TRADITIONAL VS. WIKI: SAUDI STUDENTS' PERFORMANCE IN AND PERCEPTIONS OF COLLABORATIVE WRITING IN A WIKI

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DEDICATION

This dissertation and all of my academic achievements are dedicated to:

My Lord, for giving me the health and the will to successfully complete this academic work.

My parents, Saleh and Lulu, who have emotionally supported me with unconditional love and prayer throughout the challenges of my academic journey. I am truly grateful for their sacrifices and endless support, and I would not have been able to achieve this milestone without them.

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ABSTRACT

This research study was a quasi-experimental study that investigated the impact of collaborative writing on 76 male EFL students' writing performance in an online (wiki) classroom compared with a traditional (paper-and-pencil) collaborative writing classroom. The subjects were enrolled in a semester-long advanced English writing course at Qassim University, Saudi Arabia, and were equally divided into two classrooms---online/wiki (experimental) and traditionally-taught (control). In the experimental classroom, students used wiki to collaborate; in the control classroom, students used face-to-face communication and notebooks. Both treatments were compared analyzing data collected from a pretest and post-test of individual writing, three collaborative writing assignments, a collaborative writing questionnaire, and individual interviews. Quantitative data were analyzed using descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA and *t*-test). Analysis of individual writing in the pretest and post-test showed that the number of words and grammatical form scores significantly increased in both the experimental (wiki) and control (paper and pencil) classrooms. In total score, content, diction and tone, and mechanics, the students' scores in both classrooms significantly increased regardless of the treatment the students received. Additionally, there was a significant difference in the post-test scores between the treatments, with the wiki classroom scoring higher than the traditional classroom. In rhetorical structure, the scores in both classrooms significantly improved from the pretest to the post-test, yet, they were also slightly different between treatments. Analysis of the collaborative writing assignments showed that the writing quantity (i.e., word count) and quality (i.e., total score, content, rhetorical structure, grammatical form, diction and tone, and mechanics) significantly increased over time in both treatments. However, there was no

significant difference between treatments and time by treatment. The students' perceptions of writing collaboration were significant but were not for the rest of the measurements. They responded similarly in writing performance, writing apprehension, and its future use. Qualitative analysis of student interview data showed that both treatments yielded positive responses toward collaborative writing in terms of its usefulness, ease of use, and process writing. However, there were some limitations regarding this experience (i.e., participation, technical problems).

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CHAPTER 1

INTRODUCTION

Background of the Study

ESL writing has witnessed significant development over the past 20 years (Matsuda, 2003). Of all English language skills, writing appears to be most the important for second language (L2) students, yet, it is the most difficult to master (Hyland, 2003). Writing is a demanding skill that requires enormously complicated cognitive behaviors and deep thinking to produce meaningful ideas in a written text (Hopkins, 1989; Zamel, 1983). To ameliorate the difficulties of writing in the ESL classroom, L2 teachers can choose from a variety of writing pedagogies that can improve L2 students' writing cognition and performance.

Collaborative writing is one of the pedagogical strategies that teachers have begun to implement in their classrooms to enhance students' writing and support effective teaching. The theoretical foundation of collaborative writing stemmed from the work of Vygotsky (1978), which supports the natural development of learning through interaction among members of a community. From a sociocultural perspective, Vygotsky believes that only through social interaction does cognitive and linguistic development occur. He also highlighted the social role of any kind of assistance provided by a more knowledgeable learner to a less knowledgeable learner to foster second language progress. This interaction has been named the Zone of Proximal Development (ZPD). According to Aljaafreh and Lantolf (1994), the ZPD is:

> The framework, par excellence, which brings all of the pieces of the learning setting together--the teacher, the learner, their social and cultural history, their goals and motives, as well as the resources available to them, including those that are dialogically constructed together." (p. 468)

ZPD and scaffolding also can be implemented with learners who share similar knowledge, although it was originally designed to include only interaction between experts and novices (Storch, 2002). For example, de Cuerrero and Villamil (1994) and Storch (2005) claimed that novice learners can act as experts in assisting each other through collaborative dialogic interaction.

The current study is situated in the framework of social constructivism theory, which enables learners to be actively involved in meaning processing and knowledge construction. This theory focuses on human-to-human communication to share ideas and establish learning opportunities. Social learning theory can be implemented in the forms of in-class social learning, where students physically meet in a classroom and off-class social learning, and when students virtually meet with each other to discuss and negotiate meaning. Theories that influenced this study are Vygotsky's social learning (1978), Bruner's discovery learning (1978), and Siemens and Downes' Connectivism Theory (2005, 2007). Vygotsky's social learning theory supported the social nature of collaborative writing. Bruner's theory introduced the concept of scaffolding in the writing process, which is a strategic component of the study. Siemens and Downes supported the use of wiki technology used by the experimental group in this study. The theoretical framework underlying the present study will be further discussed in Chapter 2.

Collaborative writing, as one of the pedagogical strategies in teaching composition, is considered to be a typical example of social learning that involves scaffolding and Vygotsky's concept of the ZPD. Hirvela (1999) supported social learning as a way for students to collaboratively compose a text during the process of writing, using each other for assistance and support in order to build onto their own knowledge. Swain (2000) also reinforced the potential impact of collaborative learning because "[it] encourage[s] students to reflect on language form

while still being oriented to meaning making" (p. 112). Mutual writing activities require oral interaction, which in turn, open up discussions of form and meaning, and language and language use, in order to mutually solve problems. Thus, according to Swain, during such collaborative dialog, language learning develops. In the ESL environment, collaboration enriches learners, not only in grammar use and word choice, but also in discourse (Donato, 1994). A large body of research has examined the benefits of group collaboration and peer interaction in acquiring English as a second language (Anton & DiCamilla, 1998; Donato, 1994; Storch, 1999; Swain & Lapkin, 1998). Most recently, studies undertaken by Storch (2013, 2005), Dobao (2012), and Shehadeh (2011) have promoted collaborative writing as a scaffolding activity to foster learning interaction, peer feedback, and linguistic competence.

The emergence of new online collaborative applications (i.e., blogs, wiki, email, noodle), has altered the pedagogies for teaching L2 writing in different ways. These applications have become increasingly popular in the last few decades. Some scholars who were interested in teaching English language via technology (Bloch & Wilkinson, 2014; Warschaure, 1997) have emphasized the effectiveness of such technologies in teaching and learning because these online programs could simplify communication and collaboration in the classroom setting; they could expand the audience. However, the body of research regarding online collaborative writing in the Arab context, and more specifically in Saudi Arabia, is quite limited, thus, the results of this study could help students improve writing productivity particularly in the EFL classroom. Therefore, the current study addressed the integration of online applications in teaching L2 writing.

One relevant tool in the field of ESL/EFL writing teaching is the *wiki*. This term denotes a free web page that allows specific members of a community (e.g., students) to communicate

together to produce a joint publication that can be edited by all users of that community. Through *discussion*, wiki users can compose a written piece in which they can discuss any issues relevant to the original subject, and seek assistance and help from other members. Instead of engaging only the teacher or highly proficient students, wiki encourages all learners to become knowledgeable contributors and information providers by offering a co-authoring feature that enables all students to share ideas and speak their minds in a safe and friendly environment. Wiki also provides an open-editing feature where readers become writers and writers become readers. This tool also allows participants to share useful audio, video, and links that could contribute to their learning.

The main focus of this research was to examine the contributions of online writing among ESL students in order to investigate whether participation effectively enhances their ability to write in English. This research was carried out at Qassim University in Buraydah, Saudi Arabia where students learn English as a Foreign Language (EFL). Due to the fact that English is the *lingua franca* of art and modern science in Saudi Arabia, along with many other foreign countries, it is important to prepare future generations to communicate at a sufficiently high level of English proficiency. Thus, since 2000, the Ministry of Education in Saudi Arabia has mandated the teaching of English commencing as early as elementary school.

The assessment technique for grading English language proficiency is designed as a rubric for the teacher and normally uses tests, quizzes and homework assignments as the primary means of evaluating students' English ability. There are other national assessments that students may take to enroll in college level courses. These include a National Assessment and a Summative Assessment (NASA), as well as international tests such as the Test of English as a Foreign Language (TEOFL) and the International English Language Testing System (IELTS).

In education, using English for academic writing and formal communication is highly encouraged. Writing is a skill that has been increasingly addressed in the literature. A growing number of researchers has investigated various methods of teaching and learning English as a second language. According to one theory of language learning, there is a natural order of learning acquisition when studying a new language (Krashen, 2003), and writing is the last in the sequence of learning skills. However, this does not imply that writing as a skill is less important than communication skills; rather, its placement at the end of the skill sequence indicates that writing is the key to success in academic achievement. Not only is writing essential in acquiring English as a second language, but it "…play[s] an increasingly important role today in the lives of professionals in almost every field and discipline" (Long & Richard, 2003, p. xv).

In ESL, teaching and learning writing can be overwhelming tasks, due to the fact that ESL writers encounter several sets of language problems, including different teaching contexts, cultural backgrounds, linguistic competences, literacy skills, and transference between first and second languages (Ferris & Hodgcock, 2005; Hinkel, 2004; Zhang, 1995), which could hinder the composition of meaningful written messages (Al-Ahmad, 2003; Hussein & Mohammad, 2012; Rabab'ah, 2005). Writing pedagogy in the Arab educational system, and more specifically in Saudi Arabia, is based on conveying information (Cummings, 1991), rather than constructing knowledge by producing information based on critical thinking and individual understanding.

The traditional style of teaching writing emphasizes the transmission of certain rules and specific structures that ensure writing accuracy. Although many language instructors have developed new approaches to teaching reading, listening, and speaking, the teaching of writing still focuses mainly on traditional drills and memorization of certain structures (Ryan, 2005). The literature of writing pedagogy has evolved through three influential approaches: the product

approach (a traditional approach that focuses on grammar and mimicking model texts), the process approach (an approach that emphasizes on the process of writing including brainstorming, writing, revision, and rewriting), and the genre approach (an approach that determines the social and linguistic conventions of distinct kinds of texts). Today, almost all Arab universities primarily apply the product approach in the writing classroom in all disciplines.

EFL classes in Saudi Arabia seem to generally use a teacher-based approach. Students mainly follow the teacher's directions, which are regarded as the only source of knowledge. Most of the time, students work individually to produce academic texts and solve problems. This approach to writing has been criticized because the social aspect of learning is neglected, yet it plays a huge role in preparing students to become independent and responsible for their own learning (Dobao, 2012; Storch, 2005; Swain & Lapkin, 1998). Consequently, writing proficiency is low. According to the Cambridge Examination Center, in 2009 Saudi students ranked next-to-last among the nations that participated in both academic and non-academic testing (Cambridge ESOL: Research Notes, 2010, as cited in Al-Syghayer, 2011). Similarly, Grami (2010) reported that Saudi student writing earned the lowest average scores (4.83 out of 9) on the International English Language Test System (IELTS). Considering that English is a compulsory subject in Arabic schools, starting as early as the 6th grade, very few Saudi students show satisfactory results in university entrance examinations (Grami, 2010).

Venue and Subjects

The current study was designed to examine online collaborative writing as a means of enhancing student writing ability and to explore student perceptions of the learning experience. This study compared student attitudes toward two writing pedagogies, namely online collaborative writing via wiki with in-class collaborative writing. The students recruited for the

study were two classes of fourth-year college students from Qassim University in Buraydah, Saudi Arabia. The two classes were selected specifically by the researcher because the students had satisfactorily completed two classes in Computer Assisted Language Learning (CALL), a course that provides students with hands-on experience in integrating the computer into L2 courses. Also, they also had a basic knowledge of writing structure and of composing academic essays. The students from the two writing sections were assigned into two writing conditions: wiki users and traditional groups, to help them write collaboratively. In this research study, the comparison between the two classroom experiences were analyzed to investigate the effectiveness of wiki as an online collaborative writing tool.

Statement of the Problem

Second language writing (L2 writing) has been a subject of interest for research for the past four decades. The theoretical and pedagogical growth of L2 writing during the 1960s opened new areas of second language acquisition and applied linguistics. The interdisciplinary field became the main focus of many L2 scholars discussing theoretical, pedagogical, methodological, and practical perspectives of ESL and EFL literacy. One of the issues that has been recently discussed is the potential use of technology in teaching English writing.

To date, there is a dearth of published research that thoroughly compares collaborative writing classrooms using wiki with traditional in-class communication in the context of L2 writing (Alshumaimeri, 2011; Özdemir & Aydin, 2015; Wichadee, 2013). Research is considerably less extensive in relation to Arab countries, and more specifically, to Saudi Arabia.

The goals of this study were threefold: 1) to investigate and report the impact of using asynchronous individual and collaborative writing of online and paper-and-pencil classes on EFL writing skills; 2) to investigate and report the perceptions of EFL students regarding

collaborative online technology and writing performance; 3) and to report on advantages, disadvantages, issues, and themes associated with the online collaborative writing experience.

Although collaborative writing has been widely supported by many empirical research studies, the body of research on asynchronous online applications (e.g., wiki) in ESL/EFL writing instruction is still meager. However, relevant literature examining wiki in various educational contexts and at several L2 writing proficiency levels has generally emphasized the positive impact of wiki on L2 writing development. The dominant subthemes of these discussions include: process-oriented scaffolding (Hadjerrouit, 2014; Kessler & Bikowski, 2010; Kost, 2011; Li, 2013); task-oriented scaffolding (Lee, 2010; Mak & Coniam, 2008); perception of wiki in collaborative learning (Dewitt, Alias, & Siraj, 2013; Li, Chu, Kai, & Woo, 2012; Miyazoe & Anderson, 2010; Miyazoe & Anderson, 2012; Ozkan, 2015), and wiki and feedback correction (Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2012).

Yet, a large research gap still exists in the literature, especially regarding student perceptions of online writing. Few studies thoroughly explore the feelings of ESL/EFL students toward online writing in terms of advantages, disadvantages, issues, problems, limitations, and technical problems that they may have been encountered. Also, these studies did not investigate the future practice of online writing in relation to timing of use, best classroom venues, and possible suggestions and recommendations from students for future application of the technology.

Regarding the research methodology and design of previous studies on the topic, very few were experimental (Alshumaimeri, 2011; Wichadee, 2013). Therefore, in order to fill that gap, more experimental research is required. Experimental research, as defined by Gay, Mills, and Airasian (2015), is "[a manipulation of] at least one independent variable, controls other

relevant variables, and observes the effect on one or more dependent variables" (p. 249). This is the only kind of research that examines cause-and-effect relationships between variables determined by the researcher. According to Gay et al. (2015), experimental research is the "most structured of all research types" (p. 251) and findings can be generalized to large populations. Unlike experimental designs, case studies analyze a detailed phenomenon in a particular context and cannot create a cause and effect correlation. In summary, more experimental research on the proposed research topic is needed to reveal cause-and-effect results in which the findings could be generalized to a larger population.

Purpose of the Study

The current study examined the potential impact of the use of wiki on collaborative writing. It was guided by the research questions that investigated students' perceptions of collaborative writing in both online and paper-and-pencil classrooms and their impact on EFL writing ability. The research questions endeavored to fill the following gaps in the literature: the lack of studies on ESL/EFL collaborative online and traditional research, the dearth of studies reviewing the perceptions of EFL students regarding online writing, and the limited number of studies using experimental research techniques.

This dissertation research explored three main topics. First, the research was designed to compare the writing performance of students who are using online collaborative writing through wiki, with those who are engaged in traditional collaborative writing techniques. Individual composition on pre-tests and post-tests and the quantity of collaborative writing (i.e., measured in number of words) as well as the quality of the writing (the holistic score) were analyzed to understand the influence of each technique on text production. Second, this study was designed to compare the two methods of collaboration in writing, on-line and paper-and-pencil, to

understand students' feelings and perceptions regarding the two practices. The final purpose was to explore in-depth the advantages, disadvantages, issues, and themes that may arise from the practice of online collaborative writing in both groups of students. Specifically, this study sought to:

1. Identify the potential effects of the use of wiki on students' writing development in the traditional and the online classrooms by comparing the individual writing (pre- and post-test) and collaborative writing (3 collaborative writing activities).
2. Explore the students' perceptions of collaborative writing and its possible impact on their writing ability.
3. Investigate in-depth the advantages, disadvantages, issues, and themes that may arise from the practice of traditional and online collaborative writing.

The methodology of the study was primarily quantitative, especially for the first three research questions. The fourth question, however, examined these phenomena qualitatively. By using both quantitative and qualitative research methods, this study explicitly revealed and identified student experiences of online collaborative writing as well as the traditional method of collaborative writing.

Significance of the Study

The proposed investigation of the effectiveness of integrating wiki into collaborative writing classrooms is significant; it covers theoretical, practical, and personal perspectives. Theoretically, the study used ZPD social theory and collaborative scaffolding to understand how students interact and collaborate via wiki to mutually construct knowledge and achieve cognitive and linguistic development; this study reinforced the significance of social theory and proposes new perceptions for understanding online collaborative writing in future research.

In addition, this study contributes to the growing body of literature on online collaborative writing, particularly the practice of integrating wiki into the L2 writing classroom. Specifically, it probed the nature of joint scaffolding and coauthoring activity to produce academic writing through the use of wiki in the Arab world and, more precisely, in Saudi Arabia. Moreover, this study endeavored to explore the perceptions of Saudi students on the use of collaborative online writing on their writing ability. Last, but not least, this study identified the relative merits, issues, and themes that may need to be considered in future studies. The results of the study may provide new insights for the use of online technology, not only in the Saudi context, but also in the global EFL/ESL classroom arena.

Practically, it is anticipated that the present study will assist ESL/EFL teachers and language instructors to be aware of the potential impacts of traditional collaborative writing versus online collaborative writing via wiki. The results may also help them refine pedagogical instruction, as well as show them the limitations, benefits, and problems of each technique so that they may be able to minimize the disadvantages and reinforce the advantages. The findings of this study may also help teachers to choose between the two practices (i.e., traditional collaborative writing versus online collaborative writing), to determine which one best fits their students' needs and helps them expand their social, cognitive, and linguistic language skills.

Personally, this study assists the researcher to shape his professional development both theoretically and practically. The empirical data from this research can help him make decisions about using wiki as an online collaborative writing tool and raise students' awareness about the importance of collaborative and social learning in his future EFL classrooms in Saud Arabia.

Research Questions

This dissertation aimed to answer the following research questions:

1. Are there any statistically significant differences in the improvement of individual writing between pencil-and-paper and online writing participants?
2. Are there any statistically significant differences in the improvement of collaborative writing between pencil-and-paper and online writing participants?
3. How do undergraduate EFL students perceive traditional methods of collaborative writing compared with wiki-supported experiences?
4. What are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?

The above research questions reveal the four dimensions of this study, which are presented in Figure 1 (all figures and tables will be displayed in Appendix N). These dimensions can be viewed from a social constructivism theory perspective. The Social Learning (Vygotsky, 1978), Discovery Learning (Bruner, 1978), and Connectivism theories (Downes, 2007; Siemens, 2005) guided the data analysis and the interpretation of quantitative and qualitative data of the present study.

Assumptions

From the perspective of a research and EFL writing instructor, there were five main assumptions for this study.

1. It is assumed that writing via technology (e.g., wiki) is a promising innovation based on the fact that online programs are relatively available for the teachers and to the learners to the same degree and do not have time or place restrictions.
2. It is also assumed that that these online applications are free in cost.

3. It is assumed that Wiki is a fairly new pedagogical method for EFL students in Saudi Arabia as well as for some teachers, and it may take time and extensive effort to establish and maintain training sessions that can clearly identify key features of such programs.
4. It is assumed that online collaborative writing may not suit all students' needs due to their individual abilities and preferences in learning and teaching styles; however, it is likely to affect both learning and teaching habits for those who use it.
5. It is assumed that the subjects in the present study honestly responded to the items on the questionnaires and in the interviews and to the best of their abilities.

Limitations of the Study

The present study had the following limitations that might have influenced its findings.

1. Implementing a quasi-experimental design in this research may have affected the results of the study. Due to the fact that the study was conducted after the writing courses and students were assigned by the English Department, participants were not randomly assigned to the two different class sections which resulted in a quasi-experimental research design. However, the researcher and the two language instructors randomly assigned the group that received the treatment and the group that acted as the control group.
2. Individual writing tasks might have been a limitation. All participants were required to complete two writing tasks in the pretest and the posttest, and the topic for both writing tasks were argumentative essays. Students may have possessed different writing abilities that could have emerged when engaged in writing arguments rather than in descriptive and narrative essays. The relevance of the topics of the individual and collaborative writing may also have impacted the writing quality due to the degree of students'

familiarity with the subject matter rather than with their writing skills.

3. The current quantitative study was derived mainly from self-reported data (e.g., questionnaire responses), and thus may not have identified detailed information about the differences between collaborative writing that could result from using paper-and-pencil and wiki.

Delimitations of the Study

The following are delimitations that the researcher identified for this study.

1. The data used in this study may not have been completely accurate due to the fact that some participants may not have been willing to share some personal information.
2. Because the number of participants affects validity in a quantitative study, it is important to note that the number of participants was limited to a range of 30 to 40 per each class. Recruiting a larger population would have been difficult, however, due to administrative rules limiting class size to 40 students.
3. All of the participants recruited for this study were male. Although including female participants would have been an important construct in this kind of research, cultural restrictions prevented interaction between the two genders in the same classroom in a school setting.
4. This study included several instruments, including a questionnaire, survey, interview, and as an attempt to capture the true feelings of the participants and avoid misunderstandings that might occur when reading the English version. Therefore, translated versions of the instruments were provided in the students' first language (Arabic). Two bilingual experts, the researcher and the English instructor, translated the items of each instrument along with the interview questions, to assist the subjects

in understanding the instruments.

5. Because this study was designed for an ESL/EFL context, the findings may not be generalizable to other language learning communities, such as those including native speakers of English.

Definitions of Terms

Asynchronous. This term refers to the delayed communication between two or more participants in the Internet (e.g., emails, wikis, blogs).

Collaborative Writing. Collaborative writing, as defined by Storch (2011), is "the joint production or the coauthoring of a text" (p. 275) and can be seen through the following process: 1) co-publishing, 2) peer feedback, and 3) co-writing. The present study investigates the experience of co-writing where the students gather together during the writing process and then write one common piece of writing.

Computer-Mediated Communication (CMC). According to Warschauer (2001), CMC "refers to reading, writing, and communication via networked computers" (p. 207). The role of the computer is "to provide alternative contexts for social interaction; to facilitate access to existing discourse communities and the creation of new ones." (Kern & Warschauer 2000, p. 13). CMC can be in two forms: synchronous and asynchronous communication.

English as a Foreign Language (EFL). This is an acronym that denotes teaching English as an additional language in a country where English is not the dominant language.

English as a Second Language (ESL). This term is an acronym that denotes teaching English to people who speak other languages in a country where English is the dominant language.

Online collaborative writing. This refers to the style of collaborative writing that involves the assistance of CMC programs (e.g., blogs, wiki, and email.)

Pencil-and-paper collaborative writing. This is style of collaborative writing that involves the use of paper-and-pencil.

Social Theory. This theory is heavily based on the work of Vygotsky's (1987) Social Constructivist Theory which mainly emphasizes the concept that social interaction plays a major role in the process of cognitive development. In order for learners to construct new knowledge, according to Vygotsky, learning occurs socially between learners before it becomes part of theur mental functions. Also, Vygotsky developed the theory of the Zone of Proximal Development (ZPD) as another fundamental concept of social learning, where the learner can reach full potential merely with the help of capable peers or adults; thus, the learner becomes more independent and a problem-solver. The Social Theory expands the understanding about the importance of social environment as a mediating factor that helps in the acquisition of a language and is the core theoretical framework for this study.

Synchronous. This tern refers to real-time communication between two or more participants on the Internet (e.g., online chat software).

Wiki. Wiki is a free web page for storing and modifying information. It is a collaborative online program that allows multiple users to freely create and edit the contents of the page. For the sake of this study, the wiki used is Wikispaces and only invited members (students) of the wiki can participate in this web page.

Summary of the Chapters

This chapter aimed to establish the framework for the current study by presenting the background, purpose, and significance of the study in addition to a statement of the problem and the research questions driving the study. In addition, this chapter identified some key terms, fundamental assumptions, limitations, and delimitations of the study.

In Chapter Two, the research review summarizes, and critically analyzes empirical research pertinent to the current study, beginning with a history of ESL/EFL teaching of writing, including pedagogy and theories, followed by a discussion of the theoretical framework of the study and its relevance to ESL/EFL writing. The chapter also discusses three ESL writing domains: traditional, collaborative, and computer-mediated (e.g., wiki).

Chapter Three describes the methodological approach used in this study, starting with the construct research design, setting, participants, and instruments – as well as the roles of the instructors and researcher. Next, data collection procedures and data analysis are presented. The chapter concludes by assessing the reliability and validity of the instruments used in the research study. Chapter Four presents detailed analyses of the quantitative and qualitative data collected for this study. Lastly, Chapter Five summarizes and discusses major findings of the study and provides some valuable theoretical and practical implications for teachers and presents some important recommendations for future research on the topic.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter reviews the literature that is relevant to this study. It covers certain crucial issues regarding ESL/EFL writing by presenting a concise history and reviewing some of the writing pedagogies that have been applied over the last four decades. Also, this review explicitly discusses the theoretical framework of this study which allows for a better understanding, analysis, and interpretation of the data. Moreover, the nature of ESL writing is discussed in terms of its simultaneous prominence and complexity. Next, multiple and related definitions of ESL writing are presented and the literature relevant to the L2 context is examined. This chapter also provides a general overview of computer-mediated communication (CMC) in general, and more specifically wiki, including its definition, effectiveness, and appropriateness in the ESL/EFL environment. Finally, the methodological approaches used in studying wiki, as found in the literature, are investigated along with the challenges of using wiki in the ESL/EFL writing classroom.

Brief History of ESL Writing

Second language writing had been marginalized before the 1960s. Matsuda (2003) wrote that in the early stages of teaching English as a second language, teaching was geared to Spanish-speaking students who were given priority over foreign learners from around the world. ESL theories and pedagogies have not been virtually enhanced until the rapid growth in numbers of international students gave teachers and researchers the incentive to study L2 literacy. The *disciplinary division of labor* that differentiates between L1 composition and L2 writing has been the spark for the growing attention to L2 writing. Much research has been conducted to explore

the relationship between L1 and L2 writing (Belcher & Braine, 1995; Carson & Leki, 1993; Ferris & Hedgcock, 2005; Grabe & Kaplan 1996; Hyland, 2004; Leki, 1992; Matsuda & Silva, 2005; Reid, 1993; Zamel & Spack, 1998).

Despite the short history of L2 literacy research due to the strong focus on oral proficiency (Leki, 2008), L2 writing has rapidly flourished and many L2 writing journals have contributed to the field by publishing a high number of research-based manuscripts (*Foreign Language Annals*, *Journal of Second Language Writing*, *The Modern Language Journal*, *TESOL Quarterly*). These journals explain various dimensions of L2 writing including, but not limited to, ESL writing theories, research methodology, curriculum design, classroom materials, reading-writing connections, and computer-assisted language learning.

The need to focus on second language writing became urgent after a large number of foreign students entered higher education in North America in the early 1960s. Educators and researchers began to reconceptualize the pedagogical and teaching approaches to tailor them to the special needs of L2 students by introducing differences in teaching composition to native speakers and non-native speakers. The study of the differences between L1 and L2 writing began with Kaplan (1966), who analyzed ESL writing samples and found that rhetorical patterns stemmed from the influences of the writers' first languages and cultures. Similarly, Raimes (1985) argued that there were some dissimilarities between L1 and L2 writing that needed to be addressed. Zamel (1985), on the other hand, explored some similarities in writing process of native and non-native writers.

Review of Previous and Current Approaches to Teaching Writing

The teaching of English as a Second Language (ESL) has undergone significant changes since the time that non-native-speaking students have begun to emerge in higher education in

North America and other English-speaking countries. Research has investigated a wide range of language learning approaches and new teaching pedagogies emphasizing the special needs of ESL in schools and colleges. Although there has been interest in teaching English as a second language for many years, as one of the more difficult skills to be taught and acquired, writing was not given serious attention until the early 1990s (Matsuda, 2003). During that period, the interest in second language writing grew and many new publications appeared in the form of journals (i.e., *Journal of Second Language Writing*), books (i.e., Corner, 1997; Rodby, 1992), articles (Silva & Matsuda, 2001; Zamel & Spack, 1998), and textbooks (Ferris & Hedgcock, 1998; Grabe & Kaplan, 1996; Leki, 1992; Reid, 1993).

Teaching writing was influenced by behaviorism, emphasizing the importance of grammar, vocabulary, and idioms (Raimes, 1983). Repetition and correct form were considered to be the significant factors in teaching writing (i.e., grammar). Another approach, known as the product-oriented approach, proposed helping ESL students to write well-formed sentences in English by mimicking some pre-arranged models. Producing a well-organized genre (e.g., a formal letter) is the key element in this approach. The emphasis was on evaluating the end product. In this approach, the role of the teacher is predominant; he/she designs the writing genre and assesses student performance (Ferris & Hedgcock, 2005; Matruda, 2003; Silva & Matsuda, 2001). Both approaches were very limited and not helpful in creating meaning for ESL writers (Leki, 1992). Zamel (1976) explicitly described the grammar-based approach as “unfounded, though well-intended” (p. 28). And so, the demand for new writing approaches ensued.

In the early 1980s, a process-oriented approach, a shift from written form to the process of writing, was adapted from the methods of teaching composition to native speakers to the teaching of ESL writing. This approach was widely supported by teachers and researchers who

viewed teaching writing as a cognitive activity that emphasized the important role of the learner as creator of information. In the switch to this new method, the teacher's role became subordinate. According to Hyland (2003), in process-oriented teaching "writing is learned, not taught, so writing instruction is nondirective and personal" (p. 9). Thus, process approaches outperformed the previous approaches that had focused on the surface-level of the language. Process techniques emphasized the freedom to write, fluency over accuracy, the students' voices, and peer reviews (Ferris & Hedgcock, 2005; Matruda, 2003; Silva & Matsuda, 2002). In 1993, Reid noted that "many ESL writing teachers had discovered, accepted, and implemented the approaches and philosophy associated with process writing" (p. 32). This approach required students to run through a series of steps to produce a qualified text. These steps were planning, drafting, revising, and editing in addition to an awareness of the audience for which the writing is being produced.

However, this approach was soon criticized and questioned for not preparing ESL students to write fluently, and thus, the social learning method was introduced. According to Social Constructivism Theory, learning is not a merely cognitive activity, but also incorporates social and cultural influences. As Hyland (2003) indicated, writing involves social practices in order to "[connect] people with each other in ways that carry particular social meanings" (p. 27). For an ESL writer to be effective, it is important to think about the context and the purpose of writing rather than just the cognitive process involved with it.

For example, Zamel (1983), in one of the seminal studies of L2 writing, endeavored to encourage teachers to adopt different learning pedagogies and engage students in learning from one another in order to become independent. She tried to narrow the gap between understanding the process of ESL writing, and instructional needs. The main purpose of her research was to

examine how ESL students communicate with their audience in written form. Zamel worked with six ESL graduate students to discover their particular writing processes. She analyzed written assignments, observed students in class, and conducted one-on-one interviews. She concluded that ESL students should be introduced to different teaching approaches. According to the researcher, rather than explaining the writing process as it was explained to native speakers, that is, by teaching about writing thesis statements, outlines, and topic sentences, ESL students should be encouraged to express their feelings and ideas freely as problem solvers. In Zamel's (1993) study, the teacher's role was to work with students to solve problems as they occurred. Brainstorming and pre-writing strategies were important skills to help ESL writers convey their own ideas freely to discuss writing socially either with teachers or with peers to get their feedback could also effectively result in understandable text. Zamel concluded that language learning occurred when ESL students used the language in a purposeful and communicative way.

Social Constructivist Theory had a formidable influence on learning and teaching, especially in the ESL classroom. Vygotsky (1962, 1978), the leading proponent of social constructivism, believed that human beings are social in nature. According to social theory, learning occurs when students are engaged in a series of social communications and interactions with peers as well as with other people. Teachers can assist ESL students by expanding their knowledge from their current level to a potential level of development. This assistance is sometimes referred to in the research as *the Zone of Proximal Development (ZPD)* (Vygotsky, 1978) and *scaffolding* (Bruner, 1978). These two theories will be extensively discussed in the following section.

In the social constructivist perception, a group/pair of students working together on writing tasks can improve the quality of their writing (Storch, 2005); increase awareness of

audience (Leki, 1993); lead to writing ownership (Storch, 2005; 2011); foster motivation (Reid, 1993); provide peer feedback (Storch, 2005); decrease writing anxiety (Dornyei, 2004); promote critical thinking (Gokhale, 1995); and expand attention to grammar and vocabulary (Swain & Lapkin, 1998). Some research has argued that new social technologies and applications, such as wiki and blogs, closely support the social constructivist approach (Su & Beaumont, 2010).

In the 21st century, the demand for new technologies in classrooms has become undeniable (Kessler, Bikowski, & Boggs, 2012). The shift from Web 1.0 to Web 2.0 offers the opportunity not just to publish, but also to share and communicate interactively with a wider audience (Wang & Vasquez, 2012). Web 2.0 is defined as web-based applications such as wiki, Google Docs and blogs all of which that enable online interactive and collaborative communication between groups of people (Holtzman, 2009; Motteram & Brown, 2009). Davis, Sprague, and New (2008) also supported any digital technology used to achieve specific learning objectives. Empirical studies about the integration of technology in the classroom used terms such as *new technologies*, *Computer-Mediated Communication*, *Web 2.0*, *digital media*, *digital technology*, and *social media*, which share relatively the same meaning. In this literature review, these terms will be used interchangeably.

As stated by Kessler and Bikowski (2010), Computer-Mediated Communication (CMC) could increase the level of collaboration in English writing classrooms. Many studies have proposed that technology can assist teachers and educators to bring relevance into their classrooms (Baker, 2010). Baker also observed that students of the new generation are digital natives and already have the awareness to post and edit media, and are able to communicate with others through texting, blogs, and sharing their thoughts on social media. Prensky (2010) stated that with the existence of new technologies, students can enhance traditional instruction and

pedagogies and start to learn and value independence, passion, peer collaboration, and authenticity. Belland (2004) supported computer-based classrooms because they give teachers the opportunity to address students' individual needs. Some other educators believe that modifying their daily lessons using digital media could be beneficial for expanding to additional activities beyond the classroom (Belland, 2014). As an important factor in writing development (Silva & Nicholls, 1993), motivation could be sustained by the use of online applications such as wiki and blogs (Li, Chu, Ki, & Woo, 2012; Ducate, Anderson, & Moreno, 2011). Sheskey (2010) also embraced the use of technology in the classroom; it achieves learning autonomy, and thereby encourages students to become problem solvers.

Theoretical Framework

Given the various paradigms discussed by philosophers and researchers, this researcher was receptive of the works of Lev Vygotsky, Jerome Bruner, George Siemens and Stephen Downes because their theories of learning serve the needs of English language learners today. These theoretical ideas – *social learning* (Lev Vygotsky, 1978), *discovery learning* (Bruner, 1978), and *connectivism* (Downes, 2007; Siemens, 2005;) – have influenced the theoretical framework of this dissertation and provided the basis for the data analysis.

Vygotsky and the ZPD

Vygotsky (1962) devoted his life to revealing the pivotal role of social development in learning and teaching according to his perspective that human beings are social in nature and thus, that learning takes place through social interaction. Vygotsky (1981) asserted that it is "through others that we develop into ourselves" (p. 161). Unlike Piaget, who believed that cognitive learning is the only factor in learning improvement, Vygotsky argued that "[d]evelopment does not proceed toward socialization but toward the conversion of social

relations into mental functions" (1981, pp. 161-165). In other words, Vygotsky (1978) believed that in order for cognitive development to occur, it must first be socially oriented. He sometimes referred to this theory as *internalization,* which is described below.

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (p. 57)

The Zone of Proximal Development (ZPD) is considered the central theory by which Vygotsky explained the influence of society and social life on the learners' development. The construction of the ZPD came to denote "those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state" (1978, p. 86). Vygotsky defined the ZPD as "the distance between the actual development 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" (1978, p. 86).

According to Vygotsky, the ZPD occurs when there is a task that cannot be solved by the learner alone. Therefore, the ZPD requires social interaction between a competent learner and a less competent one in order to improve the performance of the latter (Figure 2). This interaction underlies the dominant role that students play in a classroom and enables them to be responsible for their own learning. The role of the teacher, however, is reduced to one of facilitating and guiding the students by providing direction and support.

The ZPD involves actions that embrace *scaffolding* in social learning. Scaffolding, first introduced by Bruner (1978), suggests assistance from more knowledgeable peers (e.g., teacher, parent, student, and computer). In other words, learners – with the help of others – engage in scaffolding activities that assist them to connect what they already know (prior knowledge) with the new concept that they need to achieve. Sociocultural theory, developed by Vygotsky (1962, 1978), is not just useful for learning collaborative writing, but it is also effective in peer feedback activities.

Similar to Vygotsky, Bruffee (1984) highlighted the important role of social interaction in education and its ability to achieve learning development. He argued that for writing to be effective in a social environment, peer feedback should play a big part. According to Bruffee (1984),

> Students' work tended to improve when they got help from peers; peers offering help, furthermore, learned from the students they helped and from the activity of helping itself. Collaborative learning, it seemed, harnessed the powerful educative force of peer influence that had been...ignored and hence wasted by traditional forms of education. (p. 638)

Similarly, sociocultural theorists such as Donato (2000) and Swain (2000), stressed the role of collaborative peer feedback and mutual scaffolding among learners. Learning is not an isolated activity, but rather a cognitive activity that supports social interaction. Thus, peer review is an essential activity to enhance students' learning because it allows them to construct knowledge from social interaction (Liu, Lin, Chiu, & Yuan, 2001).

Bruner and Discovery Learning

In the same vein, Bruner (1960), a constructivist scholar, emphasized the importance of the social nature of learning, much as adults help a child to develop a skill through scaffolding. According to a term first developed by Wood, Bruner, and Ross (1976), *scaffolding* has similar, if not the same, characteristics as Vygotsky's concept of the ZPD. In fact, the two theories are used interchangeably in the literature.

Bruner (1967) also invented an inquiry-based construction known as the *discovery learning theory*, which encourages learners to be active and responsible for their own learning based on their own interests. The theory was summarized by Bruner: "Emphasis on discovery indeed, helps the child to learn the varieties of problem solving, of transforming information for better use, helps him to learn how to go about the very task of 1earning" (p. 87). According to Borthick and Jones (2000), the discovery learner is able to "recognize a problem, characterize what a solution would look like, search for relevant information, develop a solution strategy, and execute the chosen strategy. In collaborative discovery learning, participants, immersed in a community of practice, solve problems together" (p. 181).

Bruner regarded the learner's prior knowledge to be crucial in the process of constructing new knowledge. By communicating with the world, examining objects, and encountering many questions and controversies, students are more likely to remember and discover knowledge independently. The ultimate goal of *discovery learning* is twofold: to develop the students' metacognitive skills inspiring the notion of student engagement, and to motivate students to become creative, actively engaged, and independent.

Siemens and Downes' Theory of Connectivism

The Connectivist Theory, developed by Siemens (2004) and Downes (2007), explains how websites on the internet and online social networks have opened a new arena in which people can learn and share information. Downes (2014) defined Connectivism as "[a]connection exists between two entities when a change of state in one entity can cause or result in a change of state in the second entity" (para. 14). Downes (2007) also described knowledge and learning based on connectivist theory as "the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks" (para.1).

The major feature of Connectivism is the relationship between social and cultural contacts and technology that enhances learning ability and understanding. Connectivism provides additional sources for creating knowledge online (e.g., Facebook, YouTube, Twitter, Wikipedia, wiki, and blogs) rather than depending solely on classroom activities. The main focus of Connectivism is to understand how new technologies encourage new forms of connection and social interaction. In other words, new technologies allow fast knowledge exchange between students, which leads to connective knowledge. Siemens' (2004) theory of Connectivism, in this sense, ties in quite neatly with Vygotsky and Bruner's theories, maintaining that novice users who have access to social media for sharing information still need expert users for guidance and assistance. According to Siemens (2006), knowledge is changeable, occurring through development and use, which exactly reflects the metaphor he created to describe the transition of knowledge as a caterpillar transforming into a butterfly. In the same vein, Bruner stated that learning is an active process.

The *node* metaphor, developed by Siemens (2004) and Downes (2007), emphasizes the role of connections on learning systems in the digital age. Barabási (2002) stated that "nodes always compete for connections because links represent survival in an interconnected world" (p.106). According to Siemens (2004), nodes (e.g., communities, fields) enable people with similar interests to achieve *cross-pollination* through learning communities, in which *community* is defined as "the clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together" (2004, para. 4). It is through nodes that students engage in learning development based on their interests.

Connectivism develops socialization through the use of technology. Siemens (2006) suggested that technologies and social media can facilitate knowledge. The role of the teacher in social technology, according to the Connectivist Theory, has been altered because technology permits the students to take the control of their learning (Siemens, 2005). However, Siemens (2006) also argued that the role of educators and teachers is essential for incorporating aggregating, curating, amplifying, filtering, modeling, wayfinding, and persistent presence.

Analogous to Vygotsky's ZPD and Bruner's scaffolding, Siemens (2006) noted that Connectivism with the support of social media can achieve social learning and development to construct new knowledge. The teacher who is the learning process expert, facilitates learning through engaging the students in social interaction. Thus, students can construct knowledge and control their own learning.

Three-in-One

The theoretical framework of the proposed study – social learning, discovery learning, and connective learning –played a crucial role in shaping this dissertation and in the researcher's future teaching. They are indispensable tools in today's classroom activities (Figure 3). Social

learning theory shares several common features with discovery learning theory and the use of technology. First, they all focus on student-based learning rather than on teacher-based learning that sees the learner as a passive information receiver. A student-based learning approach helps the students manipulate their own learning and to construct new knowledge under a teacher's supervision; the role of the teacher is to encourage and support students in this endeavor. Second, the three theories utilize social learning in face-to-face experiences or through social websites. Third, scaffolding is supported across the three theories in the form of peers inside or outside the classroom. Finally, although all three theories embrace learning communities in one form or another, online learning and sharing seems to be most reliable for gathering learners together into a learning community, a group that Kop and Hill (2008) defined as "the clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together" (para. 4).

Summary and Conclusion of the Theoretical Framework

The theoretical framework of the proposed dissertation is greatly influenced by the theories of Lev Vygotsky, Jerome Bruner, and George Siemens and Stephen Downes. Vygotsky's idea of social interaction is the key to understanding how learning is socially acquired. His theory also supports the notion of scaffolding and the way in which students benefit from teachers and from one another. Burner's discovery learning theory provides a large frame for the discussion about encouraging students to be problem solvers and active learners based on their prior experiences. In addition, Siemens and Downes' online learning provides possible methods of learning via online communication among learners as a means of applying social learning, as well as empowering students to take control of their own learning. Finally, in order to employ these theories and measure the acceptance of wiki in ESL classroom, it is important to integrate technology into teaching and learning in order to help students acquire

control over their own learning and social development.

The System of English Language Programs in Saudi Arabia

In Saudi Arabia, there are over 70 private and government-sponsored universities, and most of them have English programs. The process of enrollment into the English programs in these universities is similar. Based on a set of accumulated scores from high school, the National Assessment, and the Summative Assessment, taken at the end of high school, students can take the placement test for English proficiency. These tests are used to place students either in an intensive course – a semester of preparation to acquire the necessary academic English language skills – or directly into the department. Typically, 4 years of study are required to obtain a bachelor's degree in English language and translation. This period is sufficient to train students to teach or pursue graduate studies. During this period, students learn English language skills (e.g., reading, writing, listening and speaking, and grammar) and take concentrated courses in teaching and learning English (phonetics, linguistics, syntax, and semantics), translation (academic translation, computer-assisted translation, and literary translation), literature (novel, short stories, and poem), along with some elective courses in Islamic teaching, Arabic literature, business, and computers. At the end of the 4 years, students are required to conduct a modest research project on a topic of interest, directly after finishing a basic research course as a prerequisite.

Describing Current Curriculum

The English curriculum at Qassim University has undergone changes over the past 20 years. The latest update of the current curriculum was instituted two years ago and has been in use since Fall, 2014. It should be noted that the English Department is currently reviewing the curriculum for writing as well as all elective and core courses. The main goal of the new

curriculum is to prepare students for the future bilingual workforce, to effectively communicate verbally and in writing. The need to achieve higher English proficiency levels and more effective communication skills in teaching and research is one of the priorities, considering the social and cultural backgrounds, ethnicities, and mother tongue differences of Saudi students.

Curriculum as "a plan for action or a written document that includes strategies for achieving desired goals or ends" (Ornstein & Hunkins, 1998, p. 10) suggests that all activities are planned in advance, both inside and outside of school, as part of the curriculum. According to Ornstein and Hunkins, curriculum has three main components: planning, implementation, and evaluation. Curriculum is also dynamic, and what works in one society cannot necessarily be applied to a learner from another society with the expectation of similar outcomes. Instead, educators and curriculum developers encourage schools and universities to design curricula to meet the needs and desires of the learners based on their culture and the learning system of each country. Curriculum development is an ongoing process that requires equal participation from the teacher as well as the students to ensure effectiveness.

As part of the accreditation process that has been ongoing in the Saudi university system since 2013, the English Department is working hard to be accredited by the National Commission for Academic Accreditation and Assessment (NCAAA), a designation that some science colleges at Qassim University have already achieved. During this period, the English Department modified some of their core and elective courses and organized them into three different tracks instead of only one track: Teaching English to Speakers of Other Languages (TESOL), literature, and translation.

In the TESOL track, the department head and two lecturers who possess degrees in TESOL and Applied Linguistics reviewed the latest writing curriculum in 2014. This committee

is called the writing team. In addition to designing and reviewing the writing curriculum, the committee has other responsibilities, such as recommending writing textbooks and providing help with assessment and writing materials. To ensure that the curriculum has proven its effectiveness during the year, the writing team tracks student writing scores and compares them to scores of the previous year. This traditional evaluation technique has been in use for quite a while. Student writing proficiency is assessed solely on the basis of final grades earned from each course taken in the curriculum.

The intensive course is evaluated using a different system: Students are required to take two proficiency tests before fully enrolling in the English program. These tests are the Placement Test or Entrance Exam and the Intensive Course Test (ICT), which is organized in the same way as the standardized IELTS test. These two tests are administered to students prior to enrollment into the intensive course and after taking that course. The English Department uses these scores to decide on student enrollment numbers and to provide evidence for comparing language proficiency levels before and after the intensive course to properly evaluate this course.

Importance of Writing

Context of ESL Writing

The context of this specific research study is a university in Buraydah, Qassim University, Saudi Arabia, in which ESL undergraduate students are enrolled in writing classes. There have been few studies of the academic writing challenges encountered by ESL students in Saudi Arabia, and as a result, Saudi writing outcomes are unsatisfactory. The general aim of ESL writing classes, according to Zhu (2004), is to assist L2 learners to translate the skills that they have already acquired into different contexts. Leki (2003) argued that adequate academic writing preparation is essential in order for an ESL writer to be successful in any academic discipline.

Sometimes, additional classes are needed to ensure that the ESL students acquire writing proficiency. For example, Leki (2007) evaluated an academic writing course for ESL students and found that the class had little effect on the students' understanding of the rhetorical structures of academic writing. Some challenges discussed in the literature review, such as limitations in vocabulary, grammar, prior experiences of diverse genres, and background knowledge about the topic are common among undergraduate ESL students (Crosby, 2009).

Is Writing Difficult?

Writing is one of the most demanding skills to be acquired for expressing ideas whether the communication setting is academic, professional, business or any other. Yet, there is a shortage of studies about writing pedagogy in L1 as well as in L2 (Dempsey et al., 2009; White & Arndt 1991). In both teaching and learning, writing is a tool for the language learner to convey inner emotions and thoughts in written form and to share them with various audiences, rather than merely being a thinking technique. Therefore, fluency, accuracy, and coherency in writing in both first and second language should be highlighted and fostered to demonstrate the importance of communication in writing (Olshtain, 2001).

Writing is a complex cognitive activity that requires careful thinking. It is not a direct process that the brain can execute at a specific time (Widdowson, 1983). For Zamel (1983), writing is "non-linear, exploratory, and generative process whereby writers discover and reformulate their ideas as they attempt to approximate meaning" (p. 165). Further, Brufee (1993) describes the inner feelings when writing.

> That is why writing can sometimes feel as awkward, and on occasion turn out as badly, as cutting your own hair while looking in a mirror. The complex decisions we have to make when we write are complicated even further by the fact that we write to suit the goals,

interests, and knowledge of as many as three communities of readers. (p. 58)

These three communities are constitute the community, and the community of English speakers, in general. Therefore, writing is a challenging task for anyone, and many studies have shown that most students experience some difficulties expressing their thoughts on paper (Widdowson, 1983). In addition, writing in English for ESL students is quite difficult due to the fact that they come from different teaching contexts, cultural backgrounds, linguistic competence, and literacy skills (Ferris & Hedgcock, 2005; Hinkel, 2004; Zhang, 1995). According to Hinkel (2004), even advanced and highly trained ESL students still encounter many writing problems. In fact, Leki, Cumming, and Silva (2008) indicated that ESL students' level of English language proficiency did not necessarily correspond to their writing performance.

How Is Writing Difficult?

To understand the complexity of writing, it is important to identify the aspects of writing required when composing a text. These writing aspects are the cognition of writing, the emotion of writing and the collaboration of writing. The cognition of writing, also called the process of writing, is mainly responsible for the recursive process that includes pre-writing, drafting, revising and editing. It is also important to point out that during these processes, students think about the coherence and cohesiveness of a text in regards to word choice, grammar, syntax, and text organization. Moreover, students should be aware of audience and the purpose of the writing. All these activities require thinking in order to produce a meaningful text that can be understandable to most readers (Anderson, 1985).

Second, sometimes writing is not only cognitively demanding, but it is also an emotional activity. Feeling can impact cognition. For example, writing about a horrible incident in the past

may evoke memories that may influence the process of writing a well-organized piece. Schumann (1998) argued that emotions can be used as information in writing "when faced with a situation about which we have to make a judgment we often ask ourselves how we feel about it . . . we may also employ feelings when time constraints and competing tasks limit our cognitive capacities" (p. 247).

Third, in addition to the demands on the cognitive and emotional domains of composing, the social aspect is also one of the keys to successful writing. According to Bruffee (1984), writing is a form of conversation that demands social interaction. This can assist students to generate more ideas that can be transferred into meaningful text. Bruffee explains that “[w]e converse; we internalized conversation as thought; and then by writing, we re-immerse conversation in its external, social medium” (p. 641). The above argument indicates that writing is not an individual activity, rather, it is a collaborative interaction and conversation between learners. The more conversation and interaction, the more thoughts and ideas emerge for the learner to write about. Thus, collaborative writing can be considered a successful tool in teaching writing.

In summary, writing is a complex activity that incorporates cognitive, affective, and social domains because when one writes about structure, one thinks previous emotional occasions are evoked and ideas are shared with peers to acquire more ideas about the topic. The importance of designing writing approaches (including product-oriented, process-oriented, and content-based approaches), has been addressed in the last five decades by researchers who apply knowledge of the complexity of writing and of how this complexity is reflected in different areas of teaching and learning.

Based on the theoretical framework the researcher adopted, writing is not an individual act, and thus, it is a particularly challenging experience for ESL/EFL students because they think in a different language from the one in which they write. According to the research on the topic, it is very important for ESL teachers and researchers to consider using various effective instructional approaches in order to engage students in collaborative activities to help them to write. Collaborative writing has been accepted as an effective pedagogical instruction technique that fosters student learning performance (Anton & DiCamilla, 1998; Donato, 1994; Storch, 1999, 2005; Swain, 2000; Swain & Lapkin, 1998). In the following section, a detailed review of the definition of collaborative writing and the relevant studies will be presented.

Collaborative Writing

The *social turn* of writing pedagogy was introduced in the 1990s (Trimbur, 1994) after the process-oriented approach outperformed the product-oriented approach in teaching writing. Although the process-oriented approaches recognize writing to be a dynamic and recursive process, writing is nonetheless an individual activity. Social writing became visible in some writing processes such as peer response, in which students reviewed each others' paper and made some valuable comments (de Guerrero & Villamil, 1994). After social interaction through a peer review activity proved to have successful results (Ferris, 2003; Ferris & Hedgcock, 2005), scholars such as Donato (1988, 1994), Storch (2005), and Swain (2006) promoted the use of such collaboration through the entire writing process.

Definition of Collaborative Writing

Scaffolding in writing comes in many forms. One form that has been widely discussed among writing researchers is collaborative writing. In collaborative writing, students are engaged in working together in pairs or groups throughout the whole writing process, sharing authorship

until the final draft. This mutual writing activity prepares students not only on what to say, but also on how to say it properly. This style of teaching writing opens the arena to discuss language use and solve language problems. This activity has encouraged students to acquire second language skills through meaningful pair and group communication, constructing knowledge and sharing ideas to become independent learners.

Vygotsky (1978) believed that learning happens through social interaction with peers, rather than through individual activity. Moreover, cognitive and linguistic development is an inherently social activity. Vygotsky's Zone of Proximal Development (ZPD) supports the idea that the interaction of a more competent learner with a less competent one can improve the language skills of the latter. With such assistance, now referred to as scaffolding, students' cognitive and linguistic development can improve beyond their current levels toward the expected higher level.

Swain (2006) argued that *languaging*, the use of language to produce meaning through multiple thinking process, can be encouraged through collaborative writing activity and therefore students can *language* about language. In individual writing activities, students often think alone; however, in collaborative writing, students express themselves vocally, and thus, students *language* (think) further. Swain (2000) also bolstered the role of collaborative negotiation, or "dialogue that constructs knowledge" (p. 97), by describing it as "the process of making meaning and shaping knowledge and experience through language" (p. 89). Such dialogue encompasses a combination of cognitive and social development where language use facilitates language learning. Donato (1988, 1994) also introduced *collective scaffolding* to describe the collaborative learning process. He argued that through collaboration students become more knowledgeable: ''the speakers are at the same time individually novices and collectively experts, sources of new

orientations for each other and guides through this complex linguistic problem solving" (Donato, 1994, p. 46). With a "collective orientation to jointly constructed activity" (Donato, 2004, p. 287), learners can achieve better outcomes than if they work on their own.

Regarding the definition of collaborative writing, Storch (2011) simply referred to collaborative writing as "the joint production or the coauthoring of a text by two or more writers" (p. 275). It is worth noting that this definition emphasizes the ownership of the text created between the participants. This is different from group planning and peer feedback, which are part of writing process in the process-oriented approach.

Dale (1994) endeavored to define collaborative writing as expressive interaction, joint decision-making, and accountability among the participants of a shared text. Louth, McAllister, and McAllister (1993) differentiated between interactive writing and group writing. Interactive writing is when students collaboratively communicate with one another in the writing process (e.g., peer editing), while group writing is the mutual responsibility of collaborative interaction in the writing process and the final product (e.g., co-authoring).

From the definition above, collaborative writing can be divided into three main forms: co-publishing, where students individually write different parts of a text and do some negotiating during the writing process; co-responding, where the students work individually and negotiate meaning during the writing process; and co-writing, where students write collaboratively during the writing process to produce a joint text. For this dissertation research, students were engaged in collaborative co-writing in groups to produce a joint text. In this regard, participants might co-publish and co-respond during the writing process, however, the results of these activities were not analyzed because the main goal of the research is to examine the impact of collaborative

writing and students' perceptions of the process. Research on collaborative writing will be presented in the following section.

Review of Collaborative Writing Studies

A large pool of research has investigated collaborative work in oral production and development in the L2 classroom. In L2 writing, however, the use of collaborative writing has been confined to peer feedback during the writing process (Hyland, 2000; Villamil & de Guerrero, 1996). Collaborative writing, a pedagogical approach that involves mutual interaction to produce a joint text in L1 and L2, has great potential. It requires both knowledge of the language at the structural level (e.g., grammar and word choice) and reflective thinking (Donato, 1994; Storch, 2002; Swain & Lapkin, 1998). A large body of research has examined the benefits of group collaboration and peer interaction in acquiring English as a second language (Anton & DiCamilla; 1998; Donato, 1994; Storch, 1999; Swain & Lapkin, 1998). Most recently, studies undertaken by Storch (2005, 2013), Storch and Wigglesworth, (2007), Dobao (2012), Shehadeh (2011), and Wigglesworth and Storch (2009) have encouraged collaborative writing as a scaffolding activity rather than individual composition to foster learning interaction, peer feedback, and linguistic competence.

In the research findings on collaborative writing, many studies have supported the practice of joint writing to develop individual (Sutherland &Topping, 1999) and group writing performance (Dobao, 2012; Jafari & Ansari, 2012; Shehadeh, 2011; Storch, 2005, 2013; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). For example, students' general writing scores improved (Jafari & Ansari, 2012; Storch, 2005); as did structural accuracy (Jafari & Ansari, 2012; Storch, 2005; Storch & Wigglesworth, 2007); writing complexity (Storch, 2005); and content, word choice, and organization (Jafari & Ansari, 2012).

In another collaborative writing research study, Storch (2005) compared accuracy, fluency, and complexity of individual and paired writing among 23 ESL students. The results revealed that pair productions were more grammatically accurate than individual writing although the pairs composed shorter texts than individual efforts. In addition, collaborative writing tends to be more complex than individual writing because group writing is the product of writing multiple scaffolding by group members generating and discussing ideas and providing feedback to each other. Storch and Wigglesworth (2007) and Wigglesworth and Storch (2009) conducted a similar study that compared the writing performance of group and individual writers. Both studies determined that collaborative students were more accurate than individual writers; however, fluency and complexity of the text did not show significant differences between the two treatments. Wigglesworth and Storch (2009) witnessed greater accuracy in group writing due to the fact that during the writing process, group work tended to concentrate more on the structure of the language through joint feedback and mutual scaffolding. Moreover, students' fluency could also be developed in collaborative writing as described by Ligthbown and Spada (1993).

> There is evidence that opportunities for learners to engage in conversational interactions in group and paired activities can lead to increased fluency and the ability to manage conversations more effectively in a second language because these programs emphasize meaning and attempt to simulate 'natural' communication in conversational interaction. (p. 104)

Similarly, in the EFL context, Shehadeh (2011) conducted a longitudinal study comparing team and individual writing among first year ESL undergraduate students in the United Arab Emirates. Evaluating the students' writing holistically in five areas – content,

organization, grammar, vocabulary, and mechanics – Shehadeh showed that collaborative writers had positive experiences working in pairs, and that their writing had improved in content, organization, and vocabulary, although not in grammar and mechanics. In the same vein, Jafari and Ansari (2012) compared group and individual writing to examine the effect of collaborative writing on writing accuracy of Iranian EFL students. The study's purpose was twofold: it measured the accuracy of work and examined the effect of gender on writing performance. The 60 Iranian students who participated in this study for over a month, were divided into two groups: control and experimental. The experimental group was encouraged to write collaboratively, while the control group was assigned to write individually. The two groups were assigned the same topics and genres. After analyzing the students' writing tasks, the researchers found that the students who worked collaboratively outperformed those who worked individually.

Although the previous two studies compared pair writing with individual writing, Dobao's (2012) study added a group writing component to examine how the number of participants affected writing performance. In examining writing accuracy, fluency, and complexity, the study's results reported that group writing outperformed pair and individual writing, suggesting that the number of participants may affect writing quality. However, other researchers concluded that pair exchange and interaction is more fruitful than group work. For example, Jones (2007) described the pair work environment as follows.

> In a pair, the atmosphere tends to be more protective and private than in a group. Students often feel less inhibited in a pair, and they can talk about more personal feelings or experiences than they would even in a small group. Pairs seem to be more conducive to cooperation and collaboration, while groups tend to be more conducive to (friendly)

disagreement and discussion. (p. 7)

Aside from the positive impact of collaborative writing on ESL/EFL students' production, some studies found that collaborative writing had limited influence on students' writing habits. Storch (2005), for example, reported that although the quality of the students' writing was somewhat satisfactory, the quantity of the writing did not show any statistically significant variation. Additionally, Wigglesworth and Storch (2009) concluded that while accuracy was greater in paired writing than among individual writers, fluency and complexity were similar. On the other hand, Shehadeh (2011) indicated that the structure of the language had not improved with the team writing process. The research on collaborative writing nevertheless reveals a need for further investigation in regards to the experience of collaborative writing in the Saudi Arabian context. This study investigated the quality and the quantity of collaborative writing and individual writing and collected and evaluated students' personal opinions about their experiences.

Computer-Mediated Communication (CMC)

In the 21st century, the demand for new technologies in classrooms became undeniable (Kessler, Bikowski, & Boggs, 2012; Warschauer & Grimes, 2007). The shift from Web 1.0 to Web 2.0 offers the opportunity not just to publish work, but also to share and communicate interactively with a wider audience (Wang & Vasquez, 2012). Web 2.0 is defined as web-based applications (e.g., wiki, Google Docs, and blogs) that enable online interactive and collaborative communication between groups of people (Holtzman, 2009; Motteram & Brown, 2009). Davis, Sprague, and New (2008) also supported any digital technology to be used to achieve specific learning objectives. When reviewing empirical studies about the integration of technology in the classroom, terms emerged such as *new technologies*, *Computer-Mediated Communication*, *Web*

2.0, *digital media*, *digital technology*, and *social media*, which share relatively the same meaning. In this literature review, these terms will be used interchangeably.

As stated by Kessler and Bikowski (2010), Computer-Mediated Communication (CMC) could improve the level of collaboration in English writing classrooms. Many studies have proposed that technology can assist teachers and educators to bring relevance into the classroom (Baker, 2010). Baker also observed that the new generation of students are digital natives and already have the awareness to post and edit media, communicate with others through texting, create blogs, and share their thoughts in social media. Additionally, Prensky (2010) stated that with the existence of new technologies, students can enhance traditional instructions and pedagogies and start to learn and value independence, passion, peer collaboration, and authenticity. Belland (2004) supported computer-based classrooms because they are able to address students' individual needs. Some other educators believe that modifying their daily lessons to incorporate the use of digital media could be beneficial in that it can expand activities beyond classroom boundaries (Belland, 2014). Motivation, an important factor in writing development (Silva & Nicholls, 1993), could be boosted by using online applications such as wiki and blogs (Ducate, Anderson, & Moreno, 2011; Li, Chu, Ki, & Woo, 2012;). Sheskey (2010) also embraced the use of technology in the classroom because it achieves learning autonomy, allowing students to become problem solvers. Finally, Ware and Warschauer (2006) also encouraged using online collaboration to enable equal participation between the students than face-to-face communication.

The Effect of Web 2.0 on Writing Performance

The rapid advance of information technology has encouraged many researchers, especially those influenced by constructivist theory, to investigate the potential integration of

technology into ESL classrooms. Today, Web 2.0 is not only considered important, but virtually essential as a supplementary learning tool in science and education. The research supports the notion that Web 2.0 enables active sharing, interaction, and collaboration among learners and between learners and teachers Kyeong-Ju Seo (2013). It is not surprising that a great number of educators are seeking to gauge the effectiveness of technology beyond the classroom walls and explore how using that technology has altered pedagogy in the classroom. According to Kyeong-Ju Seo (2013), "This change opens up new opportunities for us to implement socially enriched pedagogies as it allows for diverse means to facilitate student interaction and effective ways to manage collective knowledge" (p. xiii).

A key tool of social engagement in the field of education is the practice of peer scaffolding, or moving from teacher-centered to student-centered classrooms. This transition is important for encouraging students to become active learners. The emergence of technology promises to enable students to embrace their own leaning and to maintain this control to obtain better learning outcomes. Kyeong-Ju (2013) carried this observation even further, finding that technologies "are more than ever empowering students to create, customize, and share content online" (p. xiii).

Additionally, social media provides more opportunities for wider communication beyond the classroom, which can include professionals and interested readers. As a result, students experience real-time learning opportunities with people all over the world who can share a variety of expertise and experience; for instance, "Web 2.0 tools allow students to experience Spanish as it's used in the real world" (p. 25). The research strongly suggests that learners, especially college students, should implement technologies in their classroom activities as additional tools to enable them to engage with cultures, experts, and others with similar interests

across a wide range of knowledge.

New Technology and Wiki

New technologies have not only significantly altered traditional forms of communication, but have also encouraged people to construct knowledge and share information with each other. The integration of technology into classrooms is rapidly becoming accepted practice among the new generation of students. Prensky (2006) described the differences between this generation and the generation of a decade ago:

> Our students are no longer "little versions of us," as they may have been in the past. In fact, they are so different from us that we can no longer use either our 20th century knowledge or our training as a guide to what is best for them educationally. Our students as, digital natives, will continue to evolve and change so rapidly that we won't be able to keep up. (p. 9)

In education, the power of technology influences teaching methods, and many educators believe that social media can enable students to collaboratively create and share information with wider audiences beyond the classroom setting (Seo, 2013). Many studies support the emerging of technology in education to enhance learning (Alias & Siraj, 2013; Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2012, 2015; Kessler & Bikowski, 2010; Kost, 2011; Li 2013; Li, Chu, Kai, & Woo, 2012; Li & Kim, 2016; Ozkan, 2015; Wang, 2014; Woo, Chu, & Li 2013; Zhu, 2013). The researchers support that instructors need to be aware of the available technologies and when and how to apply them to provide better education. For example, Lohnes and Kinzer (2007) purport, "Faculty needs to have greater perspectives of the Net Generation technology expertise and how student learning is connected with technology; this is a vital

component for higher education" (p. 7). The term *social media* was defined by Kaplan and Haenlin (2010) as follows:

> A group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user-generated content. It is a medium for social interaction as a super-set beyond social communication enabled by ubiquitously accessible and scalable communication techniques. (p. 63)

Kaplan and Haenlein (2010) also differentiated between Web1.0 and Web 2.0 by indicating that Web 2.0 allows its users to collaboratively create and modify information, which is not available in first generation Web applications. In this sense, social media connects students so they can share and construct knowledge to improve learning outcomes. Some examples of social media are YouTube, Facebook, Twitter, blogs, wiki, and Second Life. Such applications have offered opportunities for lifelong learning where learners act as consumers of knowledge via online engagement rather than merely responding to school instruction (Collins & Halverson, 2009). Ware and Warschauer (2006) argued that "asynchronous discussion formats, in particular, are believed to combine the interactive aspect of written conversations with the reflective nature of composing'' (p. 111). One such high-relevant tool that is *wiki*.

A wiki, according to Winder (2007), is an asynchronous mode supporting collaborative communication that allows people to mutually create knowledge that can be modified and revised via users' contributions. The two main features of wiki are *discussion* page and *history*. In discussion pages, individuals have space for reciprocal communication and mutual engagement to detect problems, negotiate meaning, and provide solutions (Marandi & Nami, 2013). On the other hand, the history section is responsible for keeping track of the changes and development throughout the course. Morgan (as cited in Bruns & Humphreys, 2005) indicated

that discussion functioned as “a kind of ongoing meta-analysis on the part of the authors” (p. 28) when the collaboration moved from discussion to its final stage.

Paper-and-Pencil Versus Wiki Collaborative Writing

Although few studies have compared collaborative writing classrooms using wiki with traditional in-class communications, the results of those that have made the comparison, generally reported that wiki has a positive impact in ESL writing classrooms. For example, Alshumaimeri (2011) investigated the effect of wiki on student writing accuracy and quality. A total of 42 EFL first-year undergraduate college students participated in two groups – an experimental (n = 22) and a control group (n = 20) for a period of two semesters. The data from pre- and post-tests were analyzed, and the total scores of the two groups showed improvement in students’ writing over time. In comparing the two groups, the data reported that the experimental group outperformed the control group in revising form and organization.

Moreover, Wu (2015) investigated the potential effect of collaborative writing on student writing performance. The study compared two writing classes, where one was assigned to write collaboratively via paper-and-pencil and the other was assigned to write collaboratively via blogs. The instruments used in this study were: pretest and post-tests, collaborative writing questionnaires, writing anxiety questionnaires, and interviews. The participants were from a private university in Taiwan. The results showed that the difference between the two collaborative writing classes in quantity was not significant; however, the difference in writing quality, which included accuracy, was significant. Additionally, the writing anxiety questionnaire revealed that the students who collaborated face-to-face were less anxious than the online collaborators. In regard to the perceptions of the students, the results showed that the traditional students provided more positive responses to this experience than the online students. The

interview results included the study's participants' experiences with collaborative writing, online and face-to-face communication and reported their ease of communication, and positive and negative attitudes toward the treatment, which alluded to some helpful suggestions toward the use of collaborative writing in the future.

Additionally, Lin's (2009) experimental study investigated the effect of a CMC online application (i.e., NICENET) on ESL students' writing performance and writing process. Students from different cultural and linguistic backgrounds were recruited into two ESL writing classes; some of them were assigned online collaborative writing and others were assigned to join a face-to-face writing group. The instruments used in this study were the following: pretest and post-tests, quality of writing samples, reflection journals, interviews, and collaborative writing questionnaires. The overall results from the pretests and post-tests reported that the online students surpassed the control group. The results from the writing process presented some advantages and disadvantages of online writing. Some of the advantages included, but were not limited to, the improvement of spelling and grammar, thinking ability, and writing anxiety. The disadvantages included the experience of complexity when making revisions online and the time-consuming aspect of the online application.

On the other hand, Wichadee (2013) did not find significant differences between the two groups when he compared wiki and face-to-face groups. The main task was to collaboratively write a summary for two periods of time. The analysis of the two writing tasks and the survey results indicated that the two groups' writing improved over time, however, there were no significant differences between the scores of the experimental and control groups (p = .396). Also, there were no statistical differences between the face-to-face group (M = 4.03) and the wiki group (M = 4.15) in terms of overall satisfaction. Yet, the experimental group showed benefits

from using wiki in the areas of student motivation and confidence. In contrast, Özdemir and Aydin (2015) compared pre- and post-test scores of two groups – traditional versus blog users – to investigate the impact of blogs on writing achievement. Results indicated that blogs by themselves did not improve student writing, although the students benefited from the process-based writing in both groups.

Wiki in Previous Studies

There is a significant body of research discussing the effectiveness of wiki and its capacity to promote scaffolding engagement to enhance learning. For instance, wiki has been found to enhance writing performance (Alshumaimeri, 2011; Davidson, 2015; Demirbilek, 2015, Dewitt, Alias, & Siraj, 2013; Jung & Suzuki, 2015; Kessler & Bikowski , 2010; Li, Chu, & Ki, 2014; Li, Chu, Kai, & Woo, 2012; Salaber, 2014; Woo, Chu, & Li, 2013; Wang, 2014), social scaffolding (Ahmadi & Morandi, 2014; Demirbilek, 2015; Dewitt, Alias & Siraj, 2013; Gielenl & Wever, 2015; Jung & Suzuki, 2015; Kost, 2010; Lee, 2010; Li, 2013; Li & Zhu, 2011; Li & Kim, Mak & Coniam, 2008; Salaber, 2014; Wang, 2014); motivation (Alshumaimeri, 2011; Davidson, 2015; Demirbilek, 2015; Jung & Suzuki, 2015; Lee, 2010; Li, Chu, Ki, & Woo, 2012; Li & Zhu, 2011; Li, Chu, & Ki, 2014; Özdemira & Aydın, 2015; Sura, 2015; Wang, 2014); peer feedback (Aydin & Yildiz, 2014; Demirbilek, 2015; Gielenl & Wever, 2015; Jung & Suzuki; 2015; Lee, 2010; Woo, Chu, & Li, 2013); independent learning (Kessler & Bikowski, 2010; Portier, Peterson, Tavares, & Rambaran, 2013); learning ownership (Kessler& Bikowski , 2010) critical thinking (Demirbilek, 2015); and authentic writing (Lee, 2010; Mak & Coniam, 2008).

With the advancement of online-based applications, researchers report that computer websites (e.g., wiki) have a promising future in fostering writing collaboration in ESL classroom settings (Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2015; Kessler & Bikowski,

2010; Kessler, 2009; Kost, 2011, Lee; 2010; Wang, 2014; Woo, Chu, & Li, 2013; Zhu, 2013;). Therefore, from the perspective of Constructivist Theory, Arnold and Ducate (2011) argued that collaborative writing in wiki can encourage active interaction in task-based activities and foster peer feedback and scaffolding. Considering the positive impact of collaboration in ESL classrooms (Dobao, 1994, 2012; Storch, 2013, 2005; Shehadeh, 2011) and the use of wiki to provide opportunities to facilitate writing collaboration (Lafford & Lafford, 2005), an investigation into whether collaborative writing via wiki might also be beneficial for L2 writers in Saudi Arabia is a logical next step. The main goal of the present study is to explore that possibility.

Themes of Wiki in the Literature

Although the empirical research studies conducted on wiki documented in the literature review are few in number, the majority of them positively supported such technology in ESL/EFL classroom. The general themes of the literature that discussed wiki in L2 classroom are: process-oriented scaffolding, task-oriented scaffolding, perception of wiki in collaborative learning, and wiki and feedback correction. What follows is a detailed discussion of the main empirical results bearing these four sub-themes.

Process-Oriented Scaffolding

The primary focus in the literature is on the process that students undergo when they scaffold writing tasks in wiki. A number of studies have addressed wiki from a process-oriented perspective to text production (Hadjerrouit, 2014; Kessler & Bikowski, 2010; Kost, 2011; Li, 2013; Li & Kim, 2016; Li & Zhu, 2013; Mak & Coniam, 2008). These studies focused on writing process as well as the writing patterns of students engaged in collaborative writing through wiki.

Mak and Coniam (2008) observed the attitudes of ESL secondary school students who participated in collaborative writing via wiki. The students' main task was to design a brochure about the school which would be distributed to their parents. Four types of writing changes were detected: adding information, expanding information, recognizing information, and error correction. Later, Kessler and Bikowski (2010) specifically focused on meaning changes in a collaborative writing project involving 40 EFL pre-service teachers using wiki. The researchers identified different types of meaning changes that the participants made through wiki, such as adding/deleting information, clarifying/elaborating information, synthesizing information, and adding web links. Regarding levels of engagement, some participants were highly involved in all phases of collaborative writing, while others were characterized as *lurking*. Another study expanded the taxonomy of revision types throughout the collaborative writing process in among students studying German as a foreign language. Kost (2011) endeavored to identify learners' revision strategies and the behaviors of L2 writers when writing collaboratively in wiki. He discerned both meaning changes (including additions, deletions, and substitutions) and form changes (such as edits on spelling, punctuation, verbs, and nominal and adjectival endings) during their collaborative essay writing. The researcher concluded that the students were more frequently engaged in formal changes than in meaning changes when using a wiki.

More recently, Li (2013) discussed two important aspects of wiki and collaborative writing in the classroom. First, the study sought to address the categories of writing change functions that the participants experienced when engaged collaboratively in writing via wiki: addition, deletion, reordering, rephrasing, and correction. Second, the research also explored writing patterns by engaging ESL students in wiki scaffolding writing activities. From analysis of discussion and page sections in wiki, the findings revealed that the students were actively

engaged in mutual communication in terms of content discussion, social talk, task management, technical communication, and language negotiation. This same dimension was echoed in a research study conducted by Li and Zhu (2013) who were influenced by social theory, and especially *collective scaffolding* (Donato, 1994). The researchers sought to discover the potential impact of wiki on three collaborative writing groups. To categorize the students' patterns of collaborative engagement, they conducted a qualitative analysis of data from students' archived logs – Discussion, History, and Page – for all five groups. In addition, the researchers collected data from semi-structured interviews to examine the impact of interactional patterns on the students' learning experience. Three different patterns of interaction were derived from the data collected: collectively contributing/mutually supportive, authoritative/responsive, and dominant/withdrawn. Their findings supported Donato's (1994) and Storch's (2002) conclusions that social engagement creates potential learning opportunities. This study also noted that "group members can scaffold one another's performance when they make joint efforts to conduct the group work and actively engage with one another's contributions" (p. 77). The group experiencing the first two patterns reported more learning opportunities than the group experiencing the third pattern. In the same vein, more recently, Li and Kim (2016) examined the role of wiki in collaborative academic writing for two groups of ESL graduate students in the United States. The goal of this study was to explore three areas of student engagement: discussion, co-authored writing, and mutual scaffolding strategies. An analysis of wiki discussions, comments, interviews and reflection papers revealed that the students contributed different patterns, changing within the groups across two wiki writing tasks. These results were different from Li's and Zhu's (2013) earlier findings that revealed a stable pattern of interaction. The mixed patterns discovered in the current study were *collective-active/withdrawn* in Group1

and *dominant/defensive – collaborative* in Group 2. Similarly, Li (2014) explored similar patterns in collaborative writing in wiki. The results reported 4 patterns of engagement. The patterns changed from one task to another: Collective-Active/withdrawn in Group 1, Expert/novice in Group 2, Dominant/Defensive – Collaboration in Group 3, and Cooperating in parallel in Group 4.

In 2014, Hadjerrouit traced the participation of collaborative students using wiki through history logs, discussion pages, and peer feedback. This study also explored peer assessment in addition to examining students' contributions and factors influencing collaboration. The overall results, after analyzing the students' (n = 16) collaborative writing, reported that the most frequent patterns among students engaged in collaborative wiki activity, was formatting, followed by adding information. Adding links, clarifying information, deleting information, and error correction were actions that the participants did not apply frequently in their collaborative writing task. Therefore, the researchers concluded that the students' collaboration was rather low compared with the frequencies of other actions. Due to the low collaborative attitude toward wiki, the study concluded that certain other factors should be taken into consideration when applying wiki to the writing classroom, namely technical training, preparation for collaboration activity, and modification of pedagogical approaches.

Task-Oriented Scaffolding

Wiki alone is "not enough to create the interactional accomplishment needed for collaborative production" (Lund & Rasmussen, 2008, p. 406), yet, collaborative writing tasks play a significant role in furthering the student scaffolding and peer interaction (Donato, 1994; Lantolf, 2000, Swain & Lapkin, 1998). The term *tasks*, as defined by Ellis (2003), are "activities that call for primarily meaning-focused language use" that can foster both language performance

and collaboration among L2 students (p. 3).

According to previous research, tasks are very useful in fostering collaborative scaffolding and mutual interaction in wiki. (Lee, 2010; Mak & Coniam, 2008). For example, Mak and Coniam (2008) designed an authentic writing task for an authentic audience (i.e., parents) in which Chinese students needed to communicate via wiki to complete the task in a collaborative environment. As a result, the students became engaged and produced creative writing documents (i.e., brochures) that they would have been unable to create in a conventional a teacher-centered classroom. Lee (2010) supported Mak's and Coniam's (2008) findings and argued that task design, with regard to authenticity, is the key influence on the learners' use of a second language. Similarly, Lee (2010) created a task that required students to be engaged in wiki by telling a story in the past tense starting with the phrases "once upon a time." The findings suggested that designing wiki topics that involve peer interaction could positively impact learners' scaffolding performance as well as enhance the level of creativity.

Perceptions of Wiki in Collaborative Learning

A third major research trend in collaborative writing via wiki is examining the perceptions of teachers, students, and parents (Dewitt, Alias, & Siraj, 2013; Li, Chu, Kai, & Woo, 2012; Miyazoe & Anderson, 2010; Miyazoe & Anderson, 2012; Ozkan, 2015; Portier, Peterson, Tavares, & Rambaran, 2013; Wang, 2014). In general, perception research studies of wiki-based collaborative writing have revealed positive experiences. Specifically, these studies have examined the relationship between social learning and wiki in order to explore the students' and teachers' attitudes in developing second language writing.

For example, Dewitt, Alias, and Siraj (2014) investigated teachers' perception of, and satisfaction with, knowledge management processes in wiki. The 30 teacher-trainees recruited

for their study were asked to identify different types of curriculum models and collaboratively post them on a wiki website. Besides including some scales like the Knowledge Management Questionnaire (KMQ) and the Student Satisfaction Questionnaire (SSQ), the researchers analyzed the content of the written tasks. The data suggested that the teacher-trainees were satisfied with discussing knowledge management tasks in wiki. Also, parents' attitudes toward wiki had been examined and yielded similar results. Portier, Peterson, Tavares, and Rambaran (2013) surveyed 19 parents/guardians of middle-grade students for their opinions about the use of wiki in writing assignments. Overall, the majority of the parents were comfortable with wiki because they were very familiar with the internet and social networking programs. They supported wiki because it improved the students' confidence, collaborative skills, and motivation. According to one parent, "[M]y [child] has spent more time reading and writing, and it shows how comfortable the PC has become. All in all, I am quite happy with this technology" (p. 10).

Students' perceptions of writing and technology have been widely explored. For instance, Li, Chu, Kai, and Woo (2012) probed the online interaction of 59 EFL writers in primary school in China. The main purpose of integrating such technology in writing was to facilitate Chinese writing ability through multiple collaborative activities in wiki. Data gathered through questionnaires, observations, interviews, and wiki-written documents supported the positive attitudes of both teachers and students in using wiki for teaching and learning Chinese writing. Also, wiki collaboration activities were shown to enhance writing performance, encourage learning motivation, and expand the online audience. More recently, Li, Chu, and Ki (2014) conducted a similar study, and its general finding was that students had positive feelings about collaborative writing through wiki; however, the effect of wiki on the students' writing was not

significant.

Similarly, Wang (2014) examined the possible use of wiki in a Taiwanese undergraduate writing classroom to support collaborative writing and thus promote second language acquisition. A total of 42 first-year college students engaged in three collaborative writing tasks – drafting, revising, and editing. The results from two questionnaires and multiple interviews revealed that exposure to mutual input communication through wiki enabled the students to foster language development and social interaction. Despite the limitations of this study, due to its small number of participants, the findings indicated that the ESL students became confident, motivated and, most importantly, encouraged to initiate social interaction. Jung and Suzuki (2015) taught Japanese writing for foreign students from different language and educational backgrounds over three consecutive semesters. Their findings echoed the previous studies that the students enjoyed collaborative contribution and they greatly benefited from wiki in writing and error correction.

Some studies were conducted to compare two common writing online platforms – wiki and blogs – and to examine the students' perceptions of these applications. For example, Ozkan's 2015 research investigated the educational functions of two social programs (blogs and wiki) from the students' point of view. In this study, the participants consisted of 44 ESL non-English major participants who were taking an English writing course as a compulsory course. In order to make learning more interactive, the students were divided into groups and encouraged to write collaboratively in a wiki. In addition, blogs were designed for students to write individually to make comments to one another. Data from questionnaires (n = 44) and interviews (n = 15) were collected and organized for analysis. The findings indicated that blogs and wiki were both useful in fostering writing skills when these online tools were carefully planned.

Similarly, Miyazoe and Anderson (2010) added online forums to wiki and blogs to explore the effectiveness of the three online social websites for improving academic writing. Using Constructivist Theory that supports social learning through scaffolding, 61 students enrolled in wiki-based collaborative writing activities, while blogs and forums were used for free writing. The use of English was only permitted in the blogs and forums; however, Japanese was used in wikis to translate from English into Japanese. The triangulated data collected from questionnaires, interviews, and written assignments revealed that the students preferred wikis, followed by blogs and, finally, forums. Also, wiki has proven its ability to help students learn reading, do translations, and foster communication.

A more recent study on the topic by Miyazoe and Anderson (2012) echoed these findings. They investigated students' perceptions and preferences regarding three online writing tools (forums, blogs, and wiki) in an EFL composition classroom. Combining face-to-face and online activities among 61 second-year students in three writing sections enriched the classroom in both oral and written outcomes. Blogs and forums were used for students to post their writing tasks, while wiki was used mostly for collaboration between participants L1 (Japanese). The quantitative (questionnaires) and qualitative (interview and writing analysis) results revealed that defining different objectives for each of the tools can improve writing. The researchers recommended using forums for discussions, blogs for reflection, and wikis for collaboration.

Wiki and Feedback Correction

A fourth trend in research emphasizes students' authentic experiences and perceptions in the use of wiki to provide and receive peer feedback to one another. Because wiki allows users to create co-constructed knowledge, it also allows them to co-edit the written product to improve writing performance in the final draft. Part of Vygotsky's (1978) social theory supports the

practice of engaging the students in collaborative scaffolding in the writing revision process. The use of scaffolding to edit student writing has many developmental advantages (Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2012; Jung & Suzuki, 2015; Lee, 2010; Woo, Chu, Ho, & Li, 2011; Woo, Chu, & Li, 2013). However, some research suggests that ESL students were still not ready to provide feedback and teachers were still needed (Pled, Shalom, & Sharon, 2014).

Jung and Suzuki (2015) examined the effectiveness of scaffolding revision for students who were learning to write in Japanese. The instructors divided the students into groups, in which the main task was to co-author certain writing activities via wiki and collaboratively edit the work. This study was conducted in three successive semesters. The students' perceptions of the peer feedback scaffolding activity were generally positive: "43% of the students had indicated that they would welcome more feedback from native Japanese speakers" (p. 835).

Demirbilek (2015) probed student perspectives and experiences regarding use of two social networks – wiki and Facebook – in ESL writing activities to provide feedback to one another. Fifty-one participants expressed satisfaction and a positive attitude when engaged in the feedback process on both wiki and Facebook; however, the students still experienced anxiety when they were subject to harsh comments, even when using digital tools such as wiki. Providing and receiving online feedback was mostly beneficial because the students became critical thinkers and reflective learners.

Gielen and Wever (2012) reported similar outcomes in an investigation of writing development and students' feelings about peer feedback in an ESL classroom where wiki was integrated as an online writing tool. The researchers conducted pre- and post-tests and 5-point Likert questionnaires with 179 undergraduate students in Belgium. The analysis found that

although students' writing had not improved after peer feedback activity for some factors presented in the study, the students were still satisfied with the online peer feedback exercises, and they believed that wiki allowed them to produce critical and comprehensive feedback for one another. More recently, Gielen and Wever (2015) investigated students' perceptions of providing online feedback with wiki. Quantitative data based on information provided by 125 ESL students was analyzed, and the results suggested that, in general, the students reported having a positive experience during this activity. Also, writing quality showed improvement.

Aydin and Yildiz (2014) examined the potential benefits of integrating peer feedback activities into ESL writing classrooms. Approximately 34 participants, whose proficiency was at an intermediate level, were asked to perform three different writing tasks: argumentative, informative, and decision-making. The analysis of the three types of writing focused mainly on form and meaning. The data were collected by different means, including focus-group interviews and questionnaires. Analysis of the data revealed that the students were highly engaged in providing feedback in the argumentative writing task, while they preferred self-correction for the informative writing assignment. In general, the students' attitudes toward collaborative online writing yielded positive outcomes. Similar findings were echoed in Lee's (2010) research, which engaged 35 native English-speaking students in multiple writing tasks in Spanish. This study was designed to investigate the impact of scaffolding in writing and editing on the students' writing performance. More than half the students preferred wiki for collaborative writing over traditional writing, and maintained that feedback activity in wiki was enjoyable. Adding wiki to the ESL classroom facilitated scaffolding in the revision process and helped the students organize the content and correct errors.

However, some other studies found that students incorporated wiki in peer correction to revise and edit meaning had partial effectiveness. For example, Woo, Chu, and Li (2013) investigated the likely benefit of feedback on students' writing development by inviting 119 ESL Chinese students to write collaboratively in wiki and then comment on their writing to increase accuracy. Data were collected and analyzed to understand the nature of scaffolding feedback in wiki platforms such as students' comments, history pages, students' group writing, and student and teacher interviews. Data analysis found that the types of feedback appearing in students' comments related both to content (purpose, organization, and audience) and surface level corrections (grammar, punctuation, and rewording). However, students' revisions tended to address content and meaning rather than surface level corrections. Also, students showed positive attitudes toward revising their writing via wiki and felt at ease communicating through technology. Therefore, feedback via wiki had promoted students' writing outcomes. In the same vein, the work of Woo, Chu, Ho, & Li (2011) revealed that students focused on meaning rather than form in collaborative writing feedback.

On the other hand, some studies indicated limited benefits from using wiki for peer feedback. For example, Pled, Shalom, and Sharon (2014) identified a weak relationship between wiki-based application and peer feedback on the writing performance of 52 pre-service teachers. This study, however, examined the correlation between online feedback activity and three variables: gender, religion, and educational majors. Although the participants showed a tendency to provide feedback, there were some teachers, especially female students, who found it difficult to provide comments because they thought it was the teacher's responsibility. On the other hand, religion and major were not an influence on this feedback activity.

Review of Methodological Approaches

Quantitative

The literature offers a wide range of research dealing with the effects of Computer-Mediated Communication **(**CMC) on ESL learning, including reading, writing, listening, and speaking. When focusing on writing skills, plentiful quantitative, qualitative, and mixed methods research has explored the potential impact of CMC on student performance; among these studies, quantitative research was the first and most dominant methodological approach. Researchers tested their hypotheses by conducting either descriptive analyses including, but not limited to, calculating the means, standard deviations, frequencies, and percentages of individuals or scores (Kessler, Bikowski, & Boggs, 2012; Ozkan, 2015), or they employed inferential analysis like the paired sample t-test, ANOVA, and regression (Alshumaimeri, 2011; Li, Chu, Ki, & Woo, 2012; Özdemir & Aydin, 2015; Wichadee, 2013; Salaber, 2014).

Alshumaimeri (2011) conducted a quasi-experimental study in which 42 EFL first-year undergraduate students participated in experimental and control groups. The students were enrolled at King Saud University, Saudi Arabia, and the study lasted for 20 weeks. The genre of the writing tasks for the pre- and post-test was similar, but the topic was different. The researcher assessed the writing performance using an analytical scoring rubric; inter-rater scoring was used to analyze agreement between the pre- and post-tests (finding an agreement level of 97%). Descriptive analysis and a paired sample *t*-test concluded that the two groups showed significant improvements in writing over time. Also, an ANCOVA analysis found the experimental group exhibited higher levels of achievement than the control group.

A similar study used a paired sample *t*-test to examine the effect of blogs on achievement of Turkish EFL writers. Özdemir and Aydin (2015) assigned 30 female and 18 male student

participants randomly into two writing conditions – blog users and traditional groups – during their first year in the ELT Department of Balikesir University. Foreign Language Examination (FLE) scores were used in this study to determine English proficiency; a background questionnaire included demographic variables such as age, gender, academic achievement, and the FLE scores. The researchers also used writing achievement for pre- and post-tests from the Test of English as a Foreign Language (TOEFL) writing topics after checking the reliability of writing topics using Cronbach Alpha. Data from the background questionnaire and pre-test were collected at the beginning of the semester and the post-test was administered at the end of the semester. The results of the *t*-test analysis showed that the use of blogs in writing led to high writing achievement; however, online writing was not superior to traditional pen-paper in terms of writing achievement.

In line with the previous studies, Wichadee (2013) also conducted a cluster sample of 80 students from both traditional and wiki-based writing sections. The students met once a week over a 2-hour for a period of 14 weeks during which time data were collected using multiple instruments. First, the researchers designed English summary writing tests for pre- and post-tests, the validity of which were verified by three experts. Next, a questionnaire with five rating-scale responses was designed with a reported validity of .87 and .85, respectively. Last, an open-ended questionnaire was administered, and 100 pieces of summary writing from the two groups were checked for accuracy. The analysis of means, standard deviations, and *t*-tests indicated that collaborative writing in both face-to-face (M = 4.03) and wiki (M = 4.15) groups could help students to improve summary writing skills, and that the students were satisfied with this activity.

In a similar study, Li, Chu, Ki, and Woo (2012) recruited 59 primary school Chinese learners with an average age of 10 years. All the students were given the assignment to write collaboratively in wiki and were divided into fourteen groups of four to achieve that goal. A total of 56 out of 59 (86%) responded to questionnaires of which the validity and reliability were measured as extensively reliable (0.79). The main task was to collaboratively produce two writing tasks following the writing process stages: pre-writing, drafting, revising, and editing. Analysis of the descriptive data, including number of words, number of edits, and group scores, indicated that more students participated in the second writing task. A paired sample *t*-test analysis was used to compare the scores of the two writing topics, detecting writing improvement in the second writing task. Also, the students' overall perceptions of wiki were positive, indicating that the students recognized a positive impact – wiki motivated the students, helped them to write collaboratively, and expanded their sense of audience.

Kessler, Bikowski, and Boggs (2012) also investigated the topic and conducted an empirical study of 38 Fulbright scholars in a pre-academic orientation program at a large Midwestern university. The level of English proficiency was reported to be high according to the TOEFL test report. Over the course of 3 weeks the participants were divided into 3 sections, with the students working in groups of 3 to 4 based on their academic interests. The instructors provided the topics but did not provide specific writing process guidelines. The students had never used Google Docs for collaborative writing, so they were given some training at the beginning of the semester. A survey was conducted at the end of the semester, and a random 10% of the written data from the three groups was chosen to examine for the number of revisions. The inter-rater reliability of the 474 iterations was 0.95 using a pair sample *t*-test. The overall results showed that the students focused more on meaning (57%) rather than on form

(13%) in the revision process. As to meaning contributions, students added information (57%) more times than they deleted and replaced text (28% and 14% respectively).

In the same vein, Kost (2011) conducted a study with students learning German – 2 students in Level Six and 6 in Level Four. The students in both levels were assigned to write collaboratively about topics developed by the instructor. Because the two groups holding similar writing genre; however, the number of words were decreased for the level four students to 300-350 instead of 400-450. A questionnaire completed during this study was not accompanied by information about its validity and reliability. Students' attitudes toward wiki were examined on a 4-point Likert scale, 3 representing *yes* and 0 representing *no.* Overall, students' attitudes toward wiki were positive, and most of the students' contributions – unlike those in the work of Kessler, Bikowski, and Boggs' (2012) – concentrated on form rather than meaning.

Likewise, Ozkan (2015) conducted a descriptive study of 44 first-year undergraduate students at Aralik University in Turkey. It is worth mentioning that the students' ages, genders, and English backgrounds were not considered in this study. The students met 3 hours a week for a full semester. During the first 2 hours, they met in class for face-to-face classroom activities, while the final hour was spent in a computer lab. The questionnaire items used in this study were adopted, with some modifications, from a previous similar study. The findings suggested that both online tools (wiki and blogs) were useful; however, wiki was more beneficial (95%) than blogs (88%). Similarly, Miyazoe and Anderson (2010) designed a blended course that included a total of 61 sophomore Japanese students distributed relatively equally among three writing sections, meeting 15 times in 90-minute class. This course taught other language skills – reading, listening, and speaking – but the concentration was on writing. The students were required to use forums to discuss topics in the textbook, while wiki was used collaboratively to translate text

from Japanese into English; blogs were developed in which the students wrote freely. The concluding questionnaire contained 70 questions, and the results revealed that the students preferred wiki (55%), followed by blogs (30%), and then forums (13%).

Relatedly, Salaber (2014) conducted a case study of 78 graduate participants from three different business courses: economics and finance (24%), international management (37%), and management (39%). The majority of the students were Asian females. The main task was to engage in weekly problem-solving tasks in teams of 4 or 5 students. Two surveys were included in this study, one at the beginning of the semester and the second after the treatment. Of the total number of participants, 57 students responded to the first survey, while only half of the students responded to the second. This study also compared some variables using regression, such as the number of wiki tasks edited, number of wiki tasks viewed, timing of first viewing, and the students' programs of study. The findings revealed that the in-class test grades were positively correlated with all variables except for the courses of study (2.79, 16%), finding that students from different programs had similar scores.

Mixed Methods

The second series of studies used comprehensive quantitative and qualitative data (mixed methods) to explore the potential benefits of new technologies on learning development. The quantitative data were collected and analyzed using different methods, including descriptive analysis (surveys) and paired sample t-test analysis (pre-test and post-test) (Amir, Ismail, & Hussin, 2011; Shih, 2011; Wang, 2014) to describe student perceptions of new media and the degree of benefit offered by these tools. However, the qualitative research element was mostly used to analyze content and interviews in order to support the quantitative data (Lee, 2010; Nobles & Paganucci, 2015).

Shih (2011) conducted an experimental study with 23 first-year English majors at a technological university in Taiwan. The majority (n = 18) of the participants were female, five were males. The students were grouped according to their level of English proficiency using National College Entrance Examination (NCEE) scores. The students were classified into three groups: high (n = 8), intermediate (n = 7), and low (n = 8). Seven writing assignments were assigned in this study, the students took two writing tests – a pre- and a post-test – and the researcher adopted the scoring criteria developed by the NCEE. The study also included a 5-point Likert scale survey questionnaire designed by Hsieh (2010), with slight modifications, and the validity of the questionnaire was verified by two experts. Additionally, this study included qualitative data consisting of in-depth interviews with six students at the end of the semester. A paired t-test analysis indicated that there were statistically significant differences between pre- and post-tests ($p < .05$). Regarding the students' perspectives, analysis of the completed surveys reported that the students were moderately to highly positive about providing and receiving feedback on Facebook.

Similarly, Amir, Ismail, and Hussin (2011) designed practical-deliberative action research using a mixed method study including a survey and content analysis. The sample included four classes of 80 students enrolled in a Language and Information Technology course during the summer. The students were asked to post six writing tasks throughout 14 weeks of the study. The questionnaire revealed that they showed positive attitudes toward using computers for learning, and the content analysis suggested that the blogs helped students to enhance vocabulary and grammar, share information, and improve motivation.

This same research focus was echoed by Wang (2014) study. He conducted an empirical research study of 42 male and female students during their first year in a technical university in

Taiwan. During the semester, the students were assigned three writing tasks, after which they completed two online survey questionnaires, participated in semi-structured interviews, and submitted a reflection on collaborative online writing. The topics selected in this study were validated by two experienced teachers. The quantitative research from two surveys revealed that the majority of the participants were extremely positive about using wiki in English classes.

More recently, Nobles and Paganucci (2015) also engaged in a mixed method study using a random sample of 18 first-year high school students from a private school. For 4 weeks the students contributed to a series of online written reflections on poetry with the help of graduate students in the education program. In addition to surveys examining writing quality, writing skills, and the collaborative writing experience, open-ended questions evaluated the experience of writing online in comparison to the pen and paper construct. Analysis of quantitative and qualitative data revealed that the digital classroom outperformed the pen and paper classroom, suggesting that online writing applications enhanced the quality of the students' writing ability.

Finally, Lee (2010) examined the contributions of wiki as a synchronous tool to promote collaborative writing in ESL writing classes by engaging 35 undergraduate native speakers of English learning Spanish in a study for a period of 14 weeks. Most of the students were first-year students, with some sophomore, junior, and senior students. In groups of 4 or 5, students worked together in various writing tasks as part of the assignment. They then completed a 5-pont Likert scale about the effectiveness of wiki, the role of the task, and the feedback process, followed by brief explanations of their choices. Last, some student volunteers were interviewed. The findings indicated that the majority of the students doubled their number of revisions from the first assignment to the second and were highly satisfied with the wiki topics because they were relevant.

Qualitative

The third and least common method of research found in a search of the literature used only qualitative research methods to examine the relationship between CMC and learning outcomes. These studies collected data from content analyses and interviews to investigate the pattern of revisions when students engaged in online wiring (Kessler & Bikowski, 2010) and students' behavior when providing peer feedback regarding form or meaning revision (Li & Zhu, 2013; Li, 2013). In one instance, Kessler and Bikowski (2010) considered the engagement of 40 EFL pre-service teachers who were enrolled in a teacher preparation course at a Mexican university. The main task focused on teaching English language in the context of culture. For a period of 16 weeks, students participated in class and in wiki to enhance autonomous learning. The researchers qualitatively analyzed the students' entries to understand their writing behaviors. The results concluded that the students showed different types of changes in meaning (e.g., adding/deleting information, clarifying/elaborating information, and synthesizing information), and the participation rate fluctuated from one student to another.

More recently, a case study conducted by Li and Zhu (2013) included 9 EFL Chinese undergraduate students in order to understand the potential impact of wiki on 3 collaborative writing groups. The students had some proficiency English language proficiency, and they were required to take English as part of the program. The researchers included three writing genres in their curriculum: narration, exposition, and argumentation. After being given a full orientation about wiki and its features, the students completed the writing tasks collaboratively. Qualitative analysis of data from students' archived logs – Discussion, History, and Page – was conducted, in addition to seven semi-structured interviews. Three different patterns of interaction derived from

the data included collectively contributing/mutually supportive and authoritative/responsive, both of which indicated more learning opportunities than the third pattern – dominant/withdrawn.

More specifically, Li (2013) conducted a follow-up to the previous study on the patterns of wiki collaboration. This study focused closely on only one group – contribution/ supportive – to understand the nature of peer collaboration. Three students were included in this study for a period of 5 weeks. Using the same data from Li and Zhu's (2013) case study, the findings revealed that the students actively communicated in terms of content discussion, social talk, task management, technical communication, and language negotiation.

Challenges of Integrating Wiki in Collaborative Writing Classrooms

The presence of technology in learning empowers collaborative learning by providing equal opportunity for the students to participate in a less intimidating atmosphere (Colomb & Simutis, 1996; Ware & Warchauer, 2006). Applying wiki in collaborative writing could move in the direction of "a more social construction of the activity and interactivity of writing" (Pennington, 2003, p. 304). Wiki as a synchronous collaborative platform "[is] believed to combine the interactive aspect of written conversations with the reflective nature of composing'' (Ware & Warschauer, 2006, p. 111). Wiki has been around for almost a decade and has attracted many educators who are interested in practicing social learning theory.

Despite the many benefits of wiki explored in the previous review of the literature, some research has encountered specific limitations and challenges, even though it is reported as being able to facilitate collaborative writing. For example, Mindel and Verma (2006) noticed that some students were unwilling to participate collaboratively in writing. Others tended to participate only minimally in revising the work of their peers, and they were not happy to post in wiki, even though this activity was part of the course assignment (Arnold, Docate, & Kost,

2009). Some of the hesitation in revising peer work may be due to a sense of embarrassment at editing the work of others (Britcliffe & Walker, 2007; Jung & Suzuki; 2015), or a lack of confidence in their own writing (Lee, 2010; Jung & Suzuki; 2015), or discomfort at editing others' work (Ozkan, 2015), or inadequate instruction or specific guidelines to complete the task (Lee, 2010)

Regarding the ability of wiki to engage an authentic audience and its benefits for writing performance (Lee, 2010), some students preferred to work individually and focus merely on the grades. In these cases, the teacher was the most important audience for their writing (Grant, 2009; Pled, Shalom, & Sharon; 2014). Also, to achieve true collaborative writing throughout the whole learning process, students need a high level of academic skill and critical awareness to provide meaningful feedback and make necessary changes in content (Mcloughlin & Lee, 2007). Alyousef and Picard (2011) argued that students participated unequally on the collaborative writing task, and, therefore, it is difficult to make a systematic assessment of individual student performance. Regarding the ownership of students' writing, Lazda-Cazers (2010) argued that because the students were accustomed to writing individually and were taking responsibility for their writing, some of them were uncomfortable having their writing changed and commented on by others. Some students preferred a combination of synchronous online tools (e.g., Messenger) and asynchronous application (e.g., wiki) to assist them in mutually constructing knowledge (Li & Zhu, 2011; Lund, 2008).

Much research highlights the technical problems that could discourage the use of wiki as a collaborative platform. For example, Woo, Chu, and Li (2011) argued that some students do not have sufficient skills and experience to effectively work together in a collaborative manner. As a result, Huang and Nakazawa (2010) suggested that teachers and educators encourage and

support students to be active in wiki activities. Also, some students cannot afford online access at home, while others complained about slow internet connections that required more time than had the collaboration been completed with pen and paper (Woo, Chu, & Li, 2011).

Finally, Huang and Nakazawa (2010) encouraged teachers to design goals and objectives for integrating wiki in their writing classrooms. For example, Lund and Smørdal (2006) argued, "One major challenge for learning in technology-rich, collaborative environments is to develop design principles that balance learner exploration with a more goal directed effort" (p. 37). The researchers contend that it is clear that instructors should provide specific goals and clear structures when applying such technology in their classes. Wiki by itself does not produce collaborative writing, and students do not automatically become active participants without proper guidance and support from the teacher. Therefore, the triangulation data collected and analyzed of students, teacher, and the appropriate online tools is necessary to identify the success of collaborative learning and writing.

Chapter Summary

Chapter 2 reviewed the concise history of ESL writing and relevant previous and current approaches to teaching writing. The theoretical framework, including social learning, discovery learning, and Connectivism, highlighted the precious nature of collaboration and interaction in wiki-based writing classroom. In addition, the system of English language programs in Saudi Arabia and the description of the current curriculum were discussed in detail. Afterwards, the importance of writing was investigated to understand the writing in ESL context and its complexity. After the concept of collaborative writing was identified, by examining its definition and relevant studies conducted on this topic, related research studies on computer-mediated communication (CMC), and more specifically wiki, were introduced in terms of their potential

effectiveness on ESL writing. Furthermore, this chapter also presented some research studies conducted on wiki by themes including, but limited to, process-oriented scaffolding, task-oriented scaffolding, students' perceptions, and feedback correction. Finally, this chapter synthesized the methodological approaches applied in the literature on wiki-based collaborative writing (e.g., quantitative studies, qualitative studies, and mixed methods), and concluded by raising some challenges of integrated wiki in collaborative writing classrooms.

Chapter 3 presents the methodological approach employed in this study, which includes research design, setting, participants, research instruments, data collection, and data analysis.

CHAPTER 3

METHODOLOGY

Introduction

The aim of this chapter was to describe the methodological approach of the current study by presenting its research design, setting, participants, research instruments, data collection, and data analysis. The purpose of the study was to examine the efficacy of wiki as an online collaborative writing tool and traditional collaborative writing for EFL Saudi students attending Qassim University in Buraydah, Saudi Arabia. This study was framed by the following theories: Vygotsky's social learning, Bruner's discovery learning, and Siemens and Downes' connective learning. Based on these three theories, students in both collaborative writing classrooms would be engaged in social environment where they would produce one piece of writing following the writing process. This study sought to address the following research questions:

1. Are there any statistically significant differences in the improvement of the individual writing between pencil-and-paper and online writing participants?
2. Are there any statistically significant differences in the improvement of the collaborative writing between pencil-and-paper and online writing participants?
3. How do undergraduate EFL students perceive the traditional methods of collaborative writing compared with the wiki-supported experiences?
4. What are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?

Research Design

This study was constructed as a quasi-experimental design. Unlike the experimental design that seeks random assignment of individuals to groups; quasi-experimental design is used

when participants are not randomly assigned (Gay, Mills & Peter, 2012). Because students in the present study needed to know beforehand about the classes offered each semester, it was not possible for the researcher to randomly assign participants to the study. This design, also called nonequivalent control group design, involves two treatment groups – traditional and control – which are both pretested, administered a treatment, and then post-tested. To control some of the variables in the study design, the researcher assigned the same materials, textbooks, and similar class timing to all subjects in the research study.

Gay, Mills and Peter (2012) noted that the independent variable(s) in experimental and quasi-experimental designs differ(s) between study groups. As for the current study, the independent variable was the wiki-online writing tool, while the dependent variables were students' writing abilities and perceptions of collaborative writing.

Quantitative and qualitative analyses of the collected data were conducted to answer the raised research questions. In addressing the first three research questions, collaborative writing, individual writing, and students' perceptions of collaborative writing, the researcher calculated the results quantitatively to indicate likely outcomes. The researcher subsequently analyzed interviews from both groups qualitatively in working with the fourth research question concerning advantages, disadvantages, problems and themes that the subjects might encounter in traditional and online collaborative writing.

Setting

The study was implemented with the cooperation of the Department of English Language and Translation at Qassim University in Buraydah, Saudi Arabia. Qassim University is a public university in the Qassim province in Saudi Arabia. The university has over 38 colleges and it offers 17 PhD, 62 master, and 731 Bachelor and diploma degrees. The total number of students

was over 40,000 in 2008 and the number of faculty exceeded 3,500. The English Department of five programs is administered by the College of Arabic Language and Social Studies. The main goal of the department is to prepare EFL students to successfully earn a bachelor's degree in English in order to enter into academic careers.

The participants in the present study were undergraduate students from two writing sections of Academic English Writing, which is a 3-credit-hour course offered every semester for 18 weeks. An academic year at Qassim University has two semesters, called *levels*, and the study participants were students in Level Three. This specific course was appropriate for this study because the English Department requires all students to take at least two classes in Computer-Assisted Language Learning (CALL) in the 1st and 2nd level as a prerequisite before graduation. In addition, students enrolled in these two classes possess a sufficient level of proficiency in writing that would allow them to interact and communicate effectively during this study.

The students taking this course were divided into two groups: traditional and experimental. The traditional group was assigned to take the course in a traditional classroom in the university, while the experimental group was assigned to write collaboratively inside and outside the classroom using wiki. Although the students in both groups shared the same textbook, course syllabus, and writing activities, each group worked independently of each other to ensure internal validity of the study.

The main objective of Academic English Writing (AEW) is to prepare students by developing mutual training in reading and writing (a literacy curriculum). Instead of focusing merely on writing that the literature reports has been seen as not being effective, combining reading and writing in one course can foster the development of academic literacy among ESL learners (Karn, 2000). It can also "break down the barrier between text reception and text

production by inciting students to look at a text they read for clues to its production, and a text they produce for clues to how it might be perceived" (Goen-Salter, 2008, p. 86). In other words, a literacy course like this can help writers to understand text and readers to understand the choices writers make.

Therefore, AEW capitalizes on the similarities and connections between reading and writing (e.g., audience and purpose). The process of learning language through reading can improve a student's use of language in writing, and at the same time, the process of learning language through writing can improve a student's understanding of language in reading. In addition, the integration of reading and writing provides opportunities for students to interact with a L2 in a meaningful and active manner.

Regarding accuracy and fluency, a balance between them is needed in helping ESL/EFL students reach linguistic competence and develop writing skills that enable them to communicate clearly with the audience (Leki & Carson, 1997). Focusing on accuracy, in terms of the rules of the English language and fluency as the communication of ideas, has been widely discussed in the literature. Accordingly, in the present study, accuracy and fluency in writing were evaluated by classmates' feedback and edited accordingly. The course instructors had the opportunity to gather some common patterns of grammatical and sentence errors to be addressed through a series of 15-minute mini-lessons on grammar and writing style during each week of instruction.

Details of the English Writing course is presented in a syllabus (Appendix A). Those details include the performance assessment criteria, divided into attendance and participation (30% of the grade), five collaborative writing assignments (30% of the grade), and midterm and final exams (20% of the grade each). Because participation in collaborative writing was

voluntary for the sake of this study, students who were not willing to participate would be assigned five individual essays to write during the semester.

Participants

The participants of this study were male undergraduate EFL Saudi students taking English writing during their third year of college. The grand number of participants was 80, however, four students withdrew from the study, leaving a target population of 76 students. In this study, the participants assigned themselves to either the experimental or control classroom. This procedure was explicitly described to the students before they registered for the course. In the control classroom, the students were engaged in face-to-face collaborative writing using tradition paper-and-pencil format. Those in the experimental classroom were engaged in online collaborative writing using wiki.

The participants were selected for this study based on their advanced level of writing and the ability to use technology in learning English. The participants' language proficiency ranged from low to intermediate, and almost all of them had graduated from public high schools. Students at that level generally can read and write English, although it could still present a challenge for them. The students were drawn from a homogeneous group; they were all from Saudi Arabia and had a similar socioeconomic status ranging from middle- to upper-middle class. The age of the participants varied from 19-24 years old. The research included only male participants because the Saudi system of education requires that classes be separated by gender.

Students' Background Information

A survey about the students' background experiences with writing performance, collaborative writing, and writing apprehension was completed by students in the two writing classrooms; however, the wiki students were asked additional questions about their background

experiences with writing online and collaborating using wiki (Table 1). For the traditional classroom, more than half of the students (61%) felt anxious when it came to writing in English; as a result, most of them did not evaluate themselves as good writers (81%). However, more than half of the participants still preferred to compose in English (67%).

In the wiki classroom on the other hand, although more than half of the wiki students felt confident when they composed in English, they generally did not prefer to compose in English (68%), and they too did not consider themselves to be good writers (73%). When it came to the subject of collaborative writing, half of the traditional students (50%) were familiar with what it was, while 54% of the wiki participants were not sure what collaborative writing was. Although neither classroom had experienced collaborative writing in the past, they both preferred collaborative writing over individual writing (69% for the traditional classroom and 60% for the wiki classroom).

In terms of online writing experiences, 81% of the wiki students did not have experience with online collaborative writing, and more than half of them (57%) did not have experience with composing using technology. Moreover, more than half of the participants (65%) had no adequate idea of what online collaborative writing was. However, 65% of them were interested in trying this experience. When it came to having computers and internet access, almost all the wiki students owned personal computers (92%) and had internet access at home (97%). The majority of the wiki students did not know what wiki was and did not visit a wiki often. In addition, most students did not have their own wikis or know how to use one.

The students in the wiki and traditional classrooms had adequate training sessions introducing collaborative writing and online collaborative writing. The training session took place during the first week of the semester (Appendix H).

The English Writing Instructors' Roles

The first and main English writing instructor for this course was an assistance professor who is a specialist in composition and TESOL. He earned his Ph.D. from Indiana University of Pennsylvania and worked with the Qassim University following graduation in 2009. He received his bachelor degree from Cairo University in Teaching English to Speakers of other Languages (TESOL), and his MA in the same field from Colorado State University. The second English language instructor was a lecturer from Pakistan. He has taught English as a Foreign Language (EFL) in Qassim University for over 10 years; he speaks only English in the classroom. He earned his master's degree in Applied Linguistics in Pakistan. Both instructors have had experience in teaching English as a second language, including, but not limited to, grammar, writing, reading, and listening and speaking. They have also taught some advanced courses such as Introductions to Applied Linguistic, Phonetics, and Phonology and had conducted research studies in different areas of teaching EFL. The English writing instructors, in addition to providing reading and writing instructions, would assign scaffolding reading and writing activities through collaborative engagement that would allow students to share authorship and feedback. They were also responsible for explaining the nature of the study, the process of face-to-face and online collaborative writing, and the course assessment procedures. Additionally, they supported students by providing assistance throughout the collaborative writing process. Both instructors have had experience in monitoring traditional collaborative writing inside the classroom and outside the class via online websites and were considered by the researcher to possess fairly similar EFL teaching skills. The choice of who would be teaching which class (wiki or traditional paper and pencil), was randomly determined by a coin toss.

The Researcher's Role

The researcher in this study is a Saudi doctoral student enrolled at The University of Tennessee. He received his BA from Qassim University in Teaching English to Speakers of other Languages (TESOL) and his MA in the same field from Indiana University in Pennsylvania. During his program of graduate study, he carried out some relevant research in collaborative writing via technology and presented some of those findings at professional ESL conferences (Aljafen, 2014). For this study, the researcher had designed the Academic Writing Course including its syllabus, in-class activities, essay writing, and assessment procedures.

In addition to being a researcher in this study, he was also mentor, observer, and data collector. In the mentoring process, he organized and attended Skype meetings with the two instructors prior to the beginning of the course to review the materials of the study, data collection procedures, and assessment criteria. Although the two courses in the research study were taught by different instructors, both used the same materials, assignments, and assessment criteria. As an observer, the researcher tracked the pedagogical process, collaborative writing procedure, and evaluation system for the two groups in order to evaluate the overall process of the two courses. The two EFL writing instructors in the two writing sections followed the researcher's timeline for initiating the data collection process: pre- and post-testing of students' individual and collaborative writing performance, and students' attitudes toward collaborative writing. The principal investigator, however, conducted individual Skype interviews with selected students from both EFL classes.

The researcher was readily available to virtually meet with both English instructors via Skype to discuss any problems that occurred during the semester and to ensure consistency of instruction between the two writing courses. Moreover, the researcher was available to the

students of the two courses via Skype and he also provided personal contact information for the students in both groups in case they encountered questions or concerns about the study.

Instruments

The present study used different instruments to measure collaborative writing performance in traditional and online classrooms: pre- and post-test writing performance, background questionnaires, collaborative writing questionnaires, and interviews.

Pre- and Post-Test Writing Performance

Students were asked to complete two individual writing tasks – one before and one right after the instructional treatment. The tasks were organized to meet the writing course requirements: composing at least five paragraphs including introduction, body, and conclusion. The students were given 50 minutes (one classroom class period) to finish the task. The writing topics for the two writing tasks were chosen for their familiarity and relevance to the students. The topic of the pretest was *How to be a successful college student* (Appendix B), while the posttest task asked the students to *Identify and describe an interesting hobby* (Appendix C). Both groups used a traditional classroom setting to complete each task.

Background Survey

A general background survey (Appendix D) was distributed to all subjects before the treatment begins. The background survey contains 17 questions, answerable by a *yes* and *no* or *1* or *2* response, respectively. Both groups completed the first six questions of the survey about their attitudes toward English composition and the experience of collaborative writing. However, the experimental group completed the remaining 11 questions on the survey that concerns the students' experiences with online collaborative writing, internet accessibility, and wiki. The survey took no more than 20 minutes to be completed. Arabic translated version of the survey,

developed by the researcher, was distributed side-by-side along with the original English copy to be filled out by all the participants at the beginning of the semester.

Collaborative Writing Questionnaire

The collaborative writing questionnaire was adopted from Wu's (2015) empirical research with a few minor changes, such as the changing of the online writing tool *blogs* from the original questionnaire into *wiki*. This 5- point Likert scale instrument consists of 22 items with a range of responses: *strongly disagree, disagree, neutral, agree, and strongly agree*. Collaborative writing questionnaire attempts to measure the following four elements: individual writing performance, writing anxiety, collaborative writing, and motivation of future use. The reliability of Wu's collaborative writing questionnaire has been checked twice: once for test-retest reliability and once for internal consistency reliability. The organization of the instrument was designed for groups, online (Appendix E) and paper-and-pencil (Appendix F), with a few changes for each group of subjects. For example, on the online writing survey, the question "I can fully interact with group members in the wiki environment," was slightly altered to "I can fully interact with group members using paper-and-pen." The participants spent approximately 20 minutes to complete this questionnaire, which were written in both English and Arabic. Again, the researcher translated the English version into Arabic and provided it side by side along with the English version. (The Arabic translation had been reviewed and verified by a native speaker of Arabic to assure its clarity.)

Interviews

The final step of collecting data was an interview. For the purpose of this study, a random selection of eight participants from the two groups were identified to be interviewed by the researcher. The participants were interviewed online via Skype for 10-15 minutes and their

interviews were digitally-recorded. In these meetings, the researcher explained the purpose of the interview and asked each interviewee to sign a consent form. To gain in-depth information about the experience of collaborative writing, all interviews were conducted in the participants' first language, Arabic. The interviews were subsequently transcribed into Arabic by the researcher for qualitative data analysis.

The main focus of the interviews was to offer the participants the opportunity to reflect on their collaborative writing experiences in both online and paper-and-pencil modes. The questions on the interview protocol (Appendix G) were carefully organized to help the interviewees describe their experiences with as much detail as possible. The goal of the interviews was to have the participants identify the challenges, limitations, advantages, and disadvantages of and recommendations for using online and face-to-face collaborative writing to help improve the effectiveness of both practices.

Wiki and Face-to-Face Writing Groups

The principal task of the present research study was to examine the experience of collaborative writing using both wiki and face-to-face communication. The wiki group was encouraged to communicate and to write and revise writing assignments online, while the traditional group members only used notebooks to collaboratively write together. At no time during the study did wiki or traditional students communicate with each other; each class worked independently; this ensured internal validity of the study. The wiki for the online collaborative classroom was created through https://www.wikispaces.com, which was chosen by the researcher due to its popularity in the field of education and L2 learning. It is free of cost, and it is simple to navigate. The traditional classroom used notebooks for each group. In both treatments, every member participated for a time period of 10 weeks. The current study included

a discourse analysis of the wiki and notebooks; that evaluation will take place in a future research paper.

This particular wiki format was selected for use in this study due to the fact that it allowed the instructors the ability to provide a navigation pane in the wiki which was used to provide guidance and resources for the wiki students in the present study. The focus of this wiki was therefore on the collaborative writing process and not on instructor feedback.

Data Collection Procedure

The data collection period for this study lasted 14 weeks from October 2017 to January 2018 (Table 2). After receiving approval from the Institute Review Board (IRB) at The University of Tennessee, the researcher electronically contacted the Dean of Scientific Research at Qassim University requesting permission to allow the researcher to collect data for the study after explaining the purpose and the prospective students that were recruited for the study.

In Week 1, the subjects were given approximately 50 minutes to complete an individual pretest (50 minutes) and fill-out a background survey (20 minutes). Each student in both treatment groups were provided with written directions that described the collaborative writing process and group members' duties and responsibilities in their respective groups (Appendix H). The practice of collaborative writing was demonstrated by the two EFL teachers to all subjects prior to commencement of the study. Students in the experimental group were given instructions about how to sign-up for wiki and use the features of the online program to create, edit, participate in discussion, use the history, and make comments on the wiki. Finally, each group of subjects had the opportunity to meet informally with the online teacher in order to become acquainted with one another and share their understanding of their responsibilities for the research study.

From Weeks 2 to 11, the students were engaged in multiple collaborative writing activities in both treatment groups. The wiki students communicated with one another beginning from the initial process of collaborative writing, to peer-feedback, and later to final publishing. During class periods, the teachers provided guidance about reading and writing instructions, and the students met regularly in and out of class with each other to discuss writing assignments. The course materials (e.g., textbook, and collaborative writing activities) were identical for each treatment group. At the end of Week 13, each student completed a collaborative writing questionnaire that took approximately 30 minutes.

In Week 14, all the participants completed individual posttests lasting approximately about 50 minutes. A random selection of eight students in both writing sections was chosen to participate in an interview with the researcher. A final exam was conducted at the end of the semester. Table 2 presents the data collection procedures by weeks for both treatments.

Data Analysis

The data were collected from the following primary sources: individual student writing, collaborative writing, student perceptions of collaborative writing, and interviews. The data were primarily quantitative for the first three research questions except in addressing the fourth question, which concerned the advantages, disadvantages, and issues regarding the use of a wiki, for which the data were analyzed qualitatively. A quantitative methodology was also chosen for this research in order to examine "the relationships between and among variables … answering questions and hypotheses through surveys and experiments" (Creswell, 2013, p. 145).

Quantitative

The first research question for this study examined the possible statistical differences between pencil-and-paper individual writing and wiki individual writing and tested the null

hypothesis raised by the researcher that there were no statistical differences between individual writing of control group (pencil-and-paper writing) and experimental group (wiki writing). However, according to some previous research (e.g., Alshumaimeri, 2011; Aydin, 2015; Wichadee, 2013), online collaborative writing was reported as outperforming face-to-face collaborative writing.

To answer this research question, the quantity and quality of individual pretests and posttests were evaluated for all the students in order compare the results of the traditional and experimental groups. The term *writing quantity* refers to the number of words in each essay, whereas *writing quality* refers to the total score and the quality of writing in terms of paragraph content (i.e., understanding of topic; rhetorical structure [organization], grammatical form [accuracy], diction and tone [word choice], and mechanics [spelling, punctuation, capitalization]). An analytical rating scale was adopted by the researcher from the work of Ferris and Hedgcock (2013).

Unlike a holistic rating scale, an analytical rating scale, while time consuming, is more beneficial for L2 students because it provides accurate diagnostic information for placement and instruction. In this analytical writing scale, a score rating ranges from 5-27 in content, 5-23 in rhetorical structure, 1-20 in grammatical form, 1-17 in diction and tone, and 1-13 in mechanics, where the low number from each score rating section is the lowest score and the high number from each score rating section is the highest score according to the rating criteria (Appendix I). The total score rating is 100.

In this study, descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) were conducted to determine whether there were significant differences between the experimental and control

groups. The evaluation of the quantity and quality of writing were carried out for the individual (e.g., pretest and posttest) and collaborative (e.g., 5 collaborative writing assignments) writing activities. There were two raters in this study; these raters were the two EFL writing instructors. The reliability of the rating procedure was examined through Inter-Rater Reliability (IRR), which measures the level of agreement among raters. Intra-Class correlation (ICC) as one type of Inter-Rater Reliability was conducted to compute the strength of the association between the two raters. The value of 1 represents a high similarity between the two raters, and the value of 0 means not similar. The two raters met at the beginning of the study to discuss the writing rating scale before the official application. Due to the participation of two evaluators in this study, the mean score of the students' individual writing (e.g., pre- and post-test) and collaborative writing (e.g., five collaborