agreed on the merits of SCMC in enhancing her writing quality, she expressed doubts about how this form could potentially restrict opportunities for independent thinking:

> I'm grateful for the quick help from my friend, but there are times when I just want to think [about] things on my own to really learn something. Many times, when writing together in real-time, I didn't get much time to build my own thoughts because my partner often shared hers first. It's not that helpful. I feel like I just need to step back, think on my own for a while, and then come back to discuss it again. That's why I lean towards asynchronous discussions. They afford me more time to think, analyze, and develop a well-considered perspective before sharing. (student S15, reflective journal 15)

Perceived Merits and Drawbacks of ACMC

In examining students' perceptions of ACMC modality in collaborative writing, a variety of themes were detected from the interview responses and reflective journals. A notable advantage of ACMC identified by three-quarters of the participants (12 out of 16) was its

demand for self-reliance and individual contemplation. For instance, student S10 highlighted its benefit of increasing self-reflection and enhancing learner autonomy:

> I found I relied on myself a lot more in the asynchronous task compared to the synchronous one. Having extra time in the asynchronous mode helps me dive deep and think more about my writing. I like being able to do my own research and just type things out on my own. Before I passed my work to my partner, I always took time to revise my writing and ensure error correction. (student S10, reflective journal 10)

Similarly, student S16 highlighted that ACMC integrates effectively the advantages of both collaborative writing and traditional individual writing:

> I actually like the asynchronous task a lot because it's like getting the best of traditional individual writing – your own space to think and sort out ideas. But at the same time, you have opportunities to bounce ideas off each other and learn from what other people saying. It's a cool mix. (student S16, interview 16)

Student S5 mentioned in his reflective journal that asynchronous discussion provided him with more autonomy for self-paced participation:

> The asynchronous mode is great because we don't have to wait for each other to be online at the same time. We can just comment whenever we want and respond later. It gives us the freedom to choose when to respond and what part of the discussion to focus on. The delays in responding provide us with more time to think properly before sharing thoughts. (student S5, reflective journal 5)

Owing to the nature of different CMC formats involved in this study, students participating in the ACMC task have extended time to develop more complex and lengthy

sentences that lead to more structured and organized discussion. This extra time contributes to an enhancement in the quality of interactions. For example, student S15 pointed out the advantage of having more time to critically examine their written output and retrieve more advanced linguistic features:

> I felt I had more time to think, type, read, and reply in the asynchronous discussion. Without the pressure of an immediate response, I found our opinions to be more complex and considered with greater thoughtfulness. We had more time to polish our writing and try to make our essays longer, more creative, and more complex. Sometimes, you just need a bit of privacy in writing. (student S15, reflective journal 15)

Additionally, student S10 perceived ACMC as less face-threatening owing to the absence of immediate reactions to the feedback offered. She felt relatively more comfortable expressing herself through ACMC than SCMC or in-class situations:

> In the asynchronous vibe, I was more confident about giving honest or even "sharp" feedback to my friend. You know, I am usually shy in WeChat™ groups or regular classroom settings, but it's a whole different story in the slower-paced asynchronous channel. I participated more actively and can say what I think more directly and freely without overthinking. (student S10, reflective journal 10)

Although students regarded collaborative writing via ACMC modality as beneficial, most of them found it slower, more awkward, and more arduous compared to SCMC discussion. A significant majority, 13 out of 16 students (81.25%), reported that ACMC led to less peer interaction, which resulted in less satisfactory learning experiences. For example, student S9 reported his unpleasant experience with ACMC in his reflective journal:

I like interacting with teachers and classmates, but on Tencent Docs™, our interaction

just didn't feel like enough. Learning from each other comes from sharing knowledge,

but without instant feedback in the asynchronous method, we just don't interact much.

It's not as effective as the synchronous discussion where we can communicate more.

(student S9, reflective journal 9)

Likewise, student S6 expressed her dissatisfaction with ACMC for ineffective task

completion, commenting that "I finished my section, but then I had to wait for my partner to

complete hers. It was hard to make further contributions when others were slow with their

writing." Student S3 also reported the inconvenience of asynchronous discussion, stating that

"To give a critique, the late replies made the whole process feel slow and tedious. Using

"comments" for discussion without quick responses was just boring and felt like a waste of

time." Student S7 commented on her confusion encountered during ACMC on Tencent Docs™:

It was tough to communicate asynchronously because the comments my partner left on

Tencent Docs™ were often unclear. Since my partner wasn't online, it was hard to make

sense of the comments and I felt unsure about my writing. It was very inefficient and

took a lot of time. (student S7, reflective journal 7)

Due to the lack of opportunities for active collaboration and knowledge co-construction,

a few students perceived ACMC as less engaging and not as effective in accomplishing tasks

compared to SCMC. Student S3 revealed that the absence of prompt peer feedback led to

discomfort during the editing process, fearing it might be offensive to modify other's diligent

efforts. She highlighted the difficulty of organizing thoughts might contribute to less coherent

writing in ACMC. Student S9 also reflected that their collaborative essay might have been more

structured and coherent if completed synchronously. Students S7 and S12 noted the challenges in achieving agreement and the tendency towards passive cooperation in the ACMC context:

> Working together asynchronously is kind of cool but tough as well. It is hard to discuss and sort out differences when you can't respond in real-time. Without having live chat with my partner, I found it challenging to edit or change what she wrote because it felt rude. So, we ended up not really discussing much with each other. (student S7, reflective journal 7)

> A big challenge with asynchronous discussion is to merge our thoughts and ideas in a short time. In the asynchronous session, we didn't give each other as much feedback as when we worked synchronously. We tended to avoid editing each other's work. Sometimes we gave direct feedback, but most of the time, we just marked the text that needed change or added new text instead of changing what was already there. (student S12, reflective journal 12)

Due to the less engaging nature of discussing via "comments" on Tencent Docs™, ACMC was perceived as lacking the capacity to foster immediacy and intimacy, which may result in frustration or negative learning experiences. Several students (S3, S4, S7, and S12) reported the ACMC writing task generated a feeling of separation to some extent. For example, student S7 mentioned that interactions via "comments" felt more distant than SCMC:

> We completed the synchronous writing task in the first week and switched to the asynchronous one in the second week. Without quick replies from my partner, I felt a sudden sense of loneliness and isolation. I prefer writing together at the same time

because it helps build connections between us and keeps our friendship strong. (student S7, interview 4)

The Improvement of Writing Performance

In exploring the second research question regarding the effects of text-based SCMC and ACMC on students' English writing development, the qualitative data indicated that students perceived both modalities as instrumental in improving their writing skills. Although a large number of participants expressed their preference for SCMC over ACMC for the quantity and immediate nature of interaction, they also recognized the advantages ACMC in promoting a deeper and higher-quality interaction.

Many students (e.g., students S12, S6, and S11) highlighted that they could produce more words and interacted more during SCMC discussions compared to those in ACMC. The immediate feature of SCMC is perceived by learners as not only expanding their language knowledge but also boosting their motivation and performance in writing:

Getting immediate feedback helps me write better. If something is not clear in our WeChat™ group, we can quickly point it out. I like the robust bond formed with my partner in the synchronous task, and I felt more motivated to join in the discussion when I got many favorable responses from my friend. (student S12, reflective journal 12)

Every time I'm in chat, I'm picking up new words or phrases from my partner. It's not just about learning them; it's about using them. When I see my friend using some words or grammar structures that I'm not familiar with, I can immediately ask and understand them in context. This real-time exposure is super helpful for expanding my vocabulary and sharpening my grammar skills. It's learning in action! (student S6, interview 3)

Getting instant feedback from peers helps me construct well-organized paragraphs with many interesting ideas. It's like having a live workshop where every conversation is an opportunity to enhance my overall writing skills, from content development to language structuring. (student S11, interview 6)

On the contrary, learners (e.g., S6 and S16) generally considered ACMC less enjoyable due to reduced interactions with peers and a potential sense of isolation. However, they acknowledged their increase in the accuracy and complexity of sentence structures and valued the extended reflection on content and language use in ACMC, which could be facilitative for their L2 writing improvement. Students perceived text-based ACMC as flexible, offering them enough time to contemplate and express ideas at their own pace. The self-reliance required in ACMC tasks, although less enjoyable to the participants, contributes to their writing development:

To compare the two, I have to say I don't like the asynchronous stuff much. It felt like we weren't talking to each other much, and sometimes it was like I was just writing on my own, sort of like the usual individual writing assignments. But I did notice my sentences were more accurate, complex, and logical during the asynchronous task, whether it was in communication or essay writing. Having extra time to think made me more careful to approach the writing content and language use, and I can see how that's a good thing for writing development. (student S6, interview 3)

The asynchronous online discussion gave me the flexibility to take my time, digest my friend's feedback on my writing, and then response thoughtfully. Apart from having more profound thoughts on the writing content, having more time to think made me reflect

more on my English use, understand better of the language, and memorize them. (student S16, interview 8)

All the eight students who participated in the interview recognized the benefits of collaborative dialogues in SCMC and ACMC modalities for L2 writing development and most of them (75%) showed a positive attitude towards peer collaboration. Throughout the writing project, learners reported their gradual improvement in different aspects of writing, specifically in areas such as grammar, vocabulary, organization of ideas, and content of the essay. They attributed the enhancement of their written work's quality to the collaborative dialogues, which they felt directly bolstered these specific aspects of their writing. Vocabulary learning appears to be the most perceived linguistic benefit, as noted by 7 out of 8 students (87.5%) who participated in the interviews. For example, student S1 expressed that more transitional words were used in their co-constructed texts, which made their writing more coherent. Grammar improvement is another merit emphasized by 6 learners in the interview (75%), noting that collaborative dialogues "assisted in identifying and correcting their grammatical mistakes that may have been overlooked otherwise." Students S7 and S11 stated that collaborating with peers significantly enhanced their accuracy in writing:

> Yeah, I definitely see some improvements in my writing skills. Working in pairs not only helps finish the project but also each one of us. As we kept discussing and working together, I noticed I could get my points across better with fewer mistakes. My sentences became more accurate. I know I am improving, though it's not a huge progress. I guess the more I write, the more I'll improve. (student S7, interview 4)

> This is a refreshing experience for me; I found receiving feedback and hearing what my friend thinks about my writing is extremely helpful. No one is perfect, right? But it's cool

to see we are getting better. I noticed I was making fewer basic mistakes because I was being more mindful about my writing, knowing that someone else would be reviewing it. And I felt my writing improved to look more academic, especially in how I structured my topic sentences, supported them, and concluded. (student S11, interview 6)

Apart from gaining linguistic knowledge, student S3 pointed out in the interview that collaborative writing improved idea generation and organization because "it gave us chances to brainstorm and outline the structure of our essay together." Several learners viewed both SCMC and ACMC tasks as opportunities to notice and adopt good bits from peers and recognized more learning gains from peer contributions than individual writing. For instance, students S6 and S10 reported gaining a deeper understanding of the cognitive and higher-thinking processes in collaborative writing, such as critical thinking and idea combination:

Having to give feedback to my classmate really forced me to think more. What was nice was how we combined our different perspectives and ended up with an essay with a depth of critical insights. I learned a lot from my partner and can't wait to do another project like this. (student S6, interview 3)

Working together with my friend, both at the same time and at different times, made English writing a wonderful experience for me. When we worked together, it wasn't just about writing together on Tencent Docs™; it was about exchanging ideas, talking about the topic in-depth, and putting our thoughts together in a way that made sense. (student S10, interview 5)

Therefore, computer-mediated collaborative writing (CMCW) can be seen as beneficial for EFL learners' writing development. Students S7 and S11 appreciated its social aspect and

identified its ability to engage writers in producing content for an authentic audience: "Writing not only for teachers made me take it more seriously. I think my writing got better because I knew my partner would read it, so I paid more attention to avoid making mistakes."

Since CMCW was new to the participants according to their previous educational and learning experiences, several students expressed their initial unfamiliarity and anxiety towards engaging in either SCMC or ACMC modality. Over time, however, they began to realize the significant contribution this collaboration made to their writing development and expressed gratitude to their partner. For instance, student S15 mentioned her initial hesitation to write with peers, but with continued participation, she found this approach beneficial, valuing peer comments in enhancing her writing quality:

> Using Tencent Docs™ for collaborative writing was tough for me at first because I wasn't comfortable with it. It felt out of the ordinary I have to admit. But by the time I worked on it with my partner, it got easier. Overall, it turned out to be a great experience. I learned a lot from my teammate, and I think as time went on, we got better at working collaboratively with each other. (student S15, reflective journal 15)

Participants' initial anxious feelings in this study can likely be attributed to the fact that Chinese EFL students did not have any prior experience in terms of working collaboratively in English writing. They were more accustomed to individual writing tasks or learning contexts where the teacher was the primary source of knowledge, as student S8 wrote:

> Honestly, this is the first time I have learned about collaborative writing. Our teacher never showed us something like this. At first, I thought it was weird to write with someone because I'm used to doing things by myself, and I don't like others seeing or

criticizing my work. But after collaborating with my partner, I've become more open to it. I enjoyed how we interacted; it helped us spot mistakes and come up with some great ideas for writing. Traditional writing can get kind of boring since it's just writing for the teacher. (student S8, reflective journal 8)

In addition, all of the participants in the interview (e.g., students S3, S7 and S11) acknowledged the effectiveness of Tencent Docs™ as a platform for CMCW, particularly due to its properties for simultaneous writing and shared editing. The convenient features of Tencent Docs™, especially its flexibility regardless of time and location, significantly contribute to its effectiveness as a collaborative tool for EFL students' writing development:

Tencent Docs™ is user-friendly and makes it easier for us to work together. For me, things become simpler online. It is way better than writing on paper, crossing out, and adding notes all over. We can just highlight parts of our essay and fix them right there. We can see who did what on the Tencent Docs™. It saves time and automatically keeps track of all the changes, so picking up where we left off is easy. (student S3, interview 2)

I found Tencent Docs™ very handy and accessible. Both of us could edit things, and I could easily see what progress my partner was making. (student S7, interview 4)

I like using Tencent Docs™ for collaboration. The history page is awesome because I can go back and see what changes my partner made. I definitely want to keep using Tencent Docs™ for more group writing projects. (student S11, interview 6)

Taken together, the results suggested that CMCW was beneficial for EFL students seeking to enhance their English writing abilities. This method offers ample opportunities for collaborative dialogues and positively impacts both the global aspects of writing, such as

content, organization, and coherence, as well as the more local elements like vocabulary, grammar, and spelling. Moreover, it contributes to high levels of student satisfaction. The advantage of this approach lies in enabling students to write at their own pace and exchange ideas with peers freely without physical restriction, unlike in conventional classrooms where time is often limited and mostly consumed in teacher-led interactions. The advent of CMCW helps remove the traditional barriers of time and space and facilitates students' collaboration and L2 writing improvement.

However, it is worth noting that not all participants found the CMCW helpful for their writing development. Although most students acknowledged the merits of collaborative writing over time, a few students felt stressed for not feeling accustomed to discussing and writing with others. Four out of 16 learners (25%) reported that they encountered some difficulties during the writing process. They regarded working collaboratively as inefficient and troublesome, feeling that individual writing might be more conducive to their writing skills development. Student S1 found no noticeable changes in writing ability or motivation when comparing CMCW to individual writing. Students S2, S9, and S14 stated their preference for traditional individual writing and brought up some practical concerns:

> I like writing on my own because I can do it whenever I want. There is no need to wait for others' schedules or responses, and no need to talk to anyone. I just work better and get the job done quicker alone. If my partner isn't ready to collaborate, it's quite hard to get anything done. It isn't fair because not everyone puts in the same effort. (student S2, reflective journal 2)

> Writing with a partner is interesting, but I'm more comfortable doing it by myself since that's what I've done all the time in school. I don't really get why we need to write

together when exams are all about writing on your own. When you write individually, you learn to depend on yourself, which is highly important in real exams. (student S9, reflective journal 9)

Collaborative writing might be useful, but I trust what I can do myself. Everyone has their own way of seeing things, right? My partner and I have differing views on the story, and writing individually means we don't have to spend time negotiating or compromising our ideas. (student S14, reflective journal 14)

It seems that some Chinese EFL learners favour traditional individual writing, a preference shaped by prolonged exposure to instructor-led classrooms and examination-focused learning environment. This deep-rooted preference poses challenges to the adoption of collaborative platforms in the Chinese EFL context. Students' reluctance to engage in collaborative efforts, as inferred from their comments, might stem from their lack of motivation and recognition of the usefulness of collaborative efforts in writing enhancement. Their inclination towards traditional writing methods for exam preparation reflects the need for more explicit guidance and a longer adjustment period to this new teaching method in China.

Two respondents (students S2 and S13), each from different pairs, reported their writing progress was hindered by their partners' passive engagement in collaboration, resulting in minimal interaction between them. They were disappointed with the new writing experience and complained their partner was not contributing sufficiently to the collaborative scaffold:

I have to say our group didn't interact well in both synchronous and asynchronous writing tasks. I hardly got any feedback because my partner was pretty quiet. When some

group members don't participate much in discussions, it can really lead nowhere. We ended up short on ideas. (student S2, reflective journal 2)

We completed the asynchronous task first, and I faced some trouble connecting with my partner. I left comments asking for help but got no replies. It was difficult when my teammate didn't contribute to our discussion. (student S13, reflective journal 13)

It can be seen that despite the interactive nature of the technical tools (WeChat™ and Tencent Docs™), if students are unwilling or unable to engage and collaborate, minimal or no interaction will occur within the group, resulting in limited improvements in L2 writing. This shortfall in collaboration is not merely a matter of choice; it is often linked to the students' own limitations in English proficiency. Students S1 and S14 perceived that interacting in English would improve their language proficiency, but a lack of that proficiency prevented them from doing so. It was evident from the findings that the level of English proficiency influenced students' confidence in contributing to group activities:

I'm not sure about correcting others because my English is not that good. It's difficult for me to edit or revise what my classmate writes. We're all at the same level in English, and it's hard to spot and fix mistakes when none of us are advanced at it. (student S1, interview 1)

I hesitate to contribute because I'm not confident about my English writing skills. I don't feel like I'm qualified to point out mistakes or suggest changes. Sometimes I worried about saying something incorrect. Since we're all still learning, I don't want to give the wrong advice or discourage anyone. (student S14, reflective journal 14)

It can be inferred students' lack of advanced English and writing skills resulted in some challenges during their collaborative writing process. Due to their inadequate English proficiency, students S1 and S14 feared providing wrong suggestions might misguide their partner. Furthermore, a few students (e.g., students S7 and S12) were not satisfied with the quality and quantity of feedback received from peers, who often maintained polite distance or tone to prevent offending them. CMCW in the current study did not make any use of the instructor's comments or feedback on students' writing. However, 62.5% of the students in the interview (e.g., students S1 and S16) recommended that it might be better if the teacher could contribute more by providing critical comments and appropriate guidance:

> Working with my partner is good for sharing ideas, but I think teachers should be involved, too. They're better at guiding and correcting us. If I make a mistake in correcting my peers, it's not a big deal because the teacher will be there to clear things up and help us improve. (student S1, interview 1)

> Teachers are just more honest with you, and they just know more than us students. Getting constructive criticism is the best way to get better at writing, and teachers are the best at giving that kind of feedback. So, I'd rather get feedback from teachers. (student S16, interview 8)

The analysis of the data highlighted the need for a greater involvement of instructors in the implementation of CMCW in China. Participants in this study valued instructor's input and expressed a clear preference for the teacher to play a more active and direct role in the collaborative writing process. This result suggests a shift towards a more teacher-centered adaptation of CMCW, at least in the early stages of incorporating this new teaching method in the Chinese EFL context.

Chapter Summary

This chapter presents the findings that directly address the research questions posed in this study. The qualitative data suggested that most participants preferred the SCMC modality and identified several benefits associated with it, including the availability of immediate peer feedback, the facilitation of knowledge co-construction, more collaborative dialogues and LREs produced, and better interpersonal connection. In contrast, the ACMC condition was generally perceived as less enjoyable, attributed to less peer interaction and a feeling of separation. Despite the less favorable experiences reported in the ACMC context, learners acknowledged the significance of the self-reliance and deeper reflection on language use demanded by this context, noting these aspects as instrumental in enhancing their L2 writing skills. With the support of synchronous and asynchronous communication modalities in CMCW, most students embraced this new experience and generally perceived their gradual improvement in various facets of their writing, such as grammar, vocabulary, idea organization, and overall content quality. However, it is worth highlighting the challenges some students encountered in the collaborative writing process, such as inactive collaboration and insufficient English language proficiency. A few students remained skeptical about the advantages of collaborative learning and showed a preference for more teacher involvement in this process. Consequently, future modifications of this approach are anticipated to tailor it more effectively to the Chinese EFL settings.

The next chapter will discuss these primary findings within the framework of existing literature and offer educators practical implications based on these results. Additionally, it will identify the limitations of this study and propose recommendations for future research.

CHAPTER FIVE: DISCUSSION

Drawing upon the findings, this research aims to explore the potential differences between the impact of synchronous computer-mediated communication (SCMC) and asynchronous computer-mediated communication (ACMC) modalities on EFL learners' writing skills development. Despite collaborative writing activities being recognized in literature as beneficial in both synchronous and asynchronous modalities, scant research has been conducted to ascertain if one modality may be more facilitative than the other. This study found that pairs reported a more positive task perception and engaged in more collaborative dialogues in the SCMC condition than in the ACMC, which was primarily attributed to its provision of immediate feedback, as verified in the qualitative data. Previous research on collaborative writing mainly focused on assessing the quality of students' written products in terms of complexity, accuracy, and fluency via textual analysis (e.g., Elola & Oskoz, 2010; Mohamadi Zenouzagh, 2021). This research, however, adopted a different approach by examining students' perspectives on the effectiveness of SCMC and ACMC on their writing development. The employment of two distinct data sources (i.e., interviews and reflective journals) in this study helps provide a thorough exploration of the role of CMC modality in collaborative writing tasks. Below is the discussion of the findings and implications for EFL pedagogy and research.

The findings of the research suggest that CMC modality directly affects peer collaboration, which aligns with prior findings of Elola and Oskoz (2017) and Hsu (2022). In other words, the results indicate the crucial role of CMC modality in eliciting collaborative dialogues and enhancing L2 learning opportunities inherent in collaborative writing. The objective of this study is to investigate the effect of task modality (specifically text-based SCMC and text-based ACMC) on writing improvement, and the results revealed that each CMC

modality functions as a cognitive amplifier, aiding participants to reach the final outcome through collaborative effort (Ajabshir, 2019). The key distinction between SCMC and ACMC is evident in the nature of feedback timing, namely, immediate in the former and delayed in the latter. Such variance has led to notable differences in the writing process in the present study: the ACMC modality mirrored traditional written feedback, emphasizing depth and quality through its reactive nature, whereas the SCMC approach promotes a quantity of interaction through its interactive dynamics, allowing for immediate feedback and resolution of uncertainties during the writing phase. As reported by the participants, EFL learners predominantly had favorable perceptions toward SCMC modality for the interactive nature that WeChat™ text chat offered. Compared with the ACMC writing scenarios, students regarded the instant information exchange in the SCMC tasks as highly advantageous because the immediate feedback function of SCMC promoted learning opportunities for real-time collaboration (Al Qunayeer, 2020). The requirement for both writers to be present online at the same time prompted an environment where learners actively exchanged ideas, constructed content collaboratively, and engaged in simultaneous and reciprocal feedback, which significantly reduced the likelihood of inactivity, disengagement, or non-responsiveness (Wang, 2019; Yeh, 2014). Through immediate peer feedback and continuous communication in SCMC, dyads were capable of pooling together linguistic resources effectively throughout the collaborative writing process, which were likely to help them generate more collaborative dialogues and language-related episodes (LREs).

The perceived enhancement of writing performance in the SCMC context can be credited to the abundant collaborative dialogues and LREs they produced in their WeChat™ conversations. Numerous collaborative behaviors during students' synchronous discussions significantly assisted their joint construction of knowledge, solicitation for further clarification,

and mutual verification for understanding. In the SCMC environment, attention to both language meaning (i.e., what they wanted to say) and form (i.e., how to say it) occurred simultaneously. When learners composed texts collaboratively in synchronization with each other's thoughts, they needed to develop content concurrently. In other words, they needed to understand what was being suggested and then respond appropriately. SCMC created an environment described by Guerra (2012) as "a window of opportunity" that constructed an optimal condition for learners to correlate linguistic forms with meanings. This may have encouraged them to negotiate more with each other about the content messages in addition to checking language forms for accuracy, resulting in a more balanced focus on both language form and meaning.

According to Zeng (2017), SCMC acted as a meditational tool that fostered dialogic interaction, maximized chances for collaborative dialogue, and helped students focus on linguistic form and meaning to pursue shared objectives through collective responsibility. Participants in the current study commented they provided more mutual support and feedback during the SCMC task. This outcome is contrary to Rouhshad and Storch (2016), who found a lower incidence of collaborative interactions among pairs (8%; 1 in 12 pairs) in a similar text-based SCMC context. A potential reason for this discrepancy might stem from the fact that, in the current study, most participants had the capability to write, edit, and comment concurrently in other contexts or tasks, unlike in Rouhshad and Storch's (2016) research, where only one participant could write. The ability to write, edit, and comment at the same time might instill a stronger sense of co-authorship among learners, making them feel collective ownership and shared responsibility for completing the text. The perceived co-authorship could further prompt learners to exchange feedback, notice linguistic gaps, and actively contribute to collaborative decision-making processes (Storch, 2002, 2005), giving rise to more collaborative pair dynamics.

Text chat enabled spontaneous and equitable engagement among group members that facilitated the process of posing questions, offering feedback, and clarifying doubts (Warschauer, 1996). A positive group atmosphere is essential for fruitful collaboration, and the social dimension of SCMC facilitates effective collaboration and the maintenance of consistent interaction throughout writing tasks. According to Liang (2010), the fast responses within WeChat™ group discussions increased the sustainability of group interactions, nurtured interpersonal relationships among learners, and strengthened a sense of community within the group. Abrams (2016) revealed that text chat facilitated the exchanges of social support and sharing of personal experiences, which promoted a stronger community bond among learners. Several participants in this study noted their sense of connection and closeness positively influenced their motivation and willingness to participate in the collaborative project. Their sense of connection and satisfaction helped overcome their feelings of isolation caused by the physical distance between them. The results of this study highlighted the usefulness of WeChat™ as a social networking tool in establishing learning communities that were capable of constructing and sharing knowledge with peers. Learning is becoming a more personal and social activity that extends beyond the classroom to improve linguistic expertise exchange and development (Al Qunayeer, 2020; Yeh, 2014).

Collaborative writing via SCMC modality enabled students to find an alternative to face-to-face (FTF) interaction but in a more confident way, fostering their L2 communication abilities (Blake, 2000; Smith, 2003). Participants expressed the value of immediate feedback in text chat, which is similar to FTF conversations, but with less embarrassment experienced when making language errors. They revealed a distinct difference in the nature of feedback in online settings compared to in-person settings, where the presence of eye contact may increase their anxiety that

hinders effective communication and learning. Combining WeChat™ live chat with Tencent Docs™ text editing motivated them to produce more language output, thereby allowing them to become more confident in language use within and outside the classroom. This finding aligns with previous researchers who reported that the incorporation of online components in L2 writing offered students less intimidating interaction opportunities and inspired them to collaborate and exchange ideas more freely in a comfortable setting (Cho, 2017; Freiermuth, 2001; Kessler et al., 2020). Several participants appreciated the interactive opportunities provided in the SCMC writing setting to receive instant assistance from peers, which facilitated collaboration and shed light on their weaknesses in writing and areas for improvement. Students enjoyed and praised the unique characteristics of the SCMC writing context in which pairs communicated more effectively and collaboratively (Zeng, 2017).

In contrast, text-based ACMC differs from text-based SCMC in terms of responsiveness since it does not require simultaneous online presence or immediate real-time responses from learners. This inherent delay was perceived by many students in the current study as making the ACMC modality slower, less engaging, and less effective for task completion when compared to the more interactive SCMC. The absence of immediate feedback in ACMC led to less interaction among participants, resulting in fewer instances of mutual assistance, content suggestions, or corrections of linguistic errors (Cho, 2017; Li & Zhu, 2013). Similar findings were also revealed by Kitade (2006) and Abram (2003), where delays in message response times can cause further delays in replies, adversely affecting student motivation in collaborative activities. Participants reported that the ACMC context led to a lower frequency of collaborative dialogues (i.e., LREs) and challenges in achieving consensus. This was exemplified by the ambiguity of comments on Tencent Docs™, which often left students feeling uncertain and unsupported in their

collaborative efforts (Kitade, 2008). On the personal level, participants in this study perceived that ACMC collaborative writing was more distant, creating a sense of separation among team members and diminishing the sense of joint authorship. This lack of immediate and intimate interaction might explain some participants' frustration and dissatisfaction with their learning experiences in the writing project.

In summary, the combination of scant interaction, feelings of distance, and the inherent delay in ACMC influenced participants' learning experiences that may adversely affect their willingness to engage in future ACMC tasks (Abrams, 2016). Learners' negative viewpoints highlight the importance of addressing these challenges to improve their collaborative writing experience in ACMC settings. Although the results of this study supported existing literature that students generally perceived the SCMC writing process positively (Chen & Yu, 2019; Elola & Oskoz, 2010; Storch, 2005), participants uncovered some concerns regarding the implementation of SCMC collaborative writing in EFL writing courses. First, this research indicated that, although participants were highly satisfied with SCMC, they recognized it limited their opportunities to engage in critical and independent thinking while writing. Unlike Dobao and Blum (2013), who focused exclusively on the merits of SCMC in L2 writing improvement, this finding accorded with Cho's (2017) viewpoint that immediate peer correction might impede language learning because it led to inadequate opportunities for self-reflection and learner autonomy during the writing process. The immediate intervention offered by SCMC might reduce the time and mental space needed for critical self-assessment and independent problem-solving. When peers promptly correct errors, students become more reliant on external feedback, missing the chance to write and think independently. Second, the study identified stress among a

few students due to their limited L2 proficiency, making it challenging for them to respond promptly in English within the expected fast-paced text chat discussions in the SCMC mode.

Another issue worth considering is that students (e.g., student S3) might utilize their shared native language (L1) rather than the target second language (L2) in SCMC discussions when needing to communicate complex ideas quickly. However, this is not a significant issue based on the evidence currently available. Despite learners reporting that they communicated in their L1 Chinese sometimes during CMC activities, they perceived L1 as a mediating tool for L2 learning (Storch & Aldosari, 2010). The interview data indicated that although L1 was employed by learners, its use was limited and primarily functioned as a facilitative tool that helped establish intersubjectivity in handling obstacles and disagreements in communication. Participants in this study acknowledged the benefits of using L1 as a social tool for sustaining peer relationships and fostering their learning motivation. Nevertheless, it remains a research area of interest to determine the appropriate situation and the extent to which L1 should be incorporated in EFL collaborative writing tasks, along with its impact on task completion and L2 acquisition. Subsequent research focusing on the function of L1 in SCMC collaborative dialogues is needed.

Although many participants in this study regarded the ACMC mode as less enjoyable due to fewer interactions in terms of quantity (fewer collaborative dialogues and LREs), this does not necessarily equate to a lower quality of discussion. Storch and Wigglesworth (2010) revealed that learners are more likely to apply peer feedback to their future writings when they have made an effort to understand it. The extended time for contemplation in ACMC gave students ample time to read responses, draft, and refine their writings through more nuanced and critically thought-out contributions. It empowered learners with increased autonomy and self-

determination that enhanced higher levels of cognitive engagement, nurturing in-depth discussions and more analytical collaborative dialogues in ACMC settings (Sotillo, 2000; Warschauer, 2006). Consistent with Chen (2016), students in this study identified multiple benefits of ACMC for writing development, such as the promotion of self-reliance, the enhancement of critical and reflective thinking, and the expression of more complex ideas and linguistic features. In essence, ACMC not only fostered collective scaffolding but also bolstered independent thinking and learner autonomy (Kessler and Bikowski, 2010), which effectively merges the strengths of collaborative writing with the merits of individual writing.

This merit of the ACMC modality may help explain why many students, despite favoring SCMC, also regarded ACMC as instrumental in enhancing their English writing proficiency. Apart from promoting depth or quality in discussions, participants valued the flexibility of the ACMC environment, particularly in terms of content modification and error correction at their own pace. They reported ACMC collaborative writing afforded them extended time to reduce associated stress and anxiety towards English writing and typing. Tu and Mcisaac (2010) mirrored the findings of this study, recommending that the ACMC approach was particularly beneficial for learners with less advanced skills in typing and L2. Hence, it is evident that the ACMC modality possessed a set of unique advantages distinct from those found in the SCMC format. To a certain extent, the benefits of ACMC have counterbalanced its potential drawbacks, such as a less engaging writing experience.

A minority of students in this study felt online collaborative writing was not helpful and showed a preference for traditional individual writing, appreciating their ability to control text and the flexibility to follow their own timelines. However, most participants acknowledged an improvement in the overall quality of their writing through the writing project. This finding

supported Hsu and Lo's (2018) suggestion that collaborative efforts lead to writing performance exceeding individual skill levels. Students in this study generally found computer-mediated collaborative writing (CMCW) fresh, fun, and enjoyable, noting it alleviated their stress in L2 writing and enhanced their self-confidence. AbuSeileek (2012) suggested that the use of CMC tools provides extensive practice opportunities for students to cultivate their writing skills beyond the classroom, making the writing process less daunting and more relaxed. According to the interview responses, most participants viewed CMCW positively and emphasized its effectiveness in boosting their motivation and confidence in English writing. This point aligned with findings from Bowers (2001) and Shehadeh (2011), where participants reported an increase in writing proficiency and self-confidence through collaborative writing.

A significant number of students perceived a noticeable improvement in their writing quality in both global and local areas after the writing project. Regarding local areas, students reported incremental progress in different writing elements such as vocabulary, grammar, spelling, and punctuation. The results of this study support the findings of Susanto (2017), who identified vocabulary as the most beneficial area for students in CMCW. Collaborative writing underscores the social nature of writing, fostering students' meaning-making that is mainly expressed via vocabulary (Elola & Oskoz, 2010; Kessler et al., 2012). In agreement with various past studies (Chao & Lo, 2011; Dobao, 2012; Hsu, 2019; Wigglesworth & Storch, 2009), grammatical accuracy is another key area where learners in the present study noted beneficial improvement due to computer-mediated collaborative efforts. Students reported enhanced grammatical accuracy and syntactic complexity in CMCW compared to traditional individual writing tasks (Dobao, 2012; Shehadeh, 2011). The process of collective scaffolding occurred as learners exchanged linguistic insights and feedback.

In terms of global areas, this study is consistent with earlier research that collaborative writing places a strong emphasis on content (Elola & Oskoz, 2010; Kessler & Bikowaski, 2010). Students in this research expressed appreciation for the chance to negotiate ideas with peers and learn from each other (Li & Kim, 2016). In collaborative writing scenarios, students engaged collectively in every phase of writing, from the initial brainstorming of ideas to organizing, drafting, revising, and editing. This comprehensive involvement provided a platform for exchanging diverse perspectives and created an environment for active participation and scaffolding in the writing process. The perceived enhancements in the content quality and structural organization of students' written assignments can be attributed to their immersion in the collaborative process that involves constructive feedback and creative input from peers (Vakili & Ebadi, 2019).

Learners' general positive attitudes towards the use of WeChat™ and Tencent Docs™ in this study reinforce existing research that advocates CMC tools, particularly for content development (Salem Aldossary, 2021; Shehadeh, 2011). As a vital affordance of contemporary EFL pedagogy, CMCW enhances learners' writing self-efficacy and knowledge construction (Abrams, 2016; Storch, 2019). CMCW can be viewed as a platform for collective meaning-making among L2 writers, differing from the fact that FTF collaborative writing is a more widely recognized space for content and language co-construction (De Backer et al., 2022). CMCW provides students with more chances to build new knowledge and benefit from each other's contributions outside of classrooms (Côté & Gaffney, 2021; Kessler et al., 2012). This trend of mutual scaffolding may contribute to the joint construction of learners' shared understanding, improve their language precision, and encourage self-directed learning.

Taken together, the results of this research revealed that CMCW activities had the potential to enhance EFL learners' writing skills, providing empirical support to Ohta's (2002) hypothesis that collaborative dialogues bolster learners' writing proficiency by stimulating their cognitive mechanisms through interaction. The finding that learners perceived pair collaboration in CMCW as improving their writing corroborated the principles of sociocultural theory, specifically regarding the role of scaffolding or mediation as support offered by peers. Opportunities for second language acquisition (SLA) occur during the co-creation of English texts, facilitated by either self-regulation or other-regulation, a concept supported by various SLA studies from a sociocultural standpoint (Kim, 2008; Lantolf & Throne, 2006; Swain, 2000). The learning process initiates with learners jointly constructing knowledge, which subsequently transitions into an internalized cognitive process. Swain (2000) proposed that this shared knowledge co-construction process immerses learners in cognitive activities that can be a source for SLA (Swain, 2000). In line with the sociocultural theoretical framework, it is reasonable to suggest that CMCW tasks where learners jointly crafted texts encouraged collaborative dialogues and involved them in cognitive processes potentially beneficial for L2 learning (Swain & Lapkin, 2002), such as the internalization of linguistic structures through interaction and knowledge co-construction. CMCW promotes social interaction, which helps students acquire language knowledge and adds meaningful depth to their learning experiences.

Consistent with Shehadeh's (2011) research, this study reveals that the inclusion of varied student perspectives contributes to better writing performance. Participants in the study acknowledged the value of each individual's contribution in collaboration and the power of combined efforts, noting that CMCW led to a written product that was superior to what any individual could produce independently. Vygotsky's (1987) sociocultural learning approach

supports the use of peer feedback, focusing on the critical role of *scaffolding* in learners' social interactions. Scaffolding effectively boosts learners' cognitive growth within the *zone of proximal development* (ZPD). Particularly, peer feedback, when offered through dynamic collaborative dialogues in either SCMC or ACMC, helps students better understand their current abilities and realize their potential for further development. This approach not only clarifies students' immediate learning needs but also guides them toward greater L2 writing progress.

Pedagogical Implications for Educators

Although the experiment of CMCW with sixteen Chinese undergraduates discussed in this research may not generalize to all learners in similar EFL contexts, the insights gathered uncover significant pedagogical opportunities for educators to employ CMC platforms in teaching. The findings suggest profound implications for EFL pedagogy, particularly regarding how different communication modalities influence CMCW in educational settings. As identified previously, there are qualitative differences between the potentials of using SCMC and ACMC for L2 writing development. The results of this study revealed that SCMC modality in collaborative writing elicited a more favorable perception when working with learners of intermediate proficiency level, and was more preferable than the ACMC condition. Learners interacted more dynamically in SCMC environments, evidenced by more collaborative dialogues and instances of LREs within pairs. These findings underscore the importance of incorporating SCMC methods in EFL contexts that allow for more immediate feedback.

Learners in this research reported text-based ACMC as less enjoyable and satisfying with limited collaboration opportunities and LREs. Specifically, the lack of immediate peer feedback and a sense of separation in personal interactions led to a decreased sense of satisfaction and effectiveness in completing tasks. Nevertheless, this study does not dismiss the role of text-based

ACMC modality for writing development, given its potential capacity for thorough in-depth discussion and the autonomy for learners to contribute at their preferred pace. The results point to the necessity for teachers to remedy the identified obstacles and enhance the quality of students' learning experiences when integrating ACMC writing tasks in EFL classrooms. Challenges associated with text-based ACMC writing tasks demand careful consideration from instructors and should be thoughtfully addressed during the course or curriculum design phase. In preparation for ACMC collaborative projects, teachers should cultivate an interactive mindset among students and train them in effective cooperation and engagement with their peers' contributions. Throughout the writing process, it is crucial for EFL teachers to continually monitor the interaction dynamics among students and foster a collaborative atmosphere that enhances the efficacy of ACMC as a medium for language learning.

In that sense, teachers can enhance learners' ACMC learning experience by (a) providing clear instructions or guidelines on how to effectively collaborate with peers in ACMC, (b) guiding learners to explain their rationale for the given feedback, (c) integrating preparatory activities (such as pre-task modeling for establishing a supportive learning environment) to strengthen interpersonal bonds, and (d) combining or balancing SCMC and ACMC activities, or facilitating group-wide communication instead of limiting interaction to pairs. Adopting these approaches may help mitigate the issues of dissatisfaction and ineffectiveness caused by ACMC, as noted by several students in the study. To promote collaborative behaviors in future group tasks, it is beneficial to recognize and reward students' collaborative efforts. For instance, in the assessment stage of group writing tasks, the extent of collaborative engagement (especially mutual interaction) during the writing process can constitute a part of the overall evaluation

criteria. Students' active participation in proposing ideas and responding to peers, as reflected in the group's discussion records and textual edits, deserves consideration in the evaluation process.

Noteworthy from this case study is that merely integrating technology, such as Tencent Docs™, into the course does not automatically lead to students' improved writing performance. The effectiveness of technological innovation in education relies heavily on teacher's support, a factor of particular significance in countries like China, where English language teaching is predominantly teacher-oriented with an emphasis on language accuracy. Even though CMCW is originally designed to encourage peer interaction and scaffolding without direct teacher involvement, the instructor's role remains essential in its incorporation into the Chinese EFL context. Several participants reported their unfamiliarity with this new learning approach and their preference for more teacher participation in this activity. As a result, the introduction of CMCW projects should be tailored to suit the teacher-centered educational framework prevalent in China. Instructors should create a supportive and friendly environment, construct a scaffolding framework, and offer appropriate assistance or feedback on student work to alleviate their negative experiences associated with collaboration. They can offer structured guidance and feedback after peer interaction sessions, ensuring that learners benefit from both collaboration and essential teacher support, ultimately enriching their learning experience and L2 writing outcomes. Eliminating the divide between teacher and peer feedback contributes to more balanced feedback sources, enriches students' learning experiences with varied insights, and enhances their comfort levels with writing. Teachers' comments on students' texts or online discussions may encourage learners to contribute more to the writing task, knowing their efforts are being monitored by instructors.

Taken together, in addressing the question of which communication modality, SCMC or ACMC, is more effective for L2 writing in Chinese classrooms, there is no definitive answer. The research findings suggest that both modalities have their unique contributions to EFL students' writing improvement. However, these two modalities aid learning in different ways and prepare students for different types of collaborative writing processes. This study indicates the importance for educators to carefully balance the benefits and limitations of SCMC and ACMC, aligning them with their instructional goals and teaching philosophy: SCMC tasks tend to be more conducive to promoting peer interaction, joint construction of language knowledge, and communication skills, while ACMC tasks may better support the development of learner autonomy and critical thinking. The results imply that different online learning platforms, each with its unique features, present different educational opportunities leading to varied learning experiences. The pedagogical selection of SCMC, ACMC, or a combination of both should be guided by the learners' needs and preferences in conjunction with the curriculum goals and course objectives. In any teaching context, it is imperative for educators to critically assess and integrate technology in a way that aligns with pedagogical principles and its potential to enhance student learning.

It is worth noting that although most students enjoyed writing collaboratively in the project, a few of them faced challenges that diminished their motivation to work together in CMCW. Consistent with Kessler and Bikowski (2010), participants in this study highlighted issues of unequal participation and occurrences of free-riding. These issues stemmed from EFL students' insufficient language proficiency and a lack of confidence in their language skills. Some respondents cited their limited English proficiency as the main barrier to effective collaboration with peers and expressed their hesitation in participating in collaboration. This

aligns with the findings of Elola and Oskoz (2010), who noted that although many students appreciated the opportunity to collaborate with peers who could help review and refine text, some felt themselves unqualified to provide criticism and worried it might harm their harmonious working relationships. Lee (2010) and Shehadeh (2011) also found that inadequate language proficiency could impede smooth collaboration and writing progression because it limited students' ability to express themselves clearly.

Apart from limited English proficiency, students also experienced initial anxiety about participating in CMCW for the first time. However, most of them, even new to online peer feedback, gradually became more at ease with this learning approach within the two-week period. This highlights the importance of providing thorough training for EFL students in the use of educational technologies for interaction, enabling them to fully grasp the stages of collaborative writing and the application of CMC tools. Educators should offer additional guidance or arrange preliminary discussions to address students' concerns, focusing not only on the technical aspects of CMC tools but also on the norms and strategies for effective online collaboration. They should explain to students how, although traditional individual writing tasks target certain aspects of L2 writing enhancement, integrating CMC tasks can also contribute to the development of key skills crucial for writing, such as communication, digital literacy, and critical thinking. Providing additional support in CMCW may assist students with lower English proficiency in overcoming their anxiety and increasing their involvement with more confidence.

Owing to the initial discomfort and doubt about their writing abilities, students S1 and S14 were less engaged and participated passively in the writing project, which resulted in frustrating moments for their partners. This finding aligns with Li and Zhu's (2013) results that not all students were equally committed to collaborative writing tasks or felt positively towards

CMCW. Students S2 and S13 expressed a preference for individual writing, criticizing collaborative writing as unproductive and worrying their partner's passive involvement might impact their own grades. This is in line with Bikowski and Vithanage's (2016) findings that collaborative assignments typically require more time investment compared to individual tasks. Despite CMCW being recognized as a valuable approach for L2 writing development (Storch, 2019), students struggled with managing time and reconciling different opinions within groups. Individual writing offers learners greater control over the writing process and the freedom to develop their own writing styles (Elola & Oskoz, 2010). It is crucial, therefore, for educators to strike a balance between individual and collaborative tasks, ensuring that each student's learning style and preferences are accommodated while promoting the benefits of peer interaction and collaborative learning.

Furthermore, student S9 questioned the necessity of collaborative writing, especially in exam-oriented countries where writing is largely an individual activity. Participants' undervaluation of peer interaction in CMCW might be grounded in its inadequate design and implementation in the EFL context. Without ample student training and preparation for online discussion or instructors' intervention, it is difficult for CMCW based pedagogies to achieve anticipated positive outcomes. This research does not suggest replacing individual writing tasks with collaborative ones but rather exploring the possibility of how technological tools and peer interaction can enhance EFL students' writing skills and add to instructors' pedagogical repertoires. The findings of this study highlight the merits of CMCW and the necessity for teachers to explain clearly to students the motivation behind it. To be more specific, writing instructors should help students understand the potential benefits of CMCW. Where possible, teachers ought to provide tangible evidence or examples to demonstrate how CMCW can be an

effective tool in enhancing students' English writing proficiency, adding new skills and benefits in addition to their traditional learning tasks.

Limitations and Recommendations for Future Research

This qualitative case study examined EFL students' perceptions of an actual collaborative writing experience with SCMC and ACMC modalities. Although the experiment and post-task interviews were carefully designed and conducted in this thesis, the results should be interpreted with caution because of some limitations.

First, the sample size was relatively small. This qualitative case study focused exclusively on just sixteen EFL students from a single university in China, limiting its application to other educational and cultural contexts. Future investigations, including a broader sample of students across various institutions and countries/cultures, will aid in enhancing the generalizability of the findings. Incorporating diverse learner profiles from different educational backgrounds enables a more comprehensive and definitive understanding of learner perceptions. In order to validate the results of this study and gain deeper insights into the effect of SCMC and ACMC, future studies can replicate this research with a larger quantitative methodology, including pre-tests, post-tests, and control groups to draw comparisons between the two modes. Undertaking a larger-scale quantitative experimental study that examines differences between SCMC and ACMC in students' performance can validate or challenge the outcomes of the current study.

Second, the scope of this study was limited to comparing ACMC with only one type of SCMC modality (text-based), leaving the other two modalities (video-based and audio-based) under-explored. Also, the study focused solely on one type of writing task: the problem-solution essay. Participants' writing performance might vary if they compose essays of different genres, such as narrative essays. Further studies are needed to investigate other SCMC modalities and

diverse types of writing tasks. Comparing how students engage in SCMC and ACMC activities across different writing tasks may yield richer insights for EFL writing research and pedagogy. Understanding the dynamics between task types and CMCW can contribute to a more in-depth understanding of peer interactions in EFL settings.

Third, this study did not measure the extended impact of SCMC and ACMC over a prolonged period. The writing project's short span, confined to only two weeks, might not be sufficient to probe the growth of the participants' writing skills. Extending the project over a semester or conducting it in multiple sessions as a longitudinal study may be ideal for students to evaluate and understand their writing progress over time, although this was outside the scope of the thesis.

Fourth, due to the qualitative nature of the study, the researcher did not exercise control over participant-related variables, such as personality or L2 writing motivation. Future explorations can extend the current line of inquiry by conducting additional qualitative studies to understand how learner characteristics affect writing quality and attitudes in SCMC and ACMC activities. Another potential area worth further investigation is the effectiveness of CMC tools across other levels of language proficiency (beginner and advanced levels), which may shed some light on the impact of linguistic competence on collaboration and knowledge co-construction. A comparison of group format between pairs and larger groups may also offer valuable insights into the efficacy of CMCW for EFL writing instruction and learning.

Fifth, although this study identified the significant role of course instructors in facilitating CMCW activities, it did not address the extent to which teacher interventions might enhance student interactions in an online setting. This gap presents a compelling opportunity for future research to investigate the effects of instructors' guidance and strategies on student engagement

in peer collaboration. Apart from selecting EFL learners as a research sample, EFL teachers' perspectives on the use of CMC as a pedagogical tool are also worth exploring. Teachers' attitudes toward CMCW might shape students' perceptions and affect the success of the implementation of CMCW in EFL contexts. The current study primarily focused on student viewpoints, which may not fully align with the instructional goals and requirements from a pedagogical standpoint. Future studies can consider how EFL teachers' professional development and promotion opportunities may encourage the reform of EFL writing instruction at a school level, especially in contexts where teaching is primarily teacher-centered.

Given the limitations presented above, it is advisable to interpret the results of this study with caution, viewing them as suggestive rather than conclusive. Despite its limitations, this study represents a pioneering effort examining SCMC and ACMC modalities in collaborative writing from a sociocultural theoretical framework within Chinese EFL contexts. Specifically, this research investigates how different CMC modalities affect EFL learners' writing proficiency through collaborative dialogue. The insights gained from this study help spur further research in CMC technology and its application in EFL writing education.

Conclusion

Understanding the perceptions of EFL students towards specific learning tasks and approaches allows educators to customize writing activities according to student's needs and ensure they are adequately prepared for collaborative tasks. The aim of this case study is to explore EFL learners' perceptions toward text-based SCMC and ACMC modalities in collaborative writing tasks. Participants in this study preferred the SCMC modality because it offered opportunities for immediate feedback that encouraged interaction, mutual scaffolding, and knowledge co-construction in the writing process. They enjoyed collaborating synchronously

because it helped reduce their feelings of isolation, enhanced their communication skills and interpersonal relationships, and built a community spirit among them. The qualitative data revealed that learners in SCMC discussions engaged more actively with more collaborative dialogues and LREs, whereas learners in ACMC discussions reported lower motivation in collaboration due to the delayed nature of communication. However, fewer interactions do not necessarily equate to a lower quality of discussion. Students perceived the extended time for contemplation in ACMC offers more in-depth engagement and critically thought-out contributions. These results revealed that students' preferences for the quantity of interactions should not be the sole criteria for evaluation; both SCMC and ACMC have their merits for writing development, which necessitates a thoughtful balance to optimize the immediacy and interactive richness of SCMC while also harnessing the reflective depth and flexibility offered by ACMC, to foster a more engaging and productive EFL writing environment.

Since computer-mediated collaborative writing (CMCW) is a relatively new instructional strategy in China, educators should provide careful support to students who exhibit initial reservations and guide them to adapt to this approach step by step. This study offers insightful perspectives on the teacher's role in using WeChat™ and Tencent Docs™ as online platforms for CMCW. Although participants of this study had received an orientation session on the use of the technical tools, a few of them expressed concerns regarding their unfamiliarity with collaborative writing and lack of confidence in their English language proficiency. Therefore, learners in this context need to be continuously empowered by teachers. Educators should actively intervene in the collaborative writing process on platforms like WeChat™ or Tencent Docs™, assisting and facilitating students' discussions through direct involvement. Even though students are assigned to scaffold each other and complete the project together, the involvement of teacher is crucial

during the writing process, particularly in providing constructive feedback and guidance on students' writing and interaction. Organizing structured training sessions for students can be helpful, especially if they include practical exercises in SCMC and ACMC tasks to facilitate the application of students' learning. Considering the detrimental impact of inadequate group participation in CMCW tasks, this study underscores the importance of fostering equal engagement and assessing individual efforts in collaboration to ensure balanced participation and interactive exchange. The significance of raising learners' awareness of the potential and actual benefits of CMCW activities should also be emphasized by EFL instructors.

Students in this research recognized the merits of the self-directed and interactive nature of CMCW and perceived it as considerably less demanding than FTF collaboration. Drawing on Swain's (2000) concept of collaborative dialogue, this research found that computer-mediated collaborative dialogue is valuable for Chinese EFL students' writing development, offering a conducive but less intimidating environment for knowledge co-construction. The high student satisfaction levels with CMCW underscore its effectiveness in integrating CMC technology into the collaborative writing process. Improvements were noted by students in both global (e.g., content, organization, and coherence) and local (e.g., vocabulary, grammar, spelling, and punctuation) writing aspects. Through composing texts with peers and interacting synchronously and asynchronously, participants reported this new teaching approach engaging, not only enhanced their writing skills but also fostered their autonomy and motivation in writing. CMC technology supports peer interaction and student's writing process, conforming to the developmental stages outlined in sociocultural theory, where external guidance gradually transitions to self-regulation. Therefore, in light of students' overall acceptance of web-based learning environments, CMC tools can be used appropriately to maximize the pedagogical

benefits of collaborative writing activities in China. The insights gained from this study are expected to guide educational policymakers, curriculum planners, and teachers in creating a more effective learning environment for EFL students.

To conclude, this study provides empirical evidence of Chinese EFL students' perceptions of collaborative writing through synchronous and asynchronous communication modalities. Although CMCW may not immediately enhance students' English writing proficiency or transform them into outstanding writers, its effectiveness has been demonstrated in this study as well as in previous studies by other researchers. Given the current issue of students' inadequate English writing proficiency and a lack of enthusiasm for writing development in China, adopting a more interactive teaching approach, such as CMCW that incorporates collaborative dialogue, can be a promising alternative to traditional EFL writing pedagogy.

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Appendix A: Computer-Mediated Collaborative Writing Guidelines

1. **How much do you need to write and how much time do you have for the completion of the writing project?**

   You are allocated two weeks to complete the problem-solution writing project in pairs, encompassing two writing tasks (*Identifying Causes* and *Proposing Solutions*) with a designated one-week timeframe for each task. Select a real-world problem related to social, environmental, political, or economic concerns that you and your partner are interested in exploring in this project. The writing task for the first week is to uncover the root causes that contribute to the problem you have selected. Please write collaboratively with your partner a 500-word essay introducing the problem and pinpointing the root causes responsible for the problem's existence with evidence. The writing task for the second week is to build on the analysis conducted in the first task and propose practical and well-reasoned solutions to address the identified problem. Again, please write a 500-word essay presenting the solutions with justification, analyzing potential benefits and limitations of the solutions, and concluding with a call to action.

   After completing the writing task for each week, please write an approximately 200-word reflective learning journal entry. You have the option to either handwrite these entries or create them in a digital format. If you would like some guidance on what to write about, consider one or all of these questions:

   - Can you describe your experience collaborating (a)synchronously with your partner?
   - What are your initial thoughts and feelings immediately after completing the task?
   - Did you find any advantages or benefits in collaborating (a)synchronously with your partner on the task?
   - Did you encounter any challenges while working (a)synchronously with your partner? How did you overcome them?

2. **How do you write synchronously and asynchronously using Tencent Docs™?**

   You will be assigned a writing partner and designated as either a member of Group A or Group B. If you are in Group A, you and your writing partner need to complete the first writing task (*Identifying Causes*) synchronously, and the second writing task (*Proposing Solutions*) asynchronously via Tencent Docs™. If you are in Group B, you and your writing partner need to complete the first writing task (*Identifying Causes*) asynchronously, and the second writing task (*Proposing Solutions*) synchronously via Tencent Docs™.

When writing your collaborative essay synchronously, you and your writing partner have to negotiate a time when both of you can be online at the same time to complete the writing project. Please use WeChat™ to discuss ideas, give feedback to each other and respond to the feedback while you two are writing the essay together. If you two cannot complete the writing task during your time together, you need to negotiate another time to go online together to continue writing.

When writing your collaborative essay asynchronously, you and your writing partner do not need to be online at the same time. You can write and respond to your partner's feedback and/or questions at any time you want. Use the "comment" function in Tencent Docs™ to discuss your ideas and give each other feedback.

3. **How do you write your essays via Tencent Docs™?**

(a) Write your essay on your Tencent Docs™ page. Do not write elsewhere and copy and paste it onto your Tencent Docs™ page. Everything has to be done using Tencent Docs™ so that your writing records can be kept.

(b) Read through the essay (both yours and your partner's contribution). Give each other feedback using WeChat™ when you are writing synchronously or the "comment" function on Tencent Docs™ when you are writing asynchronously. Revise and edit both your work and your partner's contributions based on the feedback.

(c) Be sure to (1) use a range of topic-related vocabulary, (2) check the correctness of grammar (e.g., subject-verb agreement, number, verb tenses, etc.), (3) use a variety of sentence structures, (4) check spelling and punctuation, (5) check the appropriateness of content and idea organization, and (6) be original.

Appendix B: Guiding Questions for Semi-Structured Interviews

Section 1: Collaboration and Writing Development

1. How did you collaborate with your partner in the project?

2. To what extent are you satisfied with your partner's and your performance in the collaborative writing tasks? Why or why not?

3. What do you think of your partner's responses/suggestions on the part you wrote?

4. What were the goals you wished to achieve through the collaborative writing tasks? Did you achieve your goals? Why or why not?

5. Reflect on the collaborative writing process, do you think your English writing skills have improved through online collaboration with your partner? Why or why not?

6. Could you share any specific aspects or examples where collaborative writing positively influenced your writing abilities?

7. Have you encountered challenges during the activities? If yes, how did you overcome them? If no, what factors do you attribute your smooth experience to?

8. How would you assess the impact of collaboration on your overall writing proficiency?

Section 2: Perception of Collaborative Writing on Tencent Docs™

1. Considering your experience with collaborative writing on Tencent Docs™, how has it influenced your writing skills compared to traditional individual pen-and-paper writing method?

2. Between synchronous text-based communication and asynchronous text-based communication, which one do you prefer? Why?

3. Do you find Tencent Docs™ a helpful tool to improve your English writing skills? If yes, could you provide examples or specific features that facilitated this improvement? If not, what limitations or challenges did you encounter?

4. Would you like to continue to use computer-mediated communication platforms like Tencent Docs™ for English writing? Why or why not?

5. Do you have any suggestions for future use of Tencent Docs™ in English writing?

Section 3: General Project Experience

1. Overall, how do you perceive this collaborative writing project?

2. Do you find this experience beneficial? If yes, in what ways? If no, could you please elaborate on why it does not meet your expectations?

3. Is there any further point you would like to share or provide any suggestions for improvement?

Appendix C: Letters for Research Ethics Board (REB)

Lakehead
U N I V E R S I T Y

Participant Information Letter

Project Title: Enhancing EFL Writing Proficiency through Collaborative Dialogue in Synchronous and Asynchronous Computer-Mediated Communication

Investigators: Lyuming Sun & Dr. Meridith Lovell-Johnston   **Date:** December 8, 2023

Dear Student,

I am a graduate student from Lakehead University's Faculty of Education in Orillia, Ontario, Canada. I am working on a thesis study about how writing together online, both synchronously (at the same time) and asynchronously (at different times), affects the development of English writing skills among students in China. I would like to invite you to join my research. This involves doing a writing project online with others and later having interviews to discuss your thoughts about the experience.

Before deciding to participate, it is important to understand your rights of the study. Your participation is entirely voluntary, including an online writing project and a follow-up interview. This means you have the right to choose not to participate or to withdraw at any time (e.g., telling me by email). Choosing not to participate in or withdrawing from this research will not have any impact on your current program at Dalian Minzu University. The interview recordings and other materials collected in the study will never be published without your prior written consent. You have the right to decline to answer any question in the interview. If you have any concerns, especially regarding your voice in the recordings, please reach out to me or Dr. Lovell-Johnston directly, and we will make sure that any unwanted voices will be removed from the recordings. Your identity and personal information will be kept confidential, and your name and university will not be shared in any publications. I will keep copies of the audio recordings and interview transcripts in a secure cabinet at Lakehead University. Only I and my supervisor, Dr. Lovell-Johnston, will have access. These records will be kept for at least seven years after the study concludes, after which they will be safely deleted or destroyed. It is important to note that your participation in this project will not result in any formal credentials in English as a Foreign Language (EFL).

Below is a brief overview of the writing project:

Duration: December 8, 2023, to January 5, 2024

- Week 1: Orientation
- Week 2-Week 3: Work in pairs and engage in an online collaborative writing project using Tencent Docs™, covering two writing tasks over two weeks.
- Task 1 (Week 2): Identify causes of a chosen real-world problem. (Write collaboratively with your partner a 500-word essay)
- Task 2 (Week 3): Propose practical solutions with justification. (Write collaboratively with your partner a 500-word essay)
- Reflective Journal: After each task, each student writes a 200-word reflective learning journal.
- Your Involvement:
  You will be assigned a writing partner and designated to either Group A or Group B.
  (Group A: Synchronous communication for Task 1, asynchronous for Task 2. Group B: Asynchronous communication for Task 1, synchronous for Task 2)

Synchronous communication: your partner and you be online at the same time. Use WeChat™ to discuss ideas and write together. Asynchronous communication: your partner and you **do not** need to be online at the same time. Use the "comment" function in Tencent Docs™ to discuss ideas and write together.

- Week 4: Follow-up Interviews: Participation is entirely your choice, and the interviews will be audio-recorded solely for the purpose of accurately documenting the details, not for evaluation.

This writing project aims to help you get better at writing in English by practicing both essays and diary entries. As you work on this project, you will see the advantages of writing together with others and having conversations, which are useful for improving your English skills. You will also get to try out different ways of working online, either at the same time or at different times, making you more independent in learning English. This project is designed to be easy and comfortable for you. While I will be watching your online writing, I will not cause any problems and will only help with technical issues.

I will include the findings of this study in my Master's thesis. I also plan to share the results in educational research journals and present them at academic conferences, encouraging more conversations about using technology in Teaching English as a Foreign Language. At the end of the study, I will offer a summary of the findings to Dalian Minzu University. Please feel free to contact them or me directly if you would like to receive a copy.

This study has been approved by the Lakehead University Research Ethics Board and Dalian Minzu University. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at (807) 343-8283 or by email at research@lakeheadu.ca or Aijun Lyu, the College of Foreign Languages, Dalian Minzu University at 130-7416-1986 or by email at 1106829780@qq.com. Thank you for your interest in our research.

Sincerely,

Lyuming Sun, Grad Student,

Faculty of Education, Lakehead University

Email: lsun16@lakeheadu.ca / Phone: 226-234-2982

Dr. Meridith Lovell-Johnston, PhD,

Faculty of Education, Lakehead University

Email: mlovell@lakeheadu.ca / Phone: 705-330-4008 EX 2636

<u>**Participant Consent Form**</u>

Project Title: Enhancing EFL Writing Proficiency through Collaborative Dialogue in Synchronous and Asynchronous Computer-Mediated Communication

Investigators: Lyuming Sun & Dr. Meridith Lovell-Johnston   **Date:** December 8, 2023

___**No**, I do not choose to participate in the research.

___**Yes**, I agree to participate in the research. I consent to participate in a study from December 8, 2023 to January 5, 2024, to examine the impact of synchronous and asynchronous computer-mediated collaborative writing on students' English writing skills development in China. I acknowledge that: (please check all that apply)

Consent to the Study, Acknowledgement of My Role:

- I have read and understood the Participant Information Letter regarding the study.

- I agree to participate in the research as described.

- I understand that my participation will consist of: the online writing project and interviews.

Consent to Recording, Guarantee of Confidentiality:

- I give permission to audio-record our interviews.

- I understand that my identity will not be shared and that my school will not be identified in any publication or presentation.

Right to Withdraw:

- I understand that I can withdraw from this study at any time prior to the end of the data collection period (January 5, 2024), and that I may decline to answer any question.

Specifically, I understand I have the right to leave the study or to withdraw my consent for the use of any portion of my data (transcripts, audio-files, etc.) before the data collection ends. I understand if I decide not to join, I will not be penalized or be affected in my current program at Dalian Minzu University. If I withdraw, my data will be returned to me and will not appear in any presentation or publication. I understand I have the right to decline to answer any question in the interview. My privacy and the privacy of my data will be protected. Only Dr. Lovell-Johnston and Lyuming Sun will have access to the interview transcripts and other materials collected in the study. All data will be kept securely for at least 7 years, at which time it will be safely deleted or destroyed. I understand my name and other identifying information about me or my school will not be shared and pseudonyms will be used in all presentations about the study. I understand that no potential risks are anticipated for me. I also understand that I will not receive financial or other compensation for participation. However, I can ask for a report of the study's findings at the end of the study.

Name of participant: (Please print):   _____

Signature of Participant: _____

Date: _____

(Please retain one copy of this consent letter for your records and one return one copy to the investigators)

Participant Background Questionnaire

Research title: Enhancing EFL Writing Proficiency through Collaborative Dialogue in Synchronous and Asynchronous Computer-Mediated Communication

Dear Student,

Thank you for participating the study. Please provide honest and accurate information for the questionnaire. The questionnaire should take you approximately 10 minutes and will help me better understand you. Your responses will be kept confidential and used solely for research purposes. Thank you for your participation.

Section 1: Participant Information:

1. Name:

2. Age:
   - Between 18-24
   - Between 24-30
   - Over 30

3. Gender:
   - Male
   - Female
   - I identify as _____
   - Prefer not to say

4. Phone number/Email: _____

Section 2: English Proficiency and Learning Experience:

5. How would you rate your overall English proficiency level?
   - Advanced
   - Intermediate
   - Beginner

6. How would you rate your interaction (speaking and listening) ability in English?
   - Advanced
   - Intermediate
   - Beginner

7. How would you rate your literacy (reading and writing) ability in English?
   - Advanced
   - Intermediate
   - Beginner

8. What are your strengths and weaknesses in English learning?
    _____
    _____

9. How often do you use English in your daily activities?

    - Always

    - Often

    - Sometimes

    - Rarely

    - Never

10. How many years have you learned English? Please describe your English learning
    experience:_____
    _____
    _____

11. Have you ever completed a writing task with someone else before?

    - Yes

    - No

    If yes, please describe that
    experience:_____
    _____
    _____

Section 3: Technology Familiarity:

12. Do you own a computer?

    - Yes

    - No

13. How frequently do you use a computer for online activities?

    - Daily

    - Several times a week

    - Once a week

    - Rarely

    - Never

14. What do you typically do when using a computer for online activities? (Select all that apply)

    - Browse the internet for information

    - Check and send emails

    - Use social media (e.g., WeChat™, QQ™)

- Watch online videos

- Play online games

- Other (please specify): _____

15. Do you use Microsoft Word™?

- Yes

- No

16. If so, how often do you use Microsoft Word™?

- Daily

- Several times a week

- Once a week

- Rarely

17. Do you use Tencent Docs™?

- Yes

- No

18. If so, how often do you use Tencent Docs™?

- Daily

- Several times a week

- Once a week

- Rarely

19. Do you use WeChat™ to send and receive instant messages?

- Yes

- No

20. If so, how often do you use WeChat™ to communicate with others?

- Daily

- Several times a week

- Once a week

- Rarely

Study Information Letter

Project Title: Enhancing EFL Writing Proficiency through Collaborative Dialogue in Synchronous and Asynchronous Computer-Mediated Communication

Investigators: Lyuming Sun & Dr. Meridith Lovell-Johnston   **Date:** December 8, 2023

Dear Administrator,

I am a graduate student from Lakehead University's Faculty of Education in Orillia, Ontario, Canada. I am working on a thesis study about how writing together online, both synchronously (at the same time) and asynchronously (at different times), affects the development of English writing skills among students in China. I am very excited to work with the students at Dalian Minzu University. I would like to invite the first-year undergraduate students in your English course to participate in my thesis research. This involves doing a writing project online and later having interviews to discuss their thoughts about the experience. This information will be helpful because I will use the writing project and interviews to identify students' attitudes toward synchronous and asynchronous computer-mediated collaborative writing.

Before deciding to participate, students will understand their rights of the study. Students' participation is entirely voluntary, including an online writing project and a follow-up interview. This means they have the right to choose not to participate or to withdraw at any time (e.g., telling me by email). Choosing not to participate in or withdrawing from this research will not have any impact on students' current program at Dalian Minzu University. The interview recordings and other materials collected in the study will never be published without students' prior written consent. Students have the right to decline to answer any question in the interview. If they have any concerns, especially regarding their voice in the recordings, they can reach out to me or Dr. Lovell-Johnston directly, and we will make sure that any unwanted voices will be removed from the recordings. Students' identity and personal information will be kept confidential, and their name and university will not be shared in any publications. I will keep copies of the audio recordings and interview transcripts in a secure cabinet at Lakehead University. Only I and my supervisor, Dr. Lovell-Johnston, will have access. These records will be kept for at least seven years after the study concludes, after which they will be safely deleted or destroyed. It is important to note that students' participation in this project will not result in any formal credentials in English as a Foreign Language (EFL).

Below is a brief overview of the writing project:

Duration: December 8, 2023, to January 5, 2024

- Week 1: Orientation
- Week 2-Week 3: Work in pairs and engage in an online collaborative writing project using Tencent Docs™, covering two writing tasks over two weeks.
- Task 1 (Week 2): Identify causes of a chosen real-world problem. (Write collaboratively a 500-word essay)
- Task 2 (Week 3): Propose practical solutions with justification. (Write collaboratively a 500-word essay)
- Reflective Journal: After each task, each student writes a 200-word reflective learning journal.
- Students' Involvement:
  Students will be assigned a writing partner and designated to either Group A or Group B.

(Group A: Synchronous communication for Task 1, asynchronous for Task 2. Group B: Asynchronous communication for Task 1, synchronous for Task 2)
Synchronous communication: Pairs will be online at the same time. Use WeChat™ to discuss ideas and write together. Asynchronous communication: Pairs **do not** need to be online at the same time. Use the "comment" function in Tencent Docs™ to discuss ideas and write together.

- <u>Week 4: Follow-up Interviews:</u> Participation is entirely your choice, and the interviews will be audio-recorded solely for the purpose of accurately documenting the details, not for evaluation.

This writing project aims to help students get better at writing in English by practicing both essays and diary entries. As students work on this project, they will see the advantages of writing together with others and having conversations, which are useful for improving their English skills. Students will also get to try out different ways of working online, either at the same time or at different times, making them more independent in learning English. This project is designed to be easy and comfortable for students. While I will be watching students' online writing, I will not cause any problems and will only help with technical issues.

I will include the findings of this study in my Master's thesis. I also plan to share the results in educational research journals and present them at academic conferences, encouraging more conversations about using technology in Teaching English as a Foreign Language. At the end of the study, I will offer a summary of the findings to Dalian Minzu University. Students can contact them or me directly if they would like to receive a copy.

This study has been approved by the Lakehead University Research Ethics Board and Dalian Minzu University. If students or you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at (807) 343-8283 or by email at research@lakeheadu.ca or Aijun Lyu, the College of Foreign Languages, Dalian Minzu University at 130-7416-1986 or by email at 1106829780@qq.com. Thank you for your interest in our research.

Sincerely,

Lyuming Sun, Grad Student,

Faculty of Education, Lakehead University

Email: lsun16@lakeheadu.ca / Phone: 226-234-2982

Dr. Meridith Lovell-Johnston, PhD,

Faculty of Education, Lakehead University

Email: mlovell@lakeheadu.ca / Phone: 705-330-4008 EX 2636

Recruitment Email Scripts

Dear (Administrator),

I am a graduate student in the Faculty of Education of Lakehead University, Orillia, Ontario, Canada. I am working on a thesis study about how writing together online, both synchronously (at the same time) and asynchronously (at different times), affects the development of English writing skills among students in China. I would like to invite the first-year undergraduate students in your English course to participate in my thesis research. This involves doing a writing project online with others and later having interviews to discuss their thoughts about the experience. The information gathered will be helpful for me to identify students' attitudes toward synchronous and asynchronous computer-mediated collaborative writing.

I have attached a study information letter that describes my study in further detail. I am also happy to answer questions you may have by emailing to me (lsun16@lakeheadu.ca) or to my thesis supervisor, Dr. Meridith Lovell-Johnston (mlovell@lakeheadu.ca). If you are interested in hosting me at your school for the project, I kindly ask that you grant me permission to contact your first-year undergraduate students by email to invite them to participate. This study has been approved by the Lakehead University Research Ethics Board and approved by Dalian Minzu University.

Thank you for your time, and I look forward to hearing back from you soon.

Lyuming Sun

Dear (Student),

I am a graduate student from Lakehead University's Faculty of Education in Orillia, Ontario, Canada. I am working on a thesis study about how writing together online, both synchronously (at the same time) and asynchronously (at different times), affects the development of English writing skills among students in China. I would like to invite you to join my research. This involves doing a writing project online with others and later having interviews to discuss your thoughts about the experience. The information gathered through these sources will help me identify your attitudes toward synchronous and asynchronous computer-mediated collaborative writing.

I have attached a study information and consent letter that describes my study in further detail. I am also happy to answer any further questions you may have by email to me (lsun16@lakeheadu.ca) or to my thesis supervisor, Dr. Meridith Lovell-Johnston (mlovell@lakeheadu.ca). Please note that I am not affiliated with Dalian Minzu University. Participation in my study is completely voluntary and should you decline to participate, there will be no effect on your study in Dalian Minzu University or with your relationship with Lakehead University.

If you would like to participate in my study, I kindly ask that you return the consent portion of the letter to me. This study has been approved by the Lakehead University Research Ethics Board and approved by the Dalian Minzu University.

Thank you for your time, and I look forward to hearing back from you soon.

Lyuming Sun