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THE EFFECT OF GOOGLE DOCS-BASED COLLABORATIVE WRITING ON THE L2 WRITING QUALITY OF HIGH SCHOOL STUDENTS IN THE UAE PUBLIC SCHOOLS

Aliyyeh Abdulrahman
United Arab Emirates University

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Cover: Image showing a word cloud with key terms that pertain to collaborative writing

(Photo: By Aliyyeh Abdulrahman)

Declaration of Original Work

I, Aliyyeh Abdulrahman, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*The Effect of Google Docs-Based Collaborative Writing on the L2 Writing Quality of High School Students in the UAE Public Schools*", hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Sara Al Aleeli, in the College of Education at UAEU. This work has not previously formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

Student's Signature: _____

Date: ___28/04/2022__

Approval of the Master Thesis

This Master Thesis is approved by the following Examining Committee Members:

1) Advisor (Committee Chair): Dr. Sara Al Aleeli
   Title: Assistant Professor
   Department of Curriculum and Instruction
   College of Education

   Signature _____ Date April 14, 2022

2) Member: Negmeldin Alsheikh
   Title: Associate Professor

   Department of Curriculum and Instruction

   College of Education

   Signature _____ Date April 9, 2022

3) Member: (External Examiner): Dr. Suhair Al-Alami
   Title: Associate Professor

   Department of General Studies

   Institution: Al Gurair University, UAE

   Signature _____ Date April 8, 2022

This Master Thesis is accepted by:

Acting Dean of the College of Education: Dr. Najwa Alhosani

Signature_____

Date 21/6/2022 _____

Dean of the College of Graduate Studies: Professor Ali Al-Marzouqi

Signature____Ali Hassan_____

Date____21/06/2022_____

Abstract

This study investigated the effect of implementing collaborative writing using Google Docs on students' writing quality in English. The study also explored students' and the classroom teacher's perceptions of Google Docs-based collaborative writing (GDBCW). Two intact classes with 46 students from a public school in Al Ain, United Arab Emirates participated in the study and were divided into an experimental group and a control group. To collect data, the researcher employed a pretest- posttest design, distributed a post-treatment student survey, and conducted an interview with the classroom teacher. Data were analyzed quantitively using a Mann-Whitney U test analysis, and students' and teacher's responses were thematically grouped and qualitatively analyzed using thematic analysis. While findings from the post-test showed that collaborative writing using Google Docs did not significantly impact students' writing levels, the student survey results revealed positive perceptions of the activity. Similar positive feedback was gained from the teacher interview. This study extends the frontiers of collaborative writing in the UAE from higher education to the school level. It also provides significant insights for classroom teachers, researchers, and language educators.

Keywords: Collaborative writing, Google Docs, students' perceptions, second language writing.

Title and Abstract (in Arabic)

تأثير تطبيق الكتابة التشاركية المستندة إلى محرر مستندات جوجل على جودة كتابة طلاب المدارس الثانوية باللغة الثانية في الإمارات العربية المتحدة

الملخص

بحثت هذه الدراسة في تأثير تنفيذ الكتابة التشاركية باستخدام محرّر مستندات Google على جودة كتابة الطالبات باللغة الإنجليزية. علاوة على ذلك، استكشفت الدراسة مواقف الطالبات وتصوراتهن بالإضافة إلى آراء معلمة الصف حول الكتابة التشاركية المستندة إلى محرر مستندات Google. شارك في الدراسة صفان من 46 طالبة من مدرسة حكومية في مدينة العين في الإمارات العربية المتحدة، وتم تقسيمهن إلى مجموعتين تجريبية واخرى ضابطة. استخدم الباحث تصميمًا للاختبار القبلي والبعدي من أجل جمع بيانات الدراسة، ووزع استبيانًا على الطالبات بعد التجربة؛ وكذلك أجريت مقابلة مع معلمة الصف ثم تم تحليل البيانات كمياً باستخدام تحليل Mann-Whitney U Test، وتم تجميع ردود الطالبات والمعلمة حسب المواضيع وتحليلها نوعياً باستخدام التحليل النوعي. بينما أظهرت نتائج الاختبار البعدي أن الكتابة التشاركية باستخدام محرّر مستندات Google لم تؤثر بشكل كبير على مستوى الطالبات في الكتابة، الا ان نتائج استطلاع الطالبات كشفت عن المواقف الإيجابية لهن تجاه هذا النوع من النشاط الصفي. وهذا ما أكدته نتائج مقابلة المعلمة. وسَعت هذه الدراسة نطاق تطبيق الكتابة التشاركية في تعليم اللغة الانجليزية في دولة الإمارات العربية المتحدة من مستوى التعليم العالي إلى المستوى المدرسي. كما قدمت الدراسة بعض التوصيات المهمة الى المعلمين والباحثين والتربويين ذوي العلاقة.

مفاهيم البحث الرئيسة: الكتابة التشاركية، مستندات جوجل، تصورات الطالبات، الكتابة في اللغة الثانية.

Author Profile

Aliyyeh Abdulrahman graduated from the University of Aleppo, Faculty of Arts and Humanities, English Department, in 2011. Aliyyeh has worked in different international Schools in Al Ain, UAE, and currently she is a middle school English language teacher at Madar International Schools. She is also a holder of the Cambridge CELTA Certificate. Aliyyeh received several awards for her excellent academic achievements including Al Basil Award (twice) in Syria and the Chancellor's Fellowship Award for postgraduate students at the UAEU.

Acknowledgements

Dedication

To my beloved husband, Ali Shehadeh

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List of Abbreviations

ADEK	Abu Dhabi Department of Education and Knowledge
COVID-19	Coronavirus Disease of 2019
CMC	Computer-Mediated Communication
CW	Collaborative Writing
EFL	English as a Foreign Language
ESL	English as a Second Language
ESM	Emirati School Model
GD	Google Docs
GDCW	Google Docs-based Collaborative Writing
LCI	Learner-Centred Instruction
L2	The Second Language
MoE	Ministry of Education
SLA	Second Language Acquisition

Chapter 1: Introduction

1.1 Overview

The practice of Collaborative Writing (CW) is based on the relatively current perspective on language learning and teaching that supports pair and group work in second/foreign language (L2) classrooms (see, for example, Bygate et al., 2001; Ellis, 2003; Shehadeh & Coombe, 2010). Research-based evidence suggests that when students write collaboratively, they produce higher quality writing such as paragraphs, essays, reports, and projects. CW has also been shown to be useful throughout the different stages of the writing process including brainstorming, planning, drafting, and proofreading the final draft. Studies have also found that that the products of collaborative writing have demonstrated the recommended quality of work, making this another factor as to why students are more motivated after collaborative writing tasks. When working in groups, students generally produce shorter but better texts in terms of task fulfillment, grammatical accuracy, and complexity (Shehadeh, 2011). Collaboration allows students to gather ideas and provide each other with feedback.

With the advancement of technology and its affordances for educational purposes, many tech-based teaching methodologies entered the modern classroom, especially the L2 classroom. The interactive features of Web 2.0 applications have constituted fertile soil for research projects on CW to examine its implementation using various platforms such as Wikis, blogs, emails, Google Docs (GD), forums, and different social media applications.

Moreover, a considerable shift has taken place in global education, which equally spread to the UAE context, towards skill-oriented

schooling. In this regard, students are not only expected to learn the subject matter, but also to obtain the skills necessary to lead successful careers in the 21st century. One major skill that educational systems are placing huge emphasis upon is collaboration. Thus, recently, Google Docs-based collaborative writing (GDCW) has been a frequently trodden path by researchers interested in exploring state-of-the-art, effective writing instruction methods in the 21st century.

1.2 Research Problem

Although writing is considered an essential skill that students need to master, and despite the Ministry of Education's (MoE) strife to transform the educational system in the UAE to embrace learner-centered practices, the implementation of writing lessons in most of the Emirati public schools are still following the traditional way to teach writing. Consequently, the writing skill is still a challenge for students and teachers alike. From my experience in teaching different student levels, I noticed that students' lowest scores have been in writing in comparison to other skills. Also, most colleague teachers complained that their students had very poor writing skills. Furthermore, examining the existing research in the Gulf context on writing in general, and CW in particular, I found only a few studies about collaborative writing, most of which were Ph.D. dissertations investigating CW at university or college level. Given that writing instruction is suffering from the rigid, traditional methods, and considering the scarcity of research papers tackling the challenges faced by educators and students in writing in the L2, conducting more research on writing pedagogy at the school level is considered a pressing need.

1.3 Purpose of the Study

With the outbreak of the COVID-19 pandemic worldwide, the UAE shifted to a complete online teaching and learning environment in

spring 2020. Motivated by this shift, and considering the previously mentioned issues in teaching writing, the current study seeks to explore the implementation of GDCW in high school learners in a foreign language context in the UAE. Specifically, this study will investigate the effect of GDCW on the quality of students' writing in English as a foreign language (EFL) and students' and teachers' views and perceptions of GDCW.

1.4 Significance of the Study

Conducting research on the implementation of GDCW approach in the Emirati schools could be considered a justified quest and a coveted project due to the scarcity of research addressing the GDCW application in Emirati schools. A possible contribution of this study is to give insights to classroom teachers and syllabus designers into the effectiveness of implementing GDCW in the UAE context, and what challenges and constraints might be faced by students and teachers in this respect.

1.5 Research Questions

Guided by the objectives of the study and in the light of past research, the following research questions were formulated for this thesis:

1. Does Google Docs-based collaborative writing affect students' writing in an EFL high school context?
2. What are the students' perceptions of Google Docs-based collaborative writing in an EFL high school context?
3. What are the teacher's perceptions of using Google Docs-based collaborative writing in an EFL high school classroom?

1.6 Organization of the Thesis

This chapter introduced the study including statement of the problem, rationale and significance of the study, purpose of the study, and the research questions that the study seeks to answer. The following

chapter, chapter two, reviews the relevant literature on collaborative writing in general and using Google Docs in particular. This includes the established literature and the experimental past studies. The chapter concludes with the research questions. Chapter three presents the methodology of the study including the context in which the study was carried out. Chapter four presents the findings obtained from the quantitative and qualitative data in light of the research questions. It also includes the main themes extracted from the qualitative data. The final chapter discusses the main findings of the study in light of existing research on GDCW and the research questions posed for the study. In addition, a number of theoretical and pedagogical implications and recommendations for future research on Google Docs-based collaborative writing will be made based on the findings of the study.

Chapter 2: Literature Review

2.1 Overview

Collaborative writing (CW) research has dramatically expanded in scope, range, depth and reach over the last 15-20 years. With the advent of technology and its widespread availability through the various online applications, new territories for research on CW have recently opened, widening the spectrum of research strands of CW even further. Google Docs, a relatively novel technological tool that has gained popularity in the last decade as a web-based word processor, is increasingly attracting the scholars' attention to investigate its potentiality in promoting effective CW practices.

In this chapter, a discussion of the factors triggering the rise of, and researchers' initial interest in CW will be first presented. Then. light will be shed on computer-mediated communication (CMC) that ushered the way for the expansion of CW into new horizons of research in the world in general and in the United Arab Emirates (UAE) in particular. Next, the main strands of computer-mediated CW developed over the last two decades will be briefly discussed. After that, the chapter will review the main research (experimental) studies investigating Google Docs-based CW (GDCW) in the international, regional, and local contexts to provide context and rationale for the present study.

2.2 Cooperative Versus Collaborative Learning

Before delving into the theoretical background of CW, it would be beneficial to depict a short description of the term collaboration as used in L2 educational research, illustrating how it differs from the closely related concept of cooperation for a clearer understanding of research on CW itself. According to Oxford (1997), the distinction between cooperative

and collaborative learning is based on the purpose, degree of structure, and relationships among the students.

First, Oxford differentiates between collaboration and cooperation regarding the purpose of learning. While cooperative learning activities aim at enhancing the cognitive and social skills of students, the goal of collaborative learning is to "acculturate learners into a knowledge community" (p. 444). The degree of structure is another way to distinguish between cooperative and collaborative tasks. Whereas cooperative tasks are highly structured, collaborative tasks could vary in the degree of structure depending on the type of the task, learners, or context of learning. Moreover, the relationships among learners could vary between cooperative and collaborative tasks. While cooperative learners are driven by accountability for their learning individually and as a group, collaborators maintain a learning community based on assistance and collective scaffolding. Thus, in collaborative learning activities the relationship between learners, as Dillenbourg (1999) points out, is based on assistance provided by more able learners to less knowledgeable ones. Finally, the division of labor among the group members in cooperative learning contrasts with the collective work in collaborative learning that requires the contribution of all members to accomplish one task through interaction and negotiation.

2.3 Defining Collaborative Writing

Although there is no clear consensus among researchers on what collaborative is, it is possible to say that the general line of thought shows that for most researchers CW is a situation in which two or more learners work together on producing a single piece of writing (Storch, 2005, 2013). This could be considered a broad definition of CW; however, researchers have put forward other definitions for CW. Bruffee (1984) defines the

process of CW in terms of what mostly characterizes it: a group intellectual activity mediated by conversation. He explains that

> what students do when working collaboratively on their writing is not write or edit or, least of all, read proof. What they do is converse. They talk about the subject and about the assignment. They talk through the writer's understanding of the subject. (p. 645)

Other researchers, particularly Storch, view writing in general, and CW in particular as a process rather than a product (Storch, 2005). Storch defines CW as "the joint production or the coauthoring of a text by two or more writers". Based on this definition, for a text to be collaboratively produced, it should be accomplished through collaborative processes including all writing phases starting with outlining, planning and drafting, and ending up with one final draft. That is, peer feedback on individually written texts, or peer planning and reviewing are not considered CW. Similarly, Ede and Lunsford (1990) distinguish between (a) cooperative writing which involves the production of one text by many authors in which each writer works on a part of the writing task separately, and (b) CW in which each phase of the writing process is done collaboratively through negotiation of meaning and form. Ede and Lunsford identified three vital criteria of CW: (a) substantive interaction among students in pairs or small groups, (b) shared decision-making power, and (c) the production of single written text. Louth et al. (1993) define CW as an activity in which "group members interact during the writing process and the group is responsible for the final product" (p. 217).

Based on the various definitions of CW cited above, and considering the distinction between cooperative and collaborative learning, one might operationally define CW as an educational strategy in which

pairs or small groups of L2 learners produce or co-author a single text based on their joint effort throughout the writing phases including brainstorming, planning and outlining, generating ideas, drafting, revising, and producing the final product.

2.4 Research Interest in Collaborative Writing

Historically, early interest in CW as a genre has been triggered by workplace writing studies (e.g., Ede & Lunsford, 1990; Mirel & Spilka, 2002). In mainstream education, however, CW studies have been mainly influenced by the seminal works of scholars such as Bruffee (1984), Dale (1994a, 1994b,1997), and Speck (2002). For instance, Speck (2002) promoted the implementation of CW in higher education contexts, commending the role of CW in enhancing students' active learning and critical thinking as working on CW tasks creates a greater room for students to bring their unique ideas and questions into the classroom.

Similarly, CW has gained an increasing attention in the field of second/foreign language (L2) teaching and learning during the last three decades. Particularly, CW rising popularity has been brought about by the shift in education from teacher-centered instruction (TCI) to learner-centered instruction (LCI). Whereas TCI is a teaching situation in which most decisions are made and carried out by the teacher based on their priorities, LCI makes the learner, as Richards and Schmidt (2010, pp. 326-327) put it, "central to all aspects of language teaching, including planning, teaching, and evaluation," stressing the importance of the learner's role as a vital one in the learning process.

In L2 classroom, this shift emphasizes students' collaborative work in pairs and small groups. Early research on collaboration in the L2 classroom was overwhelmingly focused on students' oral production, i.e., the skill of speaking. However, during the last 10-15 years, research on L2

collaboration has given an increasing attention to students' written production in the form of CW.

2.5 Theoretical Foundations of Collaborative Writing

Research on CW is fundamentally informed by three main theoretical foundations: Swain's comprehensible output hypothesis, sociocultural theory, and recent developments in research models on writing in L2. These three theoretical foundations will be reviewed in detail in the following sections.

2.5.1 Collaborative Writing and the Comprehensible Output Hypothesis

The comprehensible output hypothesis (COH) by Swain (1984) deems learner output as fundamental for language learning. According to Swain, successful second language acquisition (SLA) depends on opportunities not only for comprehensible input as suggested by Krashen (1982), but also on opportunities for learners' production of comprehensible output.

In her COH, Swain identifies three main functions of output: a) noticing the gap in one's L2 production, which enables them to extend their language ability to fill in the gap, b) hypothesis testing in which learners modify their output to improve communication, and c) reflection on the language they produce, i.e., the metalinguistic function of learner output.

Later, Swain's subsequent studies focused on the advantages of CW accomplished through learner collaborative dialog. Swain (2000, 2010) defines collaborative dialog, or languaging as she termed it in her more recent work, as the talk resulting from learner interactions in their quest to solve language-related problems. This process of languaging is thought to trigger language learning when students deliberate on their

language use vocally in which thoughts are transformed into linguistic artefacts to be collectively explored.

This hypothesis has triggered extensive research into the role of learner output in SLA (for a review see Shehadeh, 2003; Storch, 2013). For example, examining the role of collaborative dialog on student performance in L2, Swain and Lapkin (1995) found evidence of language learning in which L2 learners' use of collaborative dialog helped them develop the storyline in a jigsaw task. Their joint language use resulted in the construction of new linguistic knowledge that they utilized to accomplish the task. Consequently, Swain argues that learner output is not just a sign of learned knowledge, but also a sign of learning at work. Even though Swain employed CW tasks especially 'dictogloss' to push learners to communicate in the second language, her work was mainly focused on examining the learners' oral production and tracing any evidence of L2 learning gains in their production.

Swain's seminal work has peaked the researchers' interest in CW as subsequent works started to place more emphasis on learner written language that is collaboratively produced in L2. For example, Storch, a prominent researcher in the field of CW, has conducted enormous research to investigate CW from different aspects. Storch (2013) points out that even though oral interaction is considered essential for language learning to take place, the deliberated-on language use in CW is thought to provide even more optimal opportunities to boost L2 learning further. Storch (2002) found that languaging positively impacted students' subsequent writing. Comparing collaborative texts to texts written individually a week after the treatment, she found that greater evidence of L2 learning was mainly traced in the collaboratively written texts than those completed individually. Perhaps a deeper understanding of how collaborative dialog

and languaging trigger language learning could be gained by shedding light on CW from the perspective of Sociocultural Theory by Vygotsky in the next section.

2.5.2 Collaborative Writing and the Sociocultural Theory

As noted above, Swain's work on languaging could be better understood from the sociocultural theory (SCT) lens. The SCT is informed by the work the Soviet scholar Lev Vygotsky. According to the SCT perspective, learning, as a human cognitive facility, is a socially situated phenomenon in which an individual's cognitive development is the outcome of people communicating within social groups. Hence, interaction provided by social activity mediates the development of inherited and primitive human capabilities into higher-order cognitive processes (Ellis, 2008; Storch, 2018). Furthermore, cognitive development involves individuals moving through two psychological stages (Lantolf, 2000; Vygotsky, 1978). In the first stage, internalization of social norms and behaviors occurs when a child interacts with adults or more capable peers at the social level (interpsychological). Then, they move to a more independent (intrapsychological) plane where participation in activities and tasks draws upon independent and internalized resources from previous social interaction without external assistance.

Thus, learning sets out at the social level towards the individual level in which knowledge co-construction occurs in learning communities where less capable individuals (novices) rely on the more knowledgeable ones (experts) for assistance in their learning (Vygotsky, 1978). When provided appropriately, this assistance or scaffolding is said to take learners to the next level of the learning process to reach their potential level of expertise or what is referred to as Zone of Proximal Development (ZPD).

Vygotsky (1978) defines ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p.86). According to this definition, for scaffolding to occur in an educational setting there should be a) presence of a more knowledgeable teacher or peer, b) interaction in a collaborative environment, and c) a well-structured activity to trigger problem-solving skills in learners. However, the emphasis placed on learner interaction and scaffolding as means to help students reach their potential is restricted by two factors: a) scaffolding per se could not be effective without learners taking account of each other's needs and levels, and b) the challenge in a particular task should be ahead the learner's current level of development.

In L2 learning, the SCT maintains that language is the essential tool that mediates human thought and cognitive development through social activities that involve interaction. Thus, L2 learning is mediated through collaboration, which involves students interacting together to solve a problem or accomplish a task. According to Ellis (2008), "language is considered as both the means to accomplishing social interaction and of managing social activity, with the former serving as the basis for the latter" (p.225), or as Swain (2000) puts it, L2 learning entails learning how to use language as a tool mediating language learning through what she terms as "collaborative dialog" to describe the condition that boosts language learning through active co-construction and knowledge building atmosphere. Similarly, collaboration has also been instrumental in promoting CW in the L2 classroom. Notably, student collaboration in the form of CW has been shown to significantly improve the quality of their subsequent writing when they write individually in the L2 (e.g., Shehadeh, 2011; Storch, 2005; Wigglesworth & Storch, 2009).

Collaboratively interacting, learners expand their linguistic and cognitive abilities to involve decision-making and problem-solving (e.g., negotiation of meaning and form) (Lee, 2010). In addition, CW helps students develop their writing skills when they share experiences and get immediate feedback on their writing from their peers and teacher. For instance, Wigglesworth and Storch (2009) found that collaboration allowed students to interact on different aspects of writing, encouraging them to collaborate when generating ideas and allowing them to give and receive immediate feedback on language, an opportunity missing when students write individually.

As shown above, CW research has been greatly motivated by the theoretical influences of the SCT on the educational domain. Particularly, SCT has given rise to the next motive that urged the shift in the instructional methods of L1 and L2 composition from product- oriented methodologies to process writing approaches that remarkably utilized CW activities as will be explained in the next section.

2.5.3 Collaborative Writing and Development of L2 Writing Instruction

The late 1960s have witnessed the early evolution of L1 writing instruction from a principally product-based approach towards the new process-based approach (Matsuda, 2003). The use of CW tasks was evident in writing research conducted by L1 composition scholars such as Bruffee (1984) and Dale (1994a, 1994b, 1997). Bruffee (1984) points out that when students write collaboratively, they share knowledge in a learning community in which each member takes part in completing the writing task.

However, the seminal works of Flower and Hayes (1981) and Hayes and Flower (1980) marked the early beginning of process-based research in L2 writing. In their studies, Flower and Hayes examined the

cognitive operations underlying the writing activity and text production. They focused on capturing and analyzing the cognitive processes of the writing expertise that they viewed as problem-solving activity. Using the 'think aloud' protocol analysis, Hayes and Flower (1980) studied the cognitive processes used by college students during writing. To achieve the writing task, participants were asked to verbalize their thoughts into loud talk that was recorded and analyzed in the lab. Flower and Hayes's process model has substantially affected the writing pedagogy, serving as a theoretical basis for using process writing in both L1 and L2 writing classes.

The CW pedagogy falls in line with the process writing schemas in that both CW and process writing approaches make use of strategies such as pre-writing activities, choice of contextualized, meaningful topics, drafting, revising, editing, and writing multiple drafts. According to Myles (2002), process writing employs the writing workshop concept in which students engage in interactive discussions about the topic and ideas with little attention paid to form. Integrating classroom interaction and collaboration into all writing stages, CW goes beyond the notion of writing as product-oriented activity and stresses the importance of how learners go to accomplish a writing task.

However, research on CW has not been limited in scope to the mere writing process. In her comprehensive review of studies on CW, Storch (2018) indicates that earlier research on L2 CW was mainly focused on face-to-face collaboration in a classroom setting. Furthermore, most of the studies conducted on CW fall under one of these categories: a) CW processes such as patterns of interaction and students' attention to language, b) CW product/outcomes (e.g., L2 learning gains, L2 writing development), and c) perceptions about CW (Storch, 2018; Zhang &

Plonsky, 2020). It is beyond the scope of this study, however, to elaborately review the numerous strands of research on face-to face CW (for a comprehensive overview see the above cited studies).

The following section will introduce computer-mediated communication (CMC) in L2 to shed light on its potential benefits for L2 learners. In addition. a brief description of the use of technology in the UAE during the last 10 years will be presented.

2.6 Computer-Mediated Communication (CMC) in L2 Contexts

Advancements in technological tools and applications have changed not only the way teachers and students used to interact and share knowledge in the classroom but also how they think of and perceive technology (Dudeney & Hockly, 2012).

Research has proven that technology can aid in the teaching and learning process, benefitting teachers and students especially in the L2 classroom. Notably, the launch of Web 2.0 technology has furthered the opportunities of interactive learning via platforms that are user-friendly and dynamic, enabling students to develop inquiry and thinking skills, increase opportunities of communication in the second language, exchange feedback, and improve their learning outcomes. In addition, Web 2.0 various applications can help teachers provide a more constructive classroom environment, with ample opportunities to exchange expertise, better tools for English language teaching (ELT), and wider access to web-based conferences and publishing venues, all made available via websites, blogs and other social networking applications such as Twitter, LinkedIn. And Facebook, among so many others. Computer-mediated communication makes use of such technological tools to facilitate communication among people. According to December (1996) computer-mediated communication is "the process by which people create,

exchange, and perceive information using networked telecommunications systems that facilitate encoding, transmitting, and decoding messages." The greatest aspect of CMC is its being a social medium in that people can use anywhere and anytime to carry out communication for different purposes either synchronously (in real-time) or asynchronously (in delayed time).

The growing body of research investigating the application of CMC in learning indicates its multiple benefits within different educational environments including L2 contexts (e.g., Blake, 2005; Lai & Li, 2011). First, CMC can provide L2 learners with ample opportunities to practice their L2 by engaging in communicative and authentic tasks through revolutionary Web 2.0 applications. Platforms such as wikis, blogs, Facebook, and Google apps, among others, can afford a learning environment which is safe and nonthreatening in which no time or place restrictions are imposed on students (Ortega, 2007; Sun & Chang, 2012).

In L2 writing classes, CMC provides an excellent environment to help students collaborate effectively to carry out CW tasks. For example, Lam and Pennington (1995) suggest that using technology helps increase students' motivation and creativity as it provides convenient means for sharing feedback and ideas about the writing task. Another important aspect of computer-mediated CW is that learners can comment, edit and share ideas not only with students from the same class or country, but also from international participants who also have access to the same document online.

Researchers reported many advantages of CMC for L2 learning. One important merit of using CMC in L2 instruction is the ample interaction opportunities that can facilitate negotiation of meaning through which learners can significantly improve their speaking skills such as

pronunciation by noticeably using more repair moves (Bueno, 2010). Consequently, improved language production, it goes without saying, can increase student motivation to learn and increase their L2 proficiency on the long run.

2.6.1 CMC and Web 2.0 Applications for Education in the UAE

The Ministry of Education (MoE) in the UAE places a huge emphasis on integrating Web 2.0 technology in the various educational institutions across the country. According to the MoE vision 2021, it is essential that students in the UAE are exposed to learning opportunities that help prepare them for the requirements of the future career. Namely, students should be equipped with the 21st century skills, on top of which are the efficient use of technology and collaboration. Because these technologies facilitate lifelong learning and support the students' collaboration, creativity, and innovation, most public and private institutions in the UAE are keen to ensure that their classrooms are equipped with the state-of-the-art technological infrastructures (Almekhlafi & Abulibdeh, 2018). Many nationwide projects and initiatives have been launched to realize the vision of MoE in relation to technology integration into UAE schools (e.g., Electronic Classroom by ADEC in 2011; Mohammed Bin Rashid Program for Smart Learning 2012; and Alef Education platform 2015).

Recently, and with beginning of 2020, the new COVID-19 pandemic has impacted almost each aspect of people's daily life and activity. Educational institutions around the world are no exception as they tremendously suffered the consequences of the lockdown that brought about protective procedures such as social distancing and sterilization of public places. As a result, schools were closed in many countries worldwide including the UAE, which made the use of distance/online

learning an imperative in these tough circumstances. Thus, this unforeseen and substantial shift from face-to-face instruction to online mode of teaching nictitated the full embrace of educational technology applications by the Ministry of Education in the UAE and school administrations such as Blackboard, Microsoft Teams, Zoom, and Google Suite for education.

One of the Web 2.0 applications that is utilized in many schools in the UAE is Google Suite (G Suite) for education which remarkably encompasses several effective applications such as slides, sheets, forms, Google Classroom, and Google Docs (GD), among others. With the spread of the COVID-19 pandemic, the utilization of Google apps including Google Docs has increased substantially to have more than just a supporting technological role in the classroom. Now it has become a key element for virtually most aspects of classroom interaction. Google applications for education present the L2 classroom with promising productivity and connectivity applications that have proven to be effective educational tools that enhance the experiences of teachers and students. GD is one application that can be accessed directly via Google Drive or indirectly through Google Classroom. Researchers interested in L2 CW around the world started to investigate the potential of GD in their studies during the last decade due to the many features that will be discussed in detail later in this chapter.

In the next section, I will expound on the history, scope, advantages, and disadvantages of computer-mediated CW.

2.6.2 Collaborative Writing and Computer-Mediated Communication

The advent of technology and the widespread utilization of Web 2.0 applications have been considered the main factors contributing to the renewed attention of researcher to the potential of CW in L2 education. According to Storch (2013), early L2 research on computer-mediated-

communication (CMC), specifically research based on chat boards, emails, and other Web 1.0 applications did not require students to complete written tasks as it was basically concerned with students' L2 oral production. Still, few studies employed CW tasks to encourage student interaction while working on writing tasks together. Later, Web 2.0 revolutionary applications such as blogs, wiki pages, and various social media applications made their way into the educational avenue, and particularly L2 CW research.

Li (2018) defines computer-mediated CW as a writing "activity [that is] conducted online in which students negotiate meaning and writing tasks, co-construct texts, co-revise texts and jointly produce a single online text through collaborative efforts using the technology tool" (p. 883). In her same review on computer-mediated CW, Li (2018) found that the most used tool for CW writing in L2 education has been wiki pages.

However, computer-mediated CW has been reported to have some drawbacks to it. One disadvantage of synchronous CW is its being a time-consuming activity (Bueno, 2011). For instance, students waste long time due to difficulties in connection that might be due to some technical issues (i.e., weak connection and internet glitches), or because of the absence of their partners. Bueno also referred to students' lacking the necessary skills to use Google Docs for synchronous CW as another disadvantage. Similarly, Soon (2011) cited problems in student coordination to find a chat time suitable to all participants in her Wiki-based study. Like Bueno (2011), Soon also reported that some students did not possess the skills required to access or write using Wiki.

2.7 Research Strands in Computer-Mediated Collaborative Writing

Studies investigating computer-mediated CW can thematically be grouped into three main lines of inquiry: Product-oriented CW, process-oriented CW, and student perceptions of CW. Besides, some studies investigated the relationship between the writing process and outcome (e.g., the effect of group dynamics, teacher-student interaction during the writing task on the writing product). Other studies explored the differences between modes of communication: Face to face versus CMC in CW. However, irrespective of what category a study falls into, researchers, as Storch (2013, 2018) points out, generally investigate CW in terms of a) L2 learning gains or the impact of CW on student L2 learning, and b) factors affecting these learning gains leading to L2 writing development such as learner interaction, type of task, etc.

Writing processes have been a major subject of investigation in research on CW (face to face or computer mediated). In particular, many studies focused on patterns of interaction among learners and the factors that mediate and/or impact peer interaction such as teacher's role, task complexity, student level of education, and motivation (e.g., Alghasab et al., 2019; Hsu, 2020; Kessler et al., 2012; Li, 2014; Li & Zhu, 2017b; Oskoz & Elola, 2014). Another area of investigation in relation to process-oriented, computer-mediated CW is collaboration phases and behaviours during the different stages of text co-construction. Studies in this area focused on themes such as learners' approaches to the CW task (Elola & Oskoz, 2010), peer revisions and collaboration behaviours/strategies during stages of text co-construction (Arnold et al., 2012; Kost, 2011; Lee, 2010; Mak & Coniam, 2008), and task nature in relation to peer interaction (e.g. Aydın & Yıldız, 2014). Finally, some studies addressed particular aspects of the writing process such as a) student attention to form in which

learners demonstrated features of recursive writing such as attention to grammar, vocabulary, and other form-related issues (Kessler, 2009; Kost, 2011), or b) student attention to meaning in which students content-related interactions were dominant (Kessler et al., 2012; Kessler & Bikowski, 2010).

Although most studies on computer-mediated CW have been largely driven by a process-oriented approach (Storch, 2013, 2018), interest in the writing outcomes have been guiding another important strand of research in this domain. According to Li, (2018), three major categories exist under this strand: a) qualities of jointly written texts (e.g., Elola & Oskoz, 2010), b) the connection between the writing processes and the writing product (Li & Zhu, 2017b), and c) individual writing development (e.g., Hsu & Lo, 2018; Wang, 2015).

For instance, some studies investigated the link between group interaction and the quality of the written product. One study by Li & Zhu (2017b) found that while collaborative interaction patterns were conducive to better text qualities, dominant/defensive patterns lead to lower-quality writing.

As L2 learning can be highly affected by students' beliefs and attitudes towards the language, the learning environment, the instructor, and the teaching methodology, exploring students' perceptions of computer-mediated CW has been one of the strands recurrently researched in the computer-mediated CW according to Storch (2013). Aslan and Ciftci (2019) conducted a study to synthesize research on students' perceptions about computer-mediated CW and found that "while learners perceive linguistic benefits from interacting with different interlocutors in mainly blog- and wiki-mediated writing activities, they also report

challenges with respect to task demands and the quality of feedback"
(p.100).

According to Li (2018), most of the participants of computer-mediated CW reported the manifold advantages of their experiences such as benefitting from their peers' different opinions on the topic (e.g., Kost, 2011; Li & Zhu, 2013) and improved language skills resultant from practicing the language with peers as in Ducate et al. (2011). In addition, students expressed positive views in terms of the improvement they achieved in their writing skills in areas of fluency, accuracy and, organization (Bikowski & Vithanage, 2016; Elola & Oskoz, 2010; Wang, 2015). Mak and Coniam's (2008) participants reported increased audience awareness when writing with peers using a Wiki, and participants in other studies such as Li &Zhu (2013) and Wang (2015) mentioned their being motivated when writing collaboratively using technology.

On the other hand, several studies reported less-positive attitudes towards computer-mediated CW, reflecting the challenges faced by participants in these studies. For example, some students found difficulty in coordinating their interactions to reach the required collective ownership of the final writing product (e.g., Arnold et al., 2012; Kessler & Bikowski, 2010). Other negative outlooks revealed dissatisfaction with computer- mediated CW due to their unappreciated contributions by other group members (e.g., Ducate et al. (2011), or lack of sense of belonging to the group (e.g., Bikowski & Vithanage, 2016; Li & Zhu, 2017a).

2.8 Major Technological Tools Utilized in Computer-Mediated CW

Various technological tools have been utilized in the L2 classroom to enhance learners' potential in language learning since the 1990s such as wikis, discussion boards, chat rooms, emails, blogs, Facebook, and Google Docs (e.g. Lin, 2009; Shang, 2007; Zhang, 2009). However, studies

investigating the potential of CW for L2 learning have basically used wikis and Google Docs since these two applications, as Li (2018) puts it, "afford the entire writing process, from task negotiation, languaging, to text co-construction, revising and editing until producing the final writing product" (p.883).

A thorough review of literature on computer-based CW for the current study revealed that only few studies used blogs or online tools for the implementation of CW as described in this chapter (for instance Wu (2015) used blogs to examine their effect on CW). Other studies examined the utilization of blogs for various L2 learning aspects. For example, Miyazoe & Anderson (2010) compared the effect of using forum, blog, and wiki on student L2 learning outcomes during a blended learning course focusing on the four skills of the language including speaking, listening, reading and writing.

One of the tools that have been exhaustively researched in relation to CW is wiki. Researchers have investigated the effectiveness of using wikis in improving students' L2 writing and examined their potential in facilitating peer interaction and collaboration as an asynchronous medium of interaction. (e.g. Hsu & Lo, 2018; Wang, 2015). Wikis are commended as a medium for CW activities (Storch, 2013) for their being an easy-to-use and convenient medium of communication boosting collaboration in the L2 class. Besides, wikis are considered a valuable tool that enables students to exchange feedback in an anxiety-free atmosphere.

The latest tool that has more recently gained the interest of CW scholars is Google Docs (GD). Since this current study is mainly concerned with the implementation of CW via GD, the following section will be devoted for research conducted using this platform.

2.9 Google Docs as a Platform for Collaborative Writing

Google company introduced Google Docs as a new, free, web-based word processor in 2009. In 2012, however, the application became a Computing-Cloud, document-sharing service. Google Docs allows users to create and edit word-processed documents, spreadsheets and presentations online while collaborating with other users. Typically, one user (a student or teacher) would create a document acting as its owner and then invite others to collaborate.

With all the special features that promote student collaboration and interaction, researchers have applauded Google Docs as a beneficial and effective tool for CW. For example, Thompson (2008) indicates that Google Docs allows students to work together to create and edit texts online. Sharp (2009) maintains that Google Docs serves as collaborative tool for writing as it helps students to write, view, and edit synchronously, promoting a collaborative atmosphere through peer discussions and sharing of ideas. Chinnery (2008) points out that Google Docs plays a positive role in t increasing student creativity being a convenient environment for working on assignments from home unlike traditional classroom.

Finally, under the prevailing social distancing brought about by the COVID-19 pandemic, implementation of online learning has become imperative in all educational institutions. Hence, the role of GD in helping students carry out their writing assignments whether individually or collaboratively is considered highly significant.

2.9.1 Studies on Google Docs-Based Collaborative Writing

Even though research on Google Docs-based CW (GDCW) has started relatively recently, there is a good number of research papers, dissertations, and theses on using Google Docs in L2 writing. This section

focuses on the related studies that examined the implementation of GDCW and students' perceptions and opinions about using it. Thus, studies reviewed in this section will be limited to CW as defined in the chapter, i.e., a process that entails the students' joint efforts to write a single text from brainstorming to the final draft. Also, studies reporting on types of non-collaborative writing research such as peer editing will be excluded.

A pioneering study on GDCW is by Kessler et al. (2012). It was the first study reporting on the use of GD as a synchronous writing application that aimed at exploring how graduate students engaged in CW using Google Docs. The writing of thirty-eight scholars from an advanced English for academic purposes (EAP) Fulbright course was analyzed and coded. Learners' production was classified as either language related contributions (LRC) including content/meaning and formal/language issues, or non-language related contributions (NLRC) such as how students used GD to plan and organize their work, and how they offered help to one another. The researchers found that even though there was evidence of collective scaffolding from students' postings on GD, a considerable amount of students' participation was focused on meaning, while attention to form was superficially limited to mechanics such as spelling and punctuation.

Suwantarathip and Wichadee (2014) compared EFL writing abilities of students who used GD to work on a joint assignment outside class to those of students who wrote together face to face in class in a university setting in Taiwan. The study also investigated the effect of employing GDCW on the degree of students' collaboration and explored students' perceptions of GDCW. Data were collected from writing tests and two questionnaires. The results from data analysis showed that students' performance in the GD group was superior to the face-to-face

group. Moreover, students perceived GDCW positively, commending its usefulness, ease of use, and high conduciveness to group collaboration.

Strobl (2014) investigated the impact of online collaboration using GD on the product and process of CW as compared to individual writing. Particularly, she examined the effect of GDCW on writing accuracy, fluency, and content. Participant were 48 advanced learners of German in an intact class at university level, and they were divided into two groups. Students in both groups were required to complete two synthesis tasks in a cross condition in which each group underwent both modes of writing: the individual and collaborative. Students' writing was analyzed to assess text quality in terms of complexity, accuracy, fluency, content, coherence, and cohesion. Results of the quantitative analysis indicated that collaboratively written texts achieved significant difference over individual texts in terms of fluency, content selection, and organization. Moreover, in relation to the writing process, findings from the qualitative analysis showed that while CW was recursive in nature, individual text production was linear.

Similarly, Bikowski & Vithanage (2016) conducted a classroom-based study to find out the extent to which CW could help ESL university students to improve their individual writing skills in English. Adopting a pretest-posttest research design, the researchers collected data by observing participants in class as well as surveying their perceptions of CW and conducting semi-structured teacher interviews. Four web-based CW tasks were given to a total of 59 participants who were divided into two groups with 32 students in the experimental group and 27 students in the control group. While both groups worked on a number of identical tasks in and out of class using Google Docs as a writing platform, only students in the experimental group wrote collaboratively. Students were grouped based on their expertise in writing organization, grammar, and

familiarity with using technology as recommended by Dale (1997). During the writing process, all participants were monitored and given feedback on their writing by the teacher. They were also encouraged to ask questions and discuss with their classmates. Prior to the formal data collection, the teacher coached students on the writing topics, on using GD, as well as on how to collaborate during writing. Pre- and posttests were scored using an analytic rubric that included content, organization, academic style, and grammar. Results from pre- and posttests for both groups showed that participants from the collaborative group outperformed those in the control group by accomplishing higher scores. Moreover, data driven from the students' survey indicated that two thirds of the CW group enunciated positive perceptions of the GDCW experience. Students who favored using Google Docs for CW mentioned that GD helped them organize and plan their writing as well as focus on grammar. On the other hand, students moaned the difficulty in putting together diverse ideas to make a whole under a stressful group work. Most participants in the Google Docs-based, individual writing group expressed their liking of the activity except for three who did not like it. Some students said it helped them to write more and better, and others found individual, web-based writing to be boring. Comments from the teachers' interviews stressed the importance of teachers' being well-prepared for implementing CW instruction and offering support to students in their CW processes. Teachers also recognized the role of GD in facilitating collaborative learning and managing students' progress through immediate feedback and monitoring. Finally, some teachers noted that Google Docs provided both teachers and students with opportunities for self-reflection and collaborative discussions.

Woodrich and Fan (2017) investigated the potential of student anonymous CW using GD, and how this tool can encourage participation

among English language art (ELA) learners. Participants were linguistically diverse, grade eight students in a school in the United States of America who worked in balanced groups of four. The study approached CW via three modalities: Face to face, online, and online anonymous in which GD served as a tool for CW in the online modalities. Data were collected from students' participations during the face-to-face trial and GD revisions done by the learners in the online modalities. All participants were given the same writing topic in each stage. Moreover, students' comfort levels across the three modalities/phases of writing were scanned using a five-point, Likert Scale attitudinal survey. Students' writing was scored using a rubric created by the Schools' English Language Department. Findings indicated that even though students tended to participate more equally with their group members when they wrote anonymously using GD, best quality tests were produced when students wrote face to face. Results from the survey showed that students liked using Google Docs and would like to repeat the experience again in the future. They also perceived their experience using GD as "mildly successful." Face-to-face CW was not perceived as an easy medium for writing and was disliked by most students. Finally, students felt that the anonymous online experience was the worst of all in facilitating CW.

Cho (2017) examined the interaction patterns as well as the factors that mediated interaction among three Asian students while collaboratively and synchronously writing a summary of two debates on GD. The researcher employed various tools to collect data including archived GD and chat records, screen recordings, stimulated recall interviews, and a questionnaire. Findings revealed that two dominant interaction patterns were detected during the two CW tasks in which a facilitator/participant pattern was prevailing in the first task, and a collaborative pattern characterized the second task. Moreover, in addition to personal goals,

several factors mediated the process of peer interaction including "modes of communication, task representations, matches/mismatches between participants' self-perceived and other perceived roles, and perceptions of peer feedback" (p. 37).

In light of Storch's (2002) participatory patterns (passive, dominant, collaborative), Abrams (2019) investigated the relationship between patterns of collaboration and the quality of the written text in a GDCW to gain insights into the characteristics of successful GDCW. This qualitative, task based GDCW study took place in a US university setting with twenty-eight freshman, German language learners. Participants worked in groups of 3-4 students on a real-world task that required them to write an ending to a movie most of which they watched in class. During the three-phase treatment, students brainstormed ideas in groups, wrote synchronously from class, and finally finished the task working asynchronously from different places. Results indicated that groups exhibiting more collaborative patterns created texts with better quality in terms of coherence and volume of propositional content than less collaborative groups. Other aspects of text linguistic features such as grammatical or lexical accuracy, syntactic complexity, or lexical diversity did not seem to be related to collaborative patterns as such.

In the Gulf context, Alsubaie and Ashuraidah (2017) examined impact of integrating Google Docs as a writing tool for individual and CW. Also, the study explored students' perceptions of CW using Google Docs. 22 EFL female Saudi college students majoring in Arabic participated in the study. In this study, the pre-task part was face-to-face for all participants, while the post-task part of the study was carried out online via GD. Tools used for data collection included pre- and post-questionnaires, pre- and post-written tasks, students' portfolios, a

customized rubric for test scores, and post interviews. The results showed significant increase in the students' scores when using GD that proved beneficial for CW in that it encouraged peer interaction and collaboration and facilitated peer feedback and editing as well as sharing ideas about the writing topic. In addition, students' perceptions confirmed the usefulness of GD for both individual and group writing.

In the same Saudi context, Alharbi (2020) quantitative study explored the effectiveness of GD in supporting writing instruction and pedagogy in an EFL writing class at the tertiary level in Saudi Arabia. Ten participants were required to write a report over one semester guided by their instructor throughout the study's four stages including preparation, student training, writing using GD, and finally feedback and editing. Data included instructor's observation, students' comments and revisions via GD, and students' responses to the interview after the treatment. The results were promising regarding the positive contribution that GD made to the teaching pedagogy in facilitating the exchange of useful feedback among students and teacher and encouraging peer editing and drafting. In addition, students held overall positive views about the use GD especially in relation to the affordance of peer feedback and editing that helped improve the students' overall writing skill.

In the UAE context, there is a dearth of studies focusing on L2 computer-mediated collaborative learning in general, and Google Docs-based CW in particular. However, there are a few studies that explored the advantages of integrating e-learning in the Emirati classroom. For instance, Ishtaiwa and Abulibdah (2012) investigated the potential of utilizing asynchronous e-learning tools in enhancing student interaction in a blended course in information technology. They found that e-learning platforms (blogs and discussion boards as per the study) played a positive

role in supporting three types of interaction despite their perceived drawbacks during interaction.

Another more recent study examined the benefits of collaborative learning via Google Docs was conducted at Al Ain University by (Ishtaiwa & Aburezeq, 2015). Focusing on the impact of Google Docs on promoting collaboration during an Instructional Technology course rather than CW in L2, the researchers found that Google Docs were effective in promoting collaboration among students themselves on the one hand, and students and their instructor on the other. However, the study reported a plethora of disadvantages to the use of Google Docs.

In relation to the implementation of CW via Google Docs, Andrew (2019) investigated the attitudes of thirty-one, female, Arabic-speaking, EFL students towards using Google Apps during one semester in an English-medium university in the United Arab Emirates. The researcher adopted a mixed-method, explanatory, sequential design to collect qualitative and quantitative data. Throughout the semester, participants were required to complete five different tasks using Google Apps (Sheets, Slides, Docs, and Forms). Students in groups of 3-4 worked collaboratively on the five activities that included vocabulary reviews and definitions, presentations, essay writing and creating a survey. However, Google Docs were only used to review vocabulary and to write an essay in this study. In addition to the five surveys given to the students upon the completion of each activity, a final survey was administered, and two focus group interviews were made at the end of the semester. Findings revealed six major advantages of using Google apps in general including 1) getting to know how to use a new technological tool by students that is 2) straightforward to use and 3) facilitated collaboration and group work. Moreover, 4) Google apps afforded student participation from different

places and 5) provided them with optimal environment to share their ideas and feedback. Finally, 6) the cloud-based platform allowed students to save their work automatically without worrying about losing their work or updating the multiple revisions. On the other hand, qualitative data revealed some disadvantages to using Google apps. These included issues related to initial use of the apps by some students who were not quite comfortable using Google apps. Another finding from the study suggested that using Google Docs was problematic for many students as it was difficult to reach consensus on ideas to write about because students in the group had conflicting opinions that were difficult to reconcile, or because people may vary in their writing styles. Other problems in relation to Google Docs-based CW emerged from technical issues such as simultaneous editing of the same location in the text and the constant need for internet connection to complete the work. The study, however, did not attempt to measure the impact of using Google apps on students' writing skill, rather; it focused mainly on exploring learners' perceptions, and their feedback on the advantages and limitations of this medium of CW. It is worth mentioning that additional activity was completed by the students the goal of which was to investigate students' collaboration behaviors and tendencies. Data taken from observations and teacher notes as well as student interviews showed that students preferred using Google Docs over Microsoft Word for the same benefits reported above. Moreover, the study found that students tended to divide labor among themselves rather than collaborate throughout the whole process.

2.10 Summary and Synthesis of Research

This chapter discussed the theoretical foundations that have informed research on CW during the last three decades. These foundations include the SCT which situates human learning in collaborative knowledge

communities, Swain's output hypothesis that stresses the importance of learner production in language learning, and finally the developments in writing instruction and theories of process writing.

The introduction of CMC into the L2 classroom has contributed to the increased interest by researchers in CW. Specifically, the launch of Web 2.0 applications characterized with high productivity and connectivity levels, especially for educational purposes, has been promising in promoting classroom collaborative learning environment. This environment is thought to be conducive to the achievement of constructivist goals for teaching and learning as it provides learners with ample opportunities to interact and co-construct knowledge in a safe learning community.

Research on computer-mediated CW not only has benefited from and built on findings of earlier face-to-face CW studies, but it has also stretched the boundaries of research to new contexts and modalities. Different technological tools have been employed including wikis, blogs, chat rooms and discussion boards to explore several areas of CW approach. A great deal of research on computer-mediated CW focused on strands related to the writing process such as patterns of interaction and collaboration behaviors. Moreover, studies on the writing product examined the collaboratively written texts in comparison to those produced individually or traced the effect of CW on the individual writing development. Students' perceptions about computer-mediated CW constitute another major research strand in computer-mediated CW.

Research on CW in general and computer-mediated CW has demonstrated the benefits of collaboration for the writing in terms of improving classroom pedagogy and achieving better writing quality in the L2. Many researchers valued the CW approach in increasing student

motivation, creativity, and generation of ideas. It has been also proven that computer-mediated CW provides students with a safe, anxiety-free learning environment, where they can productively share ideas, solve problems, revise and edit texts, and most importantly exchange constructive feedback on each other's contribution to the whole task.

According to Li & Storch (2017), the potential of CMC for L2 CW has not been sufficiently investigated. And even when considering the body of research conducted on computer-mediated CW in general, one can conclude that wikis have the lion's share of this research (Storch, 2013; Li, 2018). Thus, more research needs to be done to obtain better understanding about the utilization of other tools such as Google Docs. Given the excellent features afforded by Google Docs for a successful CW activity, the introduction of this tool to our classroom could be considered an important contribution to help our students reach their potential level in the L2 writing skill.

Moreover, most of the studies reviewed above were conducted at a tertiary level including undergraduate and post graduate students. (e.g. Kessler et al., 2012; Strobl, 2014; Suwantarathip & Wichadee, 2014). Only few studies (e.g. Woodrich & Fan, 2017) explored the implementation of Google Docs-based CW in age groups such as primary, middle, and high school students. Therefore, given the positive effects cited by previous research studies, particularly in relation to the role of Google Docs in enhancing collaboration in distance learning modes, and the positive student attitudes and perceptions about it, it is important to expand the territories of research to include a wider spectrum of learners from different educational backgrounds in the UAE context.

Moreover, when teaching students from different age groups, it is essential to relate to their interest and preferences. The new generations are

technology natives and integrating up-to-date tools into the learning process helps them express themselves more clearly and easily. They also need to gain the 21st century skills of collaboration, communication, critical thinking and creativity to achieve higher levels of future career readiness which is in line with the MoE vision and mission.

Considering the scarcity of computer-mediated CW research in the EFL context in the UAE and considering the urgent need of meeting the standards of English language teaching in the Emirati public and private schools, this study could be of a great importance in providing insights on the potential of implementing GDCW in the Emirati classrooms, which might catalyze a plethora of advantages attributed to this method of instruction in the UAE context.

Finally, a pivotal contribution of this current study is its being the only study on GDCW, to date, which is conducted in a fully distance-learning context in the UAE; a teaching and learning mode that has been adopted due to the exceptional circumstances of the COVID-19 pandemic in the country and the world at large. Obviously, distance learning is not a novel mode of communication in the world as it has been applied in different educational institutions around the globe. However, regarding the UAE context, students have been introduced to a full application of online education this year across the various educational levels.

Remarkably, the immediate pedagogical merit of this study would be investigating the effectiveness implementing GDCW during the COVID-19 pandemic to adequately compensate for the absence of face-to-face interaction featuring classroom-based education. This effectiveness will be measured using a rubric that gauges the quality of students' writing in terms of five areas including content, organization, vocabulary, grammar, and mechanics. More globally, the gains of online CW can

possibly be transferred to the post COVID-19 teaching situations that might aspire to implement distance, or even blended, learning on a wider scale in the UAE, especially with the introduction of new learning situations to the UAE education system such as home-schooling and distance learning.

Based on the goals of this study, the rising interest in Google Docs as a promising potential platform for CW, and the gaps in research identified above, the following research questions are formulated for this study:

1. Does Google Docs-based collaborative writing affect students' writing in an EFL high school context?
2. What are the students' perceptions of Google Docs-based collaborative writing in an EFL high school context?
3. What are the teacher's perceptions of using of Google Docs-based collaborative writing in an EFL high school classroom?

The next chapter will present the methodology employed in the design of the current study.

Chapter 3: Methodology

3.1 Overview

The purpose of research reported in this study is to explore the effect of implementing Google Docs-based CW in a distance learning mode. This chapter elaborates on the context of the study, namely, the educational context in the UAE's public schools. Moreover, the chapter describes in detail the methodology and procedure followed in data collection and analysis.

3.2 The Education System in the UAE

Historically, education in the UAE was basically limited to religious study circles led by Imams of mosques, and thus, mainly focused on teaching Arabic and Quran. By the mid-1950s, few formal schools were opened and funded by other Arab countries including Bahrain, Egypt, Qatar, Kuwait, and Saudi Arabia (Ridge et al., 2017). These schools were still limited in number and mostly catered to male students. It was not before the establishment of the Emirates Union in 1971 by late, HH Sheikh Zayed Bin Sultan Al Nahyan that the UAE started to build its modern, nationwide education system.

With the establishment of the Ministry of Education (MoE) in 1972, schooling programs launched the building of many schools to accommodate students throughout the country. Since most of the curricula taught in the UAE then were adopted from other Arabic countries, particularly Kuwait, Saudi Arabia, Bahrain, and Egypt, the MoE worked on creating a new national curriculum to meet the needs of Emirati students. As a result, in 1979, the National Curriculum Project started, and a national curriculum was implemented nationwide by the year 1985 (Ridge et al., 2017). Since then, the UAE has continuously been

developing different curricula by launching several reform programs and initiatives. It is worth mentioning that in 2012, education in the UAE became compulsory till the age of 18.

3.2.1 Education and the UAE National Agenda 2021

Education is considered a top national priority and one of the eight pillars of the UAE national agenda in which the emphasis is on changing the status of the UAE from an oil-based country into a knowledge-based economy status. In realization of the UAE Vision 2021, His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, announced in 2014 the UAE National Agenda 2021. The primary goal of this agenda is to develop a first-rate education system in which all schools will be transformed into smart learning environments (Warner & Burton, 2017).

UAE's strategic education plan for 2017–2021 aimed at increasing the rate of upper-secondary graduation to 98 percent (from an already high rate of 96.7 percent in 2016). Additionally, the government sought to improve the UAE's ranking in international exams such as Trends in International Mathematics and Science Study (TIMMS)) and Program for International Student Assessment (PISA) to score among the top 20 countries for PISA and the top 15 for TIMMS (Warner & Burton, 2017).

Moreover, to ensure that students in the UAE are exposed to quality teaching that is in line with most recent innovations in classroom practices, the government started the Teacher Licensing Program in 2016 to ascertain that all teachers possess up to the standards qualifications required to deliver successful instruction. Finally, the UAE National Agenda 2021 aimed at eliminating the foundation year that was obligatory for most students to qualify for university entry.

3.2.2 Public Schools in the UAE and Abu Dhabi

Public schools are the state-funded schools, and they are the major education providers for national children as it is estimated that only 17% of the Emirati students join private schools. The education system in the UAE is comprised of the following sectors: Nurseries, public schools, private schools, charter schools, and higher education (Government.ae, 2018). Table 1 below shows the educational levels in the UAE along with the age ranges of students enrolling in them.

Table 1: Age range across education sectors

Sector	Age range
Early childhood education	Birth–4 years
Kindergarten 1 and 2	4–5 years
Cycle 1	6–11 years
Cycle 2	12–14 years
Cycle 3	15–17 years (encompasses traditional secondary as well as technical/vocational schools)
University/college	17+ years

Previously, the Emirate of Abu Dhabi used to have its own curriculum which was different to that taught in the rest of the UAE. However, starting from 2017, Abu Dhabi Department of Education and Knowledge (ADEK) announced the unification of education in the Emirate of Abu Dhabi to be under the umbrella of the MoE. The harmonization of curriculum across the nation was introduced under the new system of a New School Model in which all public schools follow the national, standardized curriculum of the MoE in the UAE.

According to Statistics Center (2016), the number of schools in the Emirate of Abu Dhabi was 442 schools that accommodated 366,029 students in all education stages. Public schools constituted 57.7% of the total number of schools and students in these schools constituted 35.5% of the total number of students. The number of national students in the emirate was estimated by 159,364 students. making up 43.5% of the total number of pupils in the Emirate.

3.2.3 New Emirati School Model

The current system adopted in UAE public schools is the new Emirati School Model (ESM). Launched in September 2010, the model constitutes a new unified curriculum and advanced teaching methods that seek to enhance students' skills and abilities by creating students who can think, communicate, and solve problems independently and competently. Specifically, the model emphasises principles of active learning, learner-centered instruction, and 21st century skills including critical thinking, problem solving, creativity, collaboration, and communication essential for the preparation of Emirati human capital that is highly educated and career-ready (ADEK, 2021). Moreover, the ESM is expected to enhance students' learning experiences and raise their outcomes to the internationally competitive level needed to achieve the Abu Dhabi Economic Vision 2030.

3.2.4 Educational Streams in UAE Public Schools

Instead of choosing between the literary stream and scientific stream as before 2015, students studying in ministry schools can now choose to enrol in one of the four education streams available in these schools which include:

- General Stream: which offers a balance of literary and scientific subjects.

- Advanced Stream: in which more emphasis is placed on subjects such as mathematics and science.

- Professional Stream: which is an option for students with vocational orientation starting from 9th grade until graduation from high school.

- Elite Stream: this is for outstanding students especially who are talented in scientific subjects. Students can join this stream from 6th grade and finish in 12th grade.

3.3 English Language Education in the UAE

According to Warner and Burton (2017), the UAE has the biggest number of English-medium schools in the world. This astonishing fact reflects the remarkable status of English in the education sector as well as the need for English as a Second Language (ESL) in the UAE (Gobert, 2019). Notably, all government higher education institutions use English as a medium for instruction. However, even though English constitutes a large part of the K–12 curriculum since 1992, most graduates of public schools did not meet university entry requirements in relation to English language proficiency. Consequently, the government was heavily burdened by expenditures to cover the budgets for the foundation year at universities (amounting to one third of the total budget assigned to those institutions).

To address the urgent need to improve students' proficiency level in ESL in public schools, and to eliminate the foundation year in higher education institutions, the MoE has started a series of educational reforms the last of which was the introduction of the New School Mode (NSM) which known as ESM now. This model emphasizes the importance of

English mastery and its being the medium of instruction in public schools. Thus, currently, the tuition of scientific subjects and English is conducted in English by native English-speaking teachers, while subjects such as Arabic, social studies, and Islamic are still taught in Arabic. Other mandates by the NSM include:

- emphasis on bilingual education;

- decreasing the number of subjects taught from 13 subjects to 8;

- an emphasis on STEM (Science, Technology, Engineering, and Math) and twenty-first-century skills.

Nonetheless, and despite the massive efforts by the UAE government to increase the English language proficiency in students of public schools, a report by a higher education institution revealed that there is an achievement gap in EmSAT (Emirates Standardized Test) results between graduates of public schools and those of private schools (Gobert, 2019). Emirati students graduating from public schools, unfortunately, fail to achieve the minimum score of 1100 required for direct university entry, and need to take supplementary courses to be able to meet the English language proficiency standards necessary to cope with university-level studies.

3.3.1 English Language Curriculum in Public Schools

The MoE has developed the UAE's English Language Curriculum Framework (the Framework) in collaboration with Cambridge English. This Framework is aligned to the Common European Framework of Reference for Languages (CEFR) which represents a bespoke national curriculum with clear outcomes across all levels of English learning.

The English language curriculum aims to provide learners with a high standard of English language proficiency through:

- "developing English language literacy skills;
- equipping learners with the English language competencies to participate effectively in further education, the workplace and the community;
- preparing learners to compete successfully in international exams;
- shaping global citizens while promoting Emirati cultural values." (National English Language Curriculum Framework, 2018, p.4)

3.3.2 Bridge to Success Textbook

Bridge to Success textbook is part of a series created by Cambridge University Press' Education Reform team in cooperation with the MoE in the UAE to help students reach CEFR B2 by grade 12, in line with the MoE vision for 2021. The course, which covers the three cycles from cycle one to three, is originally a Cambridge content that is contextualized to match the national needs of Emirati students by embedding 21st century skills into the learning of English as a second language. In addition to the student's book, the course includes a workbook and a teacher's guide.

3.4 Participants

This study was conducted in one of Al Ain city's public schools. Al Ain is the second largest city in the Emirate of Abu Dhabi. The school involved in the study accommodates cycle 3 (9-12) students. The population of the study constituted 194, grade 12 students who were divided into nine classes with four classes studying in the general stream and five classes studying in the advanced stream.

Considering the goals of the study, and upon consulting the teacher who participated in the study, two intact classes in the General Stream were selected to participate in the study. Both sections were

comprised of Emirati female students who were 17-18 years old, with 29 students in the control group and 27 students in the experimental group. However, in the final stages of this study, the number of participants was 46 as some students did not have complete data sets due to not taking the pre-/posttest. Students taking part in the study shared Arabic as their first language and had intermediate proficiency level in English. Students' level was determined by a levelling test conducted at the beginning of the new academic year of 2020/2021.

The reason why the researcher decided to choose the General Stream students over the Advanced Stream students was manifold. First, results obtained from research on intermediate students are more likely to be generalized to a wider population in schools because intermediate students make up a broader category of students in high schools across the UAE. Second, the effect of the treatment on intermediate students would be more visible because advanced students might not show significant improvement upon the treatment as much as intermediate student might do. Prior to the current study, all participants had studied English as an L2 for at least 12 years. During the first term of this academic year, and due to COVID-19 pandemic, students shifted to a complete e-learning environment. Nonetheless, the teacher participating in the study reported an impressive and regular attendance by students during the first term.

The English teacher who taught the students during the study had taught the same classes since the beginning of the academic year. She is a non-native, Filipino teacher in her late twenties with advanced language proficiency. She had an excellent knowledge of collaborative teaching methodologies since she had been preparing for the thesis of the Master of Education Degree during the period of the study. Moreover, the teacher

mentioned that she is accustomed to teaching CW, and that she used the method with face-to-face classes rather than online groups.

3.5 Research Design

The study adopted a quasi-experimental, pretest-posttest design to ensure the comparability of both groups prior to treatment and was used to evaluate the impact of GDCW on the development of student writing skills. Since Bridge to Success curriculum for grade 12 is based on integrating the four skills of the language (speaking, listening, reading, and writing), the number of the writing hours per week depended on the nature of the theme of the unit being taught and the amount of writing activities to be focused on. However, approximately, writing was allocated two hours a week.

3.6 Data Collection Tools and Procedure

The study used a mixed research methodology that integrated qualitative and quantitative data. According to Mason (2016), mixing methods allows the researcher to access different ways of understanding the depth and width of contexts pertaining to social phenomena as well as enhancing our capacities for social explanation and generalization. Quantitative data were obtained using a pretest-posttest design in which the writing tasks in both tests were scored using the well-established Paragraph Rating Scale adopted from Hedgcock and Lefkowits (1992). In addition, to ensure validity of qualitative data and the results of this study, the researcher collected qualitative data from multiple sources including a student survey and a teacher's interview to explore the students' and the teacher's perceptions about the experience of CW using Google Docs.

3.6.1 The Pertest

The pertest required participants to write an opinion essay that is between 300-400 words about "marriage celebration in the UAE before and after the COVID-19 pandemic". Participants were familiar with the essay's topic and genre from their previous study. The pertest was scored by two trained, English-teacher raters including the researcher herself and the teacher taking part in the study.

3.6.1.1 The Rating Scale

The well-established writing scale developed by Jacobs et al. (1981) and adapted by Hedgcock and Lefkowitz (1992) was used to rate students' writings and determine the difference in performance between the two groups on the pre- and posttests. The scale consists of five component areas including content, organization, grammar, vocabulary, and mechanics on a 0–100-point scale. These components can be defined as follows:

- Content: knowledge of subject; development of thesis; coverage of topic; relevance of details; substance; quantity of details.
- Organization: fluency of expression; clarity in the statement of ideas; support; organization of ideas; sequencing and development of ideas.
- Grammar: use of sentence structures and constructions; accuracy and correctness in the use of agreement, number, tense, word order, articles, pronouns, prepositions, negation.
- Vocabulary: range; accuracy of word/idiom choice; mastery of word forms; appropriateness of register; effectiveness in the transmission of meaning.
- Mechanics of writing: conventions of spelling, punctuation, capitalization, paragraph indentation, etc.

Table 2 below elaborates on the scale point distribution.

Table 2: Point distribution for the rating scale

	Excellent to very good	Good to average	Fair to poor	Very poor	Total
Content	27-30	22-26	17-21	13-16	30 points
Organization	18-20	14-17	10-13	7-9	20 points
Grammar	22-25	18-21	11-17	5-10	25 points
Vocabulary	18-20	14-17	10-13	7-9	20 points
Mechanics	5	4	3	2	5

3.6.1.2 Interrater Reliability

The analysis of the collected data was performed using the IBM Statistical Package for the Social Sciences (IBM SPSS 26). To establish interrater reliability, a Pearson correlation coefficient analysis was used to assess the degree of agreement between the researcher and the teacher's ratings. All the data driven from the pertest were computed by SPSS application. The analysis showed there was positive correlation between the scoring of both raters with strong interrater reliability at 0.863 and *Sig* 0.000 (see Table 3).

Table 3: Interrater reliability analysis

Correlations

		Rater1	Rater2
Rater1	Pearson Correlation	1	.863[**]
	Sig. (2-tailed)		.000
	N	46	46
Rater2	Pearson Correlation	.863[**]	1
	Sig. (2-tailed)	.000	
	N	46	46

**. Correlation is significant at the 0.01 level (2-tailed).

3.6.1.3 Normality test

Having established reliability for the two raters, the next step was to apply a normality test to data collected from the pretest for both control and experimental groups. Initially, the researcher used a normality test to decide on the proper test to be used in the analysis (parametric or non-parametric). Data that are normally distributed are believed to have a specific statistical distribution like a bell-shaped curve. This normal distribution is defined by the mean and standard deviation of the data. Normality test for pretest (and posttest as will be shown in Chapter 4) showed that most of the data were not normally distributed. This could be explained in terms of the relatively small sample size of 46 students at 0.05 level of significance. Both Kolmogorov and Shapiro statistical tests showed that most of the variables were not normally distributed (p-value < 0.05) (see Table 4).

Table 4: Normality test for the pertest scores

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Content	.111	46	.200	.968	46	.235
Organization	.159	46	.005	.936	46	.014
Grammar	.217	46	.000	.842	46	.000
Vocabulary	.234	46	.000	.881	46	.000
Mechanics	.278	46	.000	.818	46	.000
Total	.134	46	.038	.934	46	.012

Thus, the researcher used the Mann Whitney U test, which is a non-parametric test, to compare scores across groups since it is the appropriate analysis to use when data are not normally distributed. The test showed, (see Table 5), that both groups, control and experimental, had comparable levels, which is necessary for the internal validity of this research. The table below shows the result of the Mann Whitney U test across the control and experimental groups for the pertest.

Table 5: Mann-Whitney U Test Analysis for the pertest

Measures/variables	Content	Organization	Grammar	Vocabulary	Mechanics	Total
Total Number (N)	46	46	46	46	46	46
Mann-Whitney U	271.50	292.50	248.50	244.00	235.00	245.00
Wilcoxon W	547.50	568.50	524.50	520.00	511.00	521.00
Mean Rank (Control)	23.20	22.28	24.20	24.39	24.78	24.35
Mean Rank (Experimental)	23.80	24.72	22.80	22.61	22.22	22.65
Standard Error	45.273	45.063	44.928	44.396	41.061	45.461
Standard Test Statistic (Z)	.155	.621	-.356	-.462	-.718	-.429
Asymptotic. Sig. (2-tailed)	.877	.534	.722	.644	.472	.668

3.6.2 Treatment

The study was carried out over a period of twelve weeks. The first and last weeks were dedicated for the pre- and post-test respectively. Prior to the treatment, the teacher acquainted the students with the purpose of the study, focusing on the concept of CW activity and how to write collaboratively. Students in both the experimental group and control group wrote about the same topics throughout the experiment. These topics were part of the writing curriculum, i.e., the Bridge to Success textbook. The table below shows the topics that students wrote about in a chronological order.

Table 6: Topics of CW during the treatment

Weeks	Topics
Week 1(pre-test)	Opinion essay: Traditional vs. intimate marriage
Week 2-3	Descriptive writing: Majlis
Week 4-5	Opinion writing: Texting
Week 6-7	Informative writing: Cybercrime
Week 8	Informative writing: Architecture
Week 9-10	Blog writing: Travel
Week 11	Opinion: Artificial Intelligence
Week 12- (post-test)	Opinion essay: Traditional face to face vs. distance learning

All writing sessions and instruction took place online during class time via TEAMS application for both groups. While students in the control group followed the traditional way of writing and submitted their individually written texts on LMS, students in the experimental group worked in pairs or small groups of three in the break-out groups on the TEAMS App. They were assigned to their groups by the teacher regarding their levels and personal preferences. Students were regrouped thrice during the treatment in which each student participated in two tasks per group before changing partners.

Students regrouping and how often it took place during the treatment was basically motivated by three considerations a) avoiding one student taking over the whole work with other student(s) working minimally, b) maximizing the chance of students' establishing interactional pairs focusing on task achievement for two weeks and preventing the distraction by the routine of changing partners too often , c) preventing student boredom resulting from not integrating with other

students who possibly do not share similar opinions or learning styles, or from working with the same partner(s) for a long period of time (Shehadeh, 2011).

The teacher placed students in the experimental group in several breakout rooms on Teams, and she monitored their performance and gave them feedback by joining these rooms one by one. She instructed the groups to share their screens with all groups so they could see the progress of other groups in the class.

Every writing session started with the teacher reminding students with the goals of CW and urging them to write collaboratively. The process of writing collaboratively for each writing assignment could be described as follows:

a.   Topic selection: all the topics were prescribed by the Bridge to Success Grade 12 textbook.
b.   Students were given clear instructions on how to write collaboratively, and this was constantly repeated at the beginning of every new writing task.
c.   Students were divided into break out groups on Teams App, so they can have ample opportunity to talk to each other.
d.   Using Google Docs platform. students in pairs or groups of three discussed the topic, brainstormed ideas, and generated ideas.
e.   Students wrote the first draft based on the ideas they had generated.
f.   Students revised their writing in terms of content and structure.
g.   Students produced the final draft and submitted it via google doc.
h.   For each new CW task, one student in the group/pair would create a new document on Google Docs and share it with her partner (s).

3.6.2.1 The Teacher's Role

The teacher performed the role of a facilitator throughout the writing process urging students to work in CW teams. Nonetheless, she did not intervene with the students to impose ideas or writing style on them. She was readily available to offer help and feedback when needed.

Moreover, the classroom teacher monitored the students' writing and interaction by visiting the different groups in the break-out rooms on Teams to make sure that all students were participating in the discussions and contributing to the writing tasks. In addition to observing students' performance via Teams, she used the version history feature on Google Docs as a tool to gain quantitative information on each student's contribution to the writing task. Different authors' contributions to the same Google Doc are typically shown in different distinctive colors, and the teacher had access as each group shared their Google Doc with her.

3.6.3 The Posttest

A 40-minute post-test was administered to students after the ten-week-treatment. They were asked to write an essay of about 400 words to explain their views about "distance learning as opposed to traditional face to face learning". Some test papers were excluded for either plagiarism or irregular attendance; thus, the total number of valid tests for both pre- and post-tests was 46 pairs of pre-/posttests.

3.6.4 Student Survey

The students participating in the study were sent an online survey to explore their perceptions about the experience of GDCW The survey comprised eleven open-ended questions about whether they liked or disliked CW using Google Docs as an alternative to pen and pencil writing, the difficulties they faced, the impact of CW on their self-confidence and writing ability, how effective online teacher feedback was

as compared to face to face feedback, and how willing they were to go through a similar CW activity in the future. Twenty-three students returned the survey forms from each class.

3.6.5 Teacher Interview

The teacher who took part in the study as an English classroom teacher was also invited to express her thoughts through an online interview (the answers to the interview questions were submitted online due to the precautions taken by the UAE Government to combat COVID-19 pandemic). The six, open-ended interview questions tackled different areas of the GDCW experience from the teacher's perspective. Specifically, the teacher was asked about how effective the strategy of CW was in terms of student collaboration, what benefits it had for students and the teacher, the difficulties and challenges associated with the implementation of CW via Google Docs, and the impact of CW using Google Docs on students' motivation, anxiety and creativity.

Chapter 4: Results of the Study

4.1 Overview

Divided into two main parts, this chapter will report the findings of the post test, student survey, and teacher interview. The first part will present the findings with respect to research question 1, while the second part will show findings related to research question 2. In the end of the chapter, a summary of the main findings will be presented.

4.2 Research Question 1: Effect of Google Docs-Based Collaborative Writing

The first research question investigated the effect of Google Docs-based Collaborative Writing (GDCW) on the development of students' writing skill in L2. The data obtained from the pre- and posttests were statistically analyzed to measure students' performance before and after the GDCW treatment. Initially, the researcher used a normality test to decide on the proper test (parametric or non-parametric) to be used in the analysis. Normality test for post-test showed that most of the data were not normally distributed. Both Kolmogorov and Shapiro statistical tests showed that most of the variables were not normally distributed (p-value < 0.05) (see Table 7).

Table 7: Normality test of post-test

Variables	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Content	.142	46	.021	.967	46	.221
Organization	.183	46	.001	.912	46	.002
Grammar	.137	46	.031	.944	46	.029
Vocabulary	.119	46	.102	.942	46	.022
Mechanics	.299	46	.000	.768	46	.000
Total	.092	46	.200[*]	.969	46	.251

Next, a Mann-Whitney U Test was performed to examine if there was a significant difference between the performances of the experimental and control groups on the variables of content, organization, grammar, vocabulary, and mechanics (see Table 8).

Table 8: Mann-Whitney U Test (Post-test)

Measures/variables	Content	Organization	Grammar	Vocabulary	Mechanics	Total
Total Number (N)	46	46	46	46	46	46
Mann-Whitney U	210.50	213.50	210.00	182.50	214.50	186.50
Wilcoxon W	486.500	489.500	486.000	458.500	490.500	462.500
Mean Rank (Control)	21.15	21.28	21.13	19.93	21.33	20.11
Mean Rank (Experimental)	25.85	25.72	25.87	27.07	25.67	26.89
Standard Error	45.203	44.298	45.204	45.083	41.809	45.471
Standard Test Statistic (Z)	-1.195	-1.151	-1.206	-1.819	-1.196	-1.715
Asymptotic. Sig. (2-tailed)	.232	.250	.228	.069	.232	.086

The results showed that there were no significant differences in the performances of the experimental and control groups on all five variables examined as follows: Content (Control: Mean Rank = 21.15, N = 23; Experimental: Mean Rank = 25.85, N = 23; U = 210.50, Z = 1.195, p = 0.232 > 0.05); organization (Control: Mean Rank = 21.28, N = 23; Experimental: Mean Rank = 25.72, N = 23; U = 213.50, Z = 1.151, p = 0.250 > 0.05); grammar (Control: Mean Rank = 21.13, N = 23; Experimental: Mean Rank = 25.87, N = 23; U = 210.00, Z = 1.206, p = 0.228 > 0.05); vocabulary (Control: Mean Rank = 19. 93, N = 23; Experimental: Mean Rank = 27.07, N = 23; U = 182.50, Z = 1.819, p =

0.069 > 0.05); and mechanics (Control: Mean Rank = 21.33, N = 23; Experimental: Mean Rank = 25.67, N = 23; U = 214.50, Z = 1.196, p = 0.232 > 0.05).

Even though the experimental group's performance did not improve significantly after the treatment using GDCW as shown above, a good improvement was observed across all variables. The experimental group's mean ranks for content, organization, grammar, vocabulary, and mechanics were slightly higher than those of the control group as shown above.

4.3 Research Question 2: Students' Perceptions of Google Docs-Based Collaborative Writing

The aim of the second research question was to explore students' perceptions of GDCW. To find out about this, students were given an online survey to complete immediately after finishing the posttest task. Students' responses to the survey's eleven questions are arranged in which a thorough presentation of responses per question is provided firstly. After that, a thematic analysis of the findings follows in the next section. It is worth mentioning that all students' name that appeared in the study are not their real names. They are pseudonyms given by the researcher for the sole purpose of this study.

Overall, students' feedback from the survey was mostly positive in which they felt that the experience of GDWC was rewarding, useful, interesting, and new. Moreover, many students showed their desire to involve in similar collaborative activities in the future.

Survey question 1 asked the participants about their views on the CW activity and how they found the experience. Most of the students believed that GDCW was a good, enjoyable experience from which they

learned new things. For instance, Rawda stated, "It [GDCW] makes the work easier." Likewise, Fatima believed that GDCW helped her improve her writing skills and described the experience of GDCW as "new and effective." On the other hand, few participants perceived GDCW negatively and preferred individual writing such as Alyazia who pointed out that she would prefer to write on her own not with a partner and stated, "I don't like CW, I like to write on my own."

Survey question 2 asked participants about the most interesting part of the CW activity, or the part they liked most and why. Varied responses were given by the participants to this question. Some students stressed the importance of working with a partner and how collaboration made the writing task easier. For instance, Maitha liked "the easiness of writing" during the GDCW tasks and how she could see other students' writing. Other students valued the discussions motivated by GDCW activities as the most important part of the experience. For example, Salama stated, "We can share ideas, discuss them with classmates, and have a say." Similarly, Mahra stated, "We discussed our ideas together and built them based on our opinions." Error-correction, teacher feedback and follow-up on students' writing were other areas that students appreciated about CW. For instance, Masa wrote "I like when the teacher checks for us." By the same token, Alyazia preferred the part of the activity when the teacher followed-up on her work.

Survey question 3 sought to identify the most difficult part of the GDCW activity. Several students did not face any difficulty when writing collaboratively with a partner. However, some students pointed out that they found specific aspects of CW challenging. For instance, a few students mentioned that it was difficult to put together their conflicting thoughts in one harmonious piece. Mahra, for instance, cited "connecting

all the ideas from different students" as a challenge that she faced during GDCW activities. Another difficulty that students faced during GDCW tasks was time and coordination issues. For example, one student reported that it was hard to submit writing on time, and another complained about having to wait for her partner to submit her writing on Google Docs. Aysha mentioned that "waiting for other students to write their own paragraph" was one of the difficulties she faced during CW. This could also be understood as a lack of commitment by some students as Salama mentioned that "the most difficult part is when some partners don't accomplish the tasks assigned to them resulting in incomplete paragraphs."

Survey question 4 focused on students' views and perceptions of CW before the experience, and whether these changed after the experience. Students' responses were rather brief, and many of them said they used to have negative views on writing collaboratively in the past. Nevertheless, these views had changed after going through the CW activities. For instance, Maitha, thought that it would be "difficult to divide labor in CW tasks, but it turned out to be the opposite." Whereas most students either already had or started to have more positive perceptions of CW, only few students maintained their previously held, negative perceptions about CW after the experience. One of these students was Mahra who explained that she had disliked CW and that she still disliked it after the experience because "not all ideas can be connected together."

Survey question 5 was about working with different partners, and whether students preferred working with the same partner or changing partners throughout the semester. All students worked with at least three partners throughout the experiment. However, they had different opinions about changing partners whereby some of the students liked to change their partners most often, while others preferred to work with the same

partner throughout the semester. Most of the participants preferred changing their partner for many reasons. For example, Shamma wrote "I worked with more than one partner because every person has different experience." Other students favored working with different partners as it helped them to get to know their classmates better. For instance, Aysha said, "To work with different partners is better as it helps me get to know my classmates more closely." Sharing varied experiences and information with people was another reason behind many students' preferring to change partners such as Fatima, Mouza, and Jawaher. On the other hand, only a few students were not in favor of working with different partners. For instance, Maitha explained that she liked working with the same student during the whole semester as "it facilitates communication and understanding between partners." Two students, Salama and Rawda, preferred not changing their writing partners. Salama wrote, "Sometimes I am paired with a partner who is indifferent and does not give ideas that help me, so I end up writing everything by myself." Likewise, Rawda thought that working with one partner is better, especially when she could choose her partner as it would make collaboration "easier and smoother". It seems that, for them, it is risky to keep changing partners as some students could be less committed and accountable.

Survey question 6 stated, "Did the activity of GDCW have any effect (positive or negative) on your confidence in your writing ability? Please specify." Despite the very few negative responses to this question, most of the students ascribed positive effects to the GDCW activity. They indicated that it helped them write better, become more confident, learn from their classmates, and share the responsibility of generating ideas for writing with their partners. Hawa, Mouza, and Basma, for instance, attributed an improvement in their writing skills to the activity of GDCW. Moreover, Rawda said that she became a more confident writer since she

"learned new tricks in writing." In addition, many students believed that GDCW motivated them to showcase their writing skills and present these skills to the whole class. Hamda and Salama perceived CW as an opportunity to showcase their talents in writing, "I showed my talents in writing", as Hamda confirmed. Lightening the burden of the writing activity in the classroom is another positive effect that was mentioned by Aysha who wrote, "Yes, it's positive as it showed me that I don't have to be the only thinker. We all have to work together." It is worth mentioning that the students who thought that the CW activity had no or negative effect on them did not give any further explanation or justification to their perceptions.

Survey question 7 was about the impact (positive or negative) that GDCW had on students' linguistic skills including speaking, listening, and reading. According to most of the participants, GDCW had a positive impact on their linguistic skills especially reading and speaking. Maitha, Mouza, and Jawaher reported improvement in their speaking skill because they needed to discuss things with their partners and divide the tasks among themselves. Mouza commented, "It had a positive impact on my language skills specifically speaking and reading." Salama, Mouza, Rawda, Masa, Fatima, and Meera thought that GDCW helped them improve their reading skill. For instance, Salama stated, "Yes, I learned new words and started to read fluently." Whereas several other students noticed enhanced performance in listening and vocabulary, some students, however, reported that they did not benefit from CW at all.

Survey question 8 stated, "Do you think using Google Docs has helped you to collaboratively create a better piece of writing? Why? Why not?" Most students agreed that Google Docs helped them produce better pieces of writing collaboratively. For instance, Rawda wrote, "Yes,

because it corrects our writing, which helps us to be careful next time." Aysha also mentioned that Google Docs was a useful tool to write collaboratively because it helped students to conveniently put together their writings, thereby saving so much time and effort. Conversely, there were few students who disliked using Google Docs to write together. Two students, Mouza and Hamda, considered Google Docs the "same as Word or Power Point" or "like any other program." Furthermore, Shaikha described Google Docs as a "complicated program."

Survey question 9 asked if the participants felt more comfortable reviewing and editing their classmates' writing using Google Docs than paper-based writing. Most students felt comfortable editing their partners' writing using Google Docs except for only two students. Students who preferred using Google Docs to traditional paper and pencil writing/editing mentioned its ease of use, usefulness, time saving, and being easier to read than handwriting. For example, Mouza wrote "Yes, because some of my classmates' handwriting is difficult to read." Unlike Mouza, Mahra felt that using paper and pencil was "righter" for her.

Survey question 10 sought to find out about how useful the teacher's feedback using Google Docs was in comparison to traditional paper and pencil method to provide feedback and in what way.

All students except for one found the teacher's feedback using Google Docs useful. For instance, Maitha pointed out that it made it easier for the teacher to correct students' mistakes. Similarly, Salama pinpointed that the teacher was able to monitor students' contribution to the task and know who wrote what; thus, seeing their skills, the teacher could tailor her instruction accordingly. Another student, Rawda wrote "Yes, I think the teacher helped me more, when the teacher wrote a note about something I

focused more on it." One student, Muzoun, responded negatively without providing any reasons or explanation.

Survey question 11 asked participants if they would like to do similar CW activities/tasks in the future using Google Docs. Most of the students responded positively to this question. For instance, Salama expressed her desire to participate in similar GDCW in the future with "smart and ambitious partners who have wonderful ideas." Aysha and Mouza welcomed the idea of doing more GDCW activities in the future occasionally. On the other hand, three students gave negative responses without any reasons, while three more said no with explanation. Mahra, for instance, wrote "No. I wouldn't like to do it even though it's fun, but not everyone enjoys writing with others." Similarly, Shaika explained that she preferred "individual activities."

4.4 Research Question 3: How Does the Classroom Teacher Feel About Using Collaborative Writing in Her Classroom?

To answer this question, the researcher conducted a structured interview with the classroom teacher Juana (a pseudonym given to the classroom teacher). The teacher interview was performed via an online survey form instead of face-to-face interview due to the restrictions imposed by the UAE government during the COVID-19 pandemic. Thus, Juana submitted her answers through the online interview form without further follow-up questions from the researcher. The interview comprised questions about a) the effectiveness of GDCW activity, b) the degree of collaboration during it, c) the benefits, challenges, and success factors of GDCW, and lastly d) the impact it had on students' motivation, anxiety, and creativity.

Firstly, Juana was asked if she thought that CW was a successful strategy to teach writing. Responding positively, she wrote "I think in most

cases it is a very helpful tool that helps develop students' writing skills as well as other skills like collaboration".

The second interview question was concerned with the teacher's satisfaction with the degree of collaboration achieved during the CW activity and why. Teacher Juana was satisfied with students' level of collaboration during the CW activities, as "it fosters consistency, which helps students to practice and master it".

The next interview question focused on the benefits of CW for both students and teachers. As for students, Juana mentioned that CW promotes collaboration in terms of generating and sharing ideas and knowledge. For the teacher, Juana stated that "CW helps in differentiation, easy to track changes for marking, and offers variety in teaching writing".

The fourth question investigated the major difficulties/challenges she faced during the implementation of CW using Google Docs. Juana cited multiple difficulties. One of these difficulties was the online situation which students were going through during their study due to the COVID-19 -pandemic. This had many consequences on school timings and schedules. Time allocated per class was reduced to 30 minutes instead of 40. This made completion of writing activities and tasks quite challenging for students. As Juana stated, "It was a bit challenging to manage and complete the activities on time". Beside time allocated, there was issue of monitoring students and providing sufficient, effective, written and/or oral feedback. Juana mentioned that "it was also difficult to observe everyone in the group in detail and give instant feedback as I had to put them in break out rooms, and even if I have access to their Google Docs, it wasn't enough to just type my feedback. I needed to explain it further".

The Fifth question was about the factors required for CW to be a successful teaching strategy. Juana highlighted four factors that she thought were important for the CW activity to be successful including student readiness, teacher support, effective collaboration, and sufficient activity time. First, according to the teacher, student readiness and preparedness were important factors determining the success of CW because she noticed that "for some groups, it was easier to do the activity because there were members who already knew how to use Google Docs." The second factor pertains to the "right support and feedback" as the teacher's availability to give feedback and proper support to students "makes a difference" in the students' performance on the CW activity. Effective collaboration and sufficient activity time were the last two factors leading to an effective implementation of CW according to Juana.

The last question in the teacher interview was related to the impact of using Google Docs for writing activities on students' motivation, anxiety, and creativity. The teacher considered GDCW as a source of comfort and security for students during the writing task. She said, "It can make students feel more comfortable and less anxious to deal with the writing activity because they know that there are other people that they will work with," Juana added. Feeling more secure and relaxed, students' ability to "share ideas and express opinions" would even be better, which would "make writing more fun," she concluded.

4.5 Recurring Themes

Looking at the data from a more global perspective, the researcher was able extract five major themes from the student survey and teacher interview. Each theme has sub-themes that branch from it. These themes include students' perceptions towards GDCW, students' preferences, challenges and difficulties implementing GDCW, and benefits of GDCW.

4.5.1 Students' Perceptions Towards Collaboration

Students' responses to the various survey questions showed clear appreciation and awareness of collaborative work and what it entails.

Firstly, students perceptions towards CW were mostly positive. Many students attributed their liking to the activity to the elements of teamwork and sharing ideas and opinions about different topics, which are central to collaboration. For example, Hawa described the experience of GDCW as "new, interesting, and conducive to group work."

Not only did students realize the importance of collaboration in learning, but they also showed awareness of the principles of collaborative work. As a proof, many students showed acceptance to divide labor, exhibited understanding of student accountability, and were willing to share and accept different opinions on one topic, or even to learn from each other. For instance, Mouza wrote, "It was nice that I collaborated with a lot of my friends, I also learned a lot from them." Salama also stated that it was nice to divide work. Aysha appreciated dividing labor and student accountability in CW. She was pleased that she "did not have to be the only thinker in a group" because they all were required to collaborate. Hawa liked "agreeing on writing one thing" the most, and Fatima stressed the importance of changing partners as it allowed her to work with different students and share creative thoughts.

4.5.2 Students' Preferences

Different preferences were embraced by students in relation to collaboration, using Google Docs to write and receive teacher feedback, and finally towards changing partners.

4.5.2.1 Individual Work Versus Collaboration

As mentioned above, most of the students held positive views on CW and collaboration. They expressed their liking of CW as a fun, new, easy, and useful way to share and discuss ideas, write with classmates, and edit each one's work. They viewed the experience as a social activity not only as a learning method. Nevertheless, some students preferred working alone even though many of them perceived the benefits of group work. Mahra is one of the students who valued the experience of GDCW; however, when she was asked about if she would love to go through the experience again in the future, she stated, "No. I wouldn't like to do it even though it's fun, but not everyone enjoys writing with others."

4.5.2.2 Working with One Partner Versus Changing Partners

This was another area where students' preferences diverged. Even though most students enjoyed working with different partners throughout the semester, several others were inclined to either work with one partner or to work alone in few cases.

Those students who tended to change partners were motivated by many reasons such as knowing more about their classmates, exposure to new ways of thinking and ideas to diversify their learning experience, or even benefiting academically from other students.

In contrast, some students were reluctant to change partners during the CW tasks giving various reasons to explain their preferences. For example, some students thought they wanted to work with one partner of their choice because "collaboration will be easier and smoother" as Rawda put it. Likewise, Maitha thought dealing with one partner throughout the semester was better because, for partners, "it gets easier to communicate and understand each other." Another student, Salama, referred to the inconvenience resulting from working with some irresponsible partners

who did not contribute to the task, so she ended up doing the whole work on her own.

4.5.2.3 Using Paper and Pencil Versus GD for Editing and Feedback

Most students had positive perceptions about using Google Docs for these purposes. Firstly, almost all students felt that Google Docs was a useful application for CW. They explained that this application made it easier to write, share and discuss ideas, work with different partners, and give and receive feedback from teacher and peers. On the other hand, very few students disliked using Google Docs to write such as Shaikha who wrote "No, I did not prefer it at all. It is such a complicated program!"

Second, many students preferred using Google Docs to edit their classmates mistakes for its ease of use, automatic checkup, and fast performance. For instance, Shaikha stated, "It's way better than paper and pencil," and Mouza found it more convenient than some classmates' handwriting that was difficult to understand.

Finally, as far as the teacher's feedback is concerned, most of the students were happy to read their teacher's feedback on Google Docs for its accessibility to the teacher and students alike. Students' feedback from the survey reflected their inclination to integrate technology represented by Google Docs to peer-edit their written production as well as receive teacher feedback on their writing. For example, Alyazia stated, "I feel happy that my teacher is following up on my writing." However, few students thought that Google Docs application was just like other applications. "I think Google Docs is the same as Word and PowerPoint," Moza commented. Thus, they believed that "the teacher feedback didn't change" and it was "helpful on both Google Docs and papers," as Mahra wrote.

4.5.3 Challenges and Difficulties

Even though most students perceived GDCW as a useful and rich experience that helped them improve their writing, there were some challenges facing both students and the teacher alike.

4.5.3.1 Challenges Faced by Students

Students faced various problems during their participation in the GDCW activities. These problems were in part related to the collaborative process and in another part to the writing process itself.

First, challenges pertaining to collaboration were mostly the result of students' not being as effectively collaborative or accountable as task accomplishment required. For example, Aysha complained about "waiting for other students to write their own paragraph." Hamda referred to the lack of teamwork because of the conflicting ideas and opinions. Salama noted that the most difficult part was "that some group members did not submit their parts which resulted in incomplete paragraphs".

As a result of lacking in some necessary skills in collaboration and coordination, students encountered difficulties in reconciling the conflicting opinions that they had about one topic during a discussion. Fatima, for instance, stated, "Each student in the group had a different idea from the other group members." By the same token, Mahra found "involving and connecting all the ideas from different students" difficult to handle during GDCW. Rawda found time restriction as a challenge in the face of submitting the tasks on time. Finally, Shaikha, Muzoun, Basma, Alyazia, and Meera referred to writing or CW as the most difficult part of the collaborative activity.

4.5.3.2 Challenges Faced by the Teacher

The major difficulty that the teacher faced was the time issue. According to her, period time was reduced to less than 30 minutes during which she had to finish the planned activities. Furthermore, she had to "observe everyone in the group in detail and give instant feedback", which was also challenging given the time limits and that students were divided into break out rooms." Consequently, she could not find the sufficient time to give thorough, effective feedback on all groups' writings.

Another issue that the teacher referred to indirectly (she mentioned it as a success factor for CW) is student preparedness. According to the teacher, for students who already knew how to use Google Docs, it was easier to go through the activities. Thus, the lack of technological knowledge might have been an obstacle that hindered the performance of some students.

4.5.4 Benefits of Google Docs-Based Collaborative Writing

Based on the students' survey and the teacher's interview, GDCW was reported to have the following benefits in the English writing classroom.

4.5.4.1 Improved Student Writing Skills

Many students reported that they benefited from GDCW activities in improving their writing skill including learning "new writing tricks" as Rawda called it, in creating "better pieces with their partners" as Mahra noted, or even learning and using new vocabulary as Salama wrote.

4.5.4.2 Improved Language Skills

In addition to its positively perceived effects on writing, student indicated that GDCW enhanced their other linguistic skills especially reading in addition to speaking and listening. For instance, Salama,

Rawda, Masa, Fatima, and Merra indicated that GDCW positively impacted their reading especially in terms of reading fluency, as Salama stated, "It made me read more fluently."

4.5.4.3 Google Docs as a Convenient Tool for Writing and Learning

The student survey as well as the teacher interview responses showed the viability of using Google Docs for writing. Many students found writing, editing, and giving and receiving feedback on Google Docs easier and more convenient than traditional writing using paper and pencil. For example, Aysha stated, "Yes, it is much easier (than paper and pencil), most often we had to combine our work in one paper, which took so long to do it. Thus, this method is easier as we all can write together."

4.5.4.4 Teacher and Peer Feedback is More Effective and Accessible

One of the benefits of using Google Docs according to the students as well as the teacher was providing instant feedback. Because of the synchronicity feature of Google Docs, students were able to give feedback on the spot and see one another's writing, which made feedback instant and more effective. Teacher availability to give feedback was highly appreciated by many students like Wadima who considered the teacher's checking their writing on the spot as the thing she liked the best about GDCW.

4.5.4.5 Reduced Anxiety and Increased Motivation

Another advantage that was indicated in the student survey was increased student confidence. This confidence resulted from students' being in a collaborative group learning from each other as stated by Hawa "I became more confident in my writing," and Rawda "it helps me to be more confident, I learn new tricks on writing."

Not only did GDCW increase student self-confidence, but also it helped them feel more comfortable editing their partners' writing like Rawda who wrote "I feel more comfortable using Google Docs to edit my partner's writing." There was also a kind of relief that the teacher is following up with the students. For instance, Alyazia liked that her teacher "was with her" following up on her work. Moreover, some students felt motivated to write within a group where they can compare themselves to their peers, learn from them, or even exhibit their own talents in writing and English language at large. Salama was one of the students who were motivated to improve their writing skill by the CW activities. She felt the desire to improve her skill in writing as she read other classmates' writings and compared them to what she wrote. This could be also explained in light of the teacher's comments that emphasized how students benefited from GDCW by reducing anxiety due to the positive impact of collaboration on their overall performance in the classroom.

4.6 Summary and Conclusion

This chapter focused on reporting on the findings of a study conducted to investigate the effect of implementing GDCW on students' writing quality. In this quasi-experimental study, data were collected using a pretest-posttest design, student survey, and a teacher interview. Using a Mann-Whitney U Test, data from pre-and posttests across the experimental and control groups were compared. The data analysis showed that there was no significant difference between the groups across all variables of content, organization, grammar, vocabulary, and mechanics. Nevertheless, the performance of the experimental group showed a good improvement even though it did not reach significance.

Moreover, the chapter presented a thorough review of findings from the students' survey and the teacher's interview, which were mostly

positive and promising. This cross examination of qualitative data bestows higher levels of validity to the data and findings acquired from the study. Finally, a thematic synthesis and analysis was applied to extract the recurring themes prevailing in the students' survey as well as teacher's interview.

Chapter 5: Discussion and Conclusions

5.1 Overview

This chapter will discuss the main findings of the current study conducted on the effect of implementing Google Docs-based collaborative writing (GDCW) on the quality of students' writing skill in the setting of English as a foreign language (L2). First, a brief summary of the main findings will be presented. Following is the interpretation of the results considering the existing research on GDCW. Finally, the chapter will discuss the implications of the study, its limitations, and make some recommendations for L2 educators as well as researchers.

5.2 Discussion of the Results

First of all, for the reader's convenience, it is worth re-stating here that the current study investigated the effects of implementing GDCW on students' writing quality. It also sought to explore students' perceptions of CW in a distance learning mode using Google Docs. The results of the posttest indicated that there was no significant effect of GDCW on the students' writing ability. However, data obtained from the students' survey revealed prevailing positive views towards CW and Google Docs by most participants. Findings of the study will be discussed in light of the research questions.

5.2.1 Research Question1: Does Google Docs-Based CW Affect Students' Writing in an EFL High School Context?

Results from the posttest showed that the implementation of GDCW had only a limited effect on students' writing quality, i.e., the effect did not reach a level of significance. This finding provides further support to existing research such as Li et al.'s (2014) study which examined the effect of cloud-based CW on students' writing quality and

attitudes towards writing. They found that even though cloud-based CW yielded positive student attitudes towards writing, the writing quality of the participants did not significantly improve. However, results of the current study are not in line with findings from previous research that found a significant effect of CW on students' writing quality (see, e.g., Bikowski & Vithanage, 2016; Strobl, 2014).

The fact that the implementation of CW using Google Docs did not affect students' performance to a significant level has, in turn, called for further investigation to deeply interpret these unexpected results. Thus, gathering evidence from the tasks of the pre- and posttests, the teacher's interview, and informal discussions with the classroom teacher, the researcher proposes that some factors could have affected the results negatively. These factors include a) students' low English proficiency level, b) the length of the study, and finally c) the sudden and dramatic shift from face-to-face learning to distance learning due to the COVID-19 pandemic.

First, it was expected that collaboration as seen by the sociocultural theory was to play an important role in helping students boost their learning and improve their L2 writing skills. However, it seems that their low proficiency levels hindered their communication to an extent, which resulted in minimizing the benefits of CW. Moreover, it could also be argued that students' inadequate linguistic abilities in both groups played a significant role in the written tasks yielding close scores. Struggling to compose in English, many students resorted to Google Translate to accomplish the written pre/posttest tasks, which eliminated many of the potential linguistic insufficiencies in their writing. This reveals a lot of underlying insecurities students felt towards their level in English. Even though they knew that the tests' results were not significant

in relation to their records, they wanted to mask their linguistic weaknesses with the help of on-line resources such as copying from website articles or mainly using a web translator. The researcher discussed this issue with the classroom teacher after suspecting the use of Google Translate in a considerable number of the essays, and she confirmed that students usually use it in their writing assignments. She also emphasized the fact that she warned students repeatedly against using any external resources to write the tasks but, unfortunately, it was not possible to control or eliminate this shortcoming during the treatment.

Another factor that affected the performance of the students was the sudden, dramatic shift from one learning mode to another, i.e., from a totally face-to-face learning environment to a complete utilization of distance learning and virtual classroom mode. The study took place with the commencement of the COVID-19 pandemic, which brought about the complete shift to online education in the UAE. This, as the classroom teacher revealed in an informal discussion, affected the students' performance negatively both academically and psychologically. Moreover, lacking in the adequate technological skills, students faced difficulties in adjusting to a completely technology-based learning environment.

Furthermore, there were specific adjustments in the timetable of public schools at the time of the experiment in which the period time was reduced to only 30 minutes. This time limit issue is considered one of the most challenging obstacles in the face of the implementation of proper, effective CW activities. The teacher reported the insufficient time as a major difficulty that she encountered during GDCW. She stated that moving between breakout rooms on MS Teams, giving instructions and feedback, and managing students' collaboration all needed substantially longer time than the time allocated. Similarly, students also needed a

longer time to assign roles, divide tasks, pool ideas, and negotiate the outline and organization of the essays. Finally, curriculum requirements by the MoE imposed further constraints on the time available per writing task, as the teacher was required to cover a number of units per semester, and any extra time spent on CW activities could have resulted in an undesirable delay in the completion of the yearly plan of the grade 12 English curriculum.

5.2.2 Research Question 2: What are the Students' Perceptions of Google Docs-Based CW in an EFL High School Context?

The students´ perceptions and preferences expressed in the students' survey helped shed light on their perceptions of the advantages and disadvantages of CW using Google Docs. Generally, students' responses to the survey reflect overly positive perceptions about GDCW such as being fun, useful, enjoyable, an opportunity for collaboration, and easy to use. This is consistent with the vast majority of studies reporting positive attitudes to CW in general (see Shehade, 2011; Alsubaie & Ashuraidah, 2017; Li, 2018; Alharbi, 2020). In addition, students' as well as the classroom teacher's positive perspectives on using Google Docs as a tool to write collaboratively are also in line with studies from the Gulf region that investigated the use of digital online tools in collaborative learning (Ishtaiwa & Abulibdah, 2012; Alsubaie & Ashuraidah, 2017).

Most of the themes extracted from the data are in line with findings of previous research dealing with online collaborative learning in general and GDCW in specific. First, the plethora of advantages to using GDCW discussed in the findings of this study were also cited by the existing body of research on GDCW. For instance, participants in the study preferred using Google Docs to paper and pencil method. In a similar vein, Alsubaie & Ashuraidah (2017) and Andrew (2019) reported

similar tendencies by participants in their studies who preferred using Google apps to other digital or online tools. Also, students in the current study reported that Google Docs helped them get instant teacher feedback, edit their partners' writing, share ideas and collaborate effectively. Likewise, the classroom teacher pointed out that Google Docs is a useful tool to help students write collaboratively and share ideas. This is in accordance with findings of previous studies that reported the accessibility of feedback (Andrew, 2019; Ishtaiwa & Abulibdah, 2012), ease of peer feedback and editing, and sharing ideas (Alharbi, 2020; Alsubaie & Ashuraidah, 2017) and promoting student collaboration (Ishtaiwa & Aburezeq, 2015), as the major strengths of Google Dogs and other Web 2.0 tools.

On the other hand, challenges of GDCW reported in this study have their counterparts in previous research. First, students in the current study found difficulty in reconciling conflicting ideas to reach consensus on what to include in their essays. This confirms findings from previous studies (e.g., Andrew, 2019; Arnold et al., 2012; Kessler & Bikowski, 2010) that reported the difficulty of students' agreeing on different ideas about one topic as one of CW disadvantages. This could be due to the students' lack of teamwork skills necessary to carry out collaborative discussions and tasks. This might also explain why some students also complained about their partners' being unaccountable. This challenge was also reported by participants in Ishtaiwa and Abulibdah (2012) who described it as "deficiency of students' commitment" (p.141). Finally, findings from the teachers' interview provides further support to previous study in terms of CW being a time-consuming strategy.

5.2.3 Research Question 3: How Does the Classroom Teacher Feel About Using Collaborative Writing in Her Classroom?

The English teacher who taught the participants in the experimental and control group expressed her satisfaction with CW as an instructional method to teach writing and facilitate collaboration. This agrees with the students' positive views on the usefulness of CW in fostering collaboration and teamwork. In addition, data from the teacher's interview provide support to students' feedback concerning the advantages and disadvantages of GDCW. The teacher as well as the students shared similar opinions about the benefits of GDCW such as facilitating the sharing of ideas, sending and receiving instant feedback, and co-construction of knowledge. The significance of the teacher and students agreeing on the effectiveness of GDCW as a teaching approach is promising as it is sometimes frustrating for teachers to realize that a seemingly successful teaching method might not be as popular among students. However, the teacher interview revealed some of the shortcomings of using Google Docs in writing classes. Most of the challenges reported by the teacher stem from external factors that can be overcome with strategic planning and training. For instance, students lacking the awareness about the proper use of technology, teacher preparedness to embrace CW methods and strategies, and the necessity to give sufficient time for writing classes are all issues that can be resolved by proper planning.

5.3 Implications

Based on the findings of this study, some implications for researchers and educators can be made. The main theoretical implication of the study is the extension of research on CW in the UAE context from tertiary to school setting using Google Docs in an online learning environment. The other implication is that students' tendencies towards

CW using Google Docs revealed in this study are a significant indication that they are shifting away from a teacher-centered instruction to a more learner-centered learning environment. This was evident in their preferences to share ideas and feedback, and the desire to write with different classmates so that they involve themselves in close social activities within the classroom. This transition also implies that Google Docs, or any other online technology could enable a shift in L2 writing instruction from teacher-centered approaches to more learner-centered writing practices. It also implies that the application of CW in the L2 classrooms could be a good choice to increase students' participation in writing tasks and activities.

In addition to the above theoretical implications, it is possible to make some pedagogical implications targeting the utilization and implementation of GDCW in the UAE L2 classroom. First, findings from student survey indicated that students appreciate and like the activity of GDCW. Despite these positive opinions, an insignificant difference was revealed by the post-test data analysis, which could be partially due to students lacking the essential skills necessary to achieve a successful CW pedagogy (such as teamwork, negotiation, and giving and asking for feedback skills). Thus, exposing students more frequently to CW could help them acquire the skills necessary for effective classroom collaboration and interaction. Not only should educators provide students with CW activities, but they also need to coach their students on how to collaborate, providing them with the adequate support and guidance throughout the CW process.

Not only do students need to acquire collaborative work skills, but they also need to be instructed on the proper use of technological tools and platforms especially sophisticated tools such as Google Docs. Indeed,

there have to be more focus on integrating goals related to information technology skills into the curriculum objectives and lesson planning to ensure that students have the adequate skills necessary to handle educational platforms and tools.

Moreover, a deep understanding of what CW entails should be reached by the educational leaderships, including school administrators and policy makers, to insure that the application of such a pedagogy is carried out properly and systematically. For example, one of the challenges faced by the classroom teacher during the GBCW activities was the issue of time limitation. Sufficient time is a prerequisite for any successful implementation of CW. Expecting teachers to cover a huge amount of the curriculum regardless of teaching and learning quality is a hinderance that is in the face of not only CW but also the proper educational process at large. Thus, laying a solid foundation for implementing CW in public schools is a matter of strategic planning and collaboration among several stakeholders including, classroom teachers, school administrators, and educational planners.

5.4 Limitations and Recommendations for Further Research

The researcher suspected that some of the students in this study might have resorted to Google Translate tool to compile their writing tasks in the pre/post-tests which might have impacted the findings of the study. It is recommended, therefore, that future researchers consider finding an effective solution to control for this variable, i.e., resorting to undesirable external resources. This might be accomplished by using a lock-down browser (a secure browser for taking tests that prevents exam takers from accessing any external resources during an online test), or by increasing the students' awareness of the importance of being self-dependent when doing the pre/posttests tasks from home.

The second limitation is that the time allocated for each CW activity was short, which was 10-12 minutes per activity. The teacher voiced her concerns in the interview very clearly regarding the time constraints. She mentioned that the period's time was greatly reduced from 45 to only 30 minutes in which time was barely sufficient to cover her targeted lesson units. Given that such CW activity consists of several phases including brainstorming, planning, drafting, editing, proofreading, and writing the final draft, the time must be substantially longer, e.g., between 20-25 minutes.

Finally, it is recommended to conduct more research at the school level to target the context of primary and middle schools. Indeed, there is a genuine need to explore the potential of implementing CW in younger students. The insights provided by the teacher are useful and eye-opening. However, given the scarcity of research focusing on the teachers' view and attitudes towards CW, more research is needed to explore how teachers perceive the use of technology in CW classes, especially the use of GDCW.

5.5 Conclusion

To conclude, this study sought to examine the effect of the implementation of CW using Google Docs on high school students' writing quality. The study also explored the students' and the classroom teacher's perceptions of GDBC. The researcher collected both quantitative and qualitative data by employing a pre/posttest design for the quantitative data, and a student survey and teacher interview for the qualitative data. Although the quantitative analysis did not show significant differences in favor of the experimental group in the post test, most of the figures obtained were in favor of the experimental group. Results of the student survey and teacher interview clearly demonstrated a preference for

GDCW. Findings of the study were discussed in light of the previous research on CW and the significance of the results of the study. Several implications were made based on the findings of the study. The study concluded with some limitations that might have impacted the results of the study, and a number of specific recommendations for future research on CW.

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Appendix 1

Ministry of Education's Approval

United Arab Emirates
Ministry of Education

الإمارات العربية المتحدة
وزارة التربية والتعليم

TO: Ministry of Education

This is to certify that Aliyyeh Shaaban Abdulrahman is the leading researcher

This research is currently planning a research entitled:

(The Effect of Google Docs-Based Collaborative Writing on the Writing Quality of High School Students in UAE Public Schools)

Any information or data received from the Ministry of Education will be used solely for research purposes and **will not be published nor shared by any research member to the public unless a written approval was granted from the Ministry of Education to the researchers.**

Yours sincerely,

Aliyyeh Abdulrahman

www.moe.gov.ae

Appendix 2

Student Survey (online)

Dear High school Students,

The researcher Mrs. Aliyyeh Abdulrahman is currently pursuing a master's degree in education at the UAE University.

She has designed her final thesis topic entitled, "The Effect and student perceptions of Google Docs-Based Collaborative Writing on the L2 Writing Quality of High School Students in UAE Public Schools".

The objective of the study is to investigate the effectiveness of collaborative writing that is based on Google Docs in high school students who are studying in public schools in Abu Dhabi. In order to better understand that, we would like you to answer the following questions based on your views, perceptions, and experience of the Google Docs-based collaborative writing activity used in this course. In order to make this writing strategy more useful in the future, you are strongly encouraged to provide your feedback, and to write as much as you can. Your answers will be used solely for research purposes and will not affect your grades in any way. Your answers will also remain anonymous to everyone, including the researcher and your instructors.

Thank you for participating in this study!

أعزائي طلاب الثانوية العامة،

تسعى الباحثة علية عبد الرحمن حالياً للحصول على درجة الماجستير في التربية في جامعة الإمارات العربية المتحدة، وقد صممت موضوع أطروحتها الأخير بعنوان "تأثير الكتابة التشاركية المستندة إلى Google Docs على جودة الكتابة لطلاب المدارس الثانوية في المدارس الحكومية الإماراتية"

الهدف من الدراسة هو تحري فعالية الكتابة التشاركية التي تستند إلى Google Docs لدى طلاب المدارس الثانوية الذين يدرسون في المدارس الحكومية في أبو ظبي. من أجل فهم ذلك بشكل أفضل، نود منك أن تجيب على الأسئلة التالية بناءً على آرائك وتصوراتك وخبراتك في نشاط الكتابة التشاركية المستند إلى محرر مستندات Google والمستخدم في هذا البحث. من أجل جعل استراتيجية الكتابة هذه أكثر فائدة في المستقبل، نشجعك بشدة على تقديم ملاحظاتك، وأن تكتب بقدر ما تستطيع. سيتم استخدام إجاباتك لأغراض البحث فقط ولن تؤثر على درجاتك بأي شكل من الأشكال. ستظل إجاباتك أيضًا مجهولة للجميع، بما في ذلك الباحثة والمدرسين. شكرا لك على المشاركة في هذه الدراسة!

Survey Open Questions:

Question 1. What's your view on the collaborative writing activity? How did you find the experience?

السؤال 1. ما رأيك في نشاط الكتابة التشاركية؟ كيف وجدت التجربة؟

Question 2. What was the most interesting part of the activity, or the part you liked most? Why?

السؤال الثاني: ما هو الجزء الأكثر إثارة للاهتمام في النشاط، أو الجزء الذي أعجبك أكثر؟ لماذا ا؟

Question 3. What was the most difficult part of the activity? Why?

السؤال 3. ما هو أصعب جزء في النشاط؟ لماذا ا؟

Question 4. What was your view and perception of collaborative writing before the experience? Did these change after the experience?

السؤال الرابع: ما هو رأيك وتصورك للكتابة التشاركية قبل التجربة؟ هل تغيرت هذه بعد التجربة؟

Question 5. You worked with more than one partner throughout the semester? Did you find changing partners useful? Or is it better to work with one partner only throughout the semester? Why?

السؤال 5. هل عملت مع أكثر من شريك طوال الفصل الدراسي؟ هل وجدت تغيير الشركاء مفيد؟ أم أنه من الأفضل العمل مع شريك واحد فقط طوال الفصل الدراسي؟ لماذا ا؟

Question 6. Did the activity have any effect (positive or negative) on your confidence in your writing ability? Please specify.

السؤال 6. هل كان للنشاط أي تأثير (إيجابي أو سلبي) على ثقتك في قدرتك على الكتابة؟ رجاء حدد بدقة.

Question 7. Did the activity have any effect (positive or negative) on your other language skills (e.g., speaking, reading, listening)? Please specify.

السؤال 7. هل كان للنشاط أي تأثير (إيجابي أو سلبي) على مهاراتك اللغوية الأخرى (على سبيل المثال ، التحدث والقراءة والاستماع)؟ رجاء حدد بدقة.

Question 8. Do you think using Google Docs has helped you to collaboratively create a better piece of writing? Why? Why not?

السؤال 8. هل تعتقد أن استخدام Google Docs ساعدك على كتابة نصوص أفضل بشكل تشاركي؟ لماذا ا؟ لم لا؟

Question 9. Do you feel comfortable editing your classmate writing using Google Docs more than using paper-based writing in class?

السؤال 9. هل تشعر بالارتياح عند تعديل كتابة زميلك باستخدام Google Docsأكثر من استخدام الورقة والقلم في الصف؟

Question 10. Do you think your teacher feedback on your writing is more helpful using Google Docs? In what way?

السؤال 10. هل تعتقد أن التغذية الراجعة من معلمك على كتابتك تصبح أكثر فائدة باستخدام Google Docs؟ كيف؟

Question 11. Would you like to do similar collaborative writing activities/tasks in the future?

السؤال 11. هل ترغب في القيام بأنشطة / مهام كتابة تشاركية مماثلة في المستقبل؟

Appendix 3

Teacher's Survey (Online interview):

Dear Cycle 3 English Teachers,

The researcher Mrs. Aliyyeh Abdulrahman is currently pursuing her master's degree in education at the UAE University

She has designed her final thesis topic entitled, "The Effect of Google Docs-Based Collaborative Writing on the L2 Writing Quality of High School Students in UAE Public Schools in Abu Dhabi".

The objective of the study is to investigate the effectiveness of collaborative writing that is based on Google Docs in high school students who are studying in public schools in Abu Dhabi. In order to better understand that, we would like you to answer the following questions based on your views, perceptions, and experience of the Google Docs-based collaborative writing activity used in this course. In order to make this writing strategy more useful in the future, you are strongly encouraged to provide your feedback, and to write as much as you can. Your answers will be used solely for research purposes and will not affect your grades in any way. Your answers will also remain anonymous to everyone, including the researcher and your instructors.

Thank you for participating in this study.

Survey Questions:

Question 1. Do you think that collaborative writing is a successful strategy to teach writing?
Question 2. Are you satisfied with the degree of collaboration during the collaborative writing activities? Why?
Question 3. What are the benefits of collaborative writing for both students and teachers?

Question 4. What are the major difficulties/challenges you faced during the implementation of collaborative writing using Google Docs?

Question 5. What are the factors required for collaborative writing to be a successful teaching strategy?

Question 6. What is the impact of using Google Docs for writing activities on students' motivation, anxiety, and creativity?

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This thesis attempts to examine the potential effect of the implementation of collaborative writing approach in an online environment using Google Docs. It also attempts to explore students' perceptions about this strategy.

Aliyyeh Abdulrahman received her Master of Education from the Department of Curriculum and Instruction, College of Education at UAE University, UAE. She received her BA from the Faculty of Arts and Humanities, University of Aleppo, Syria.

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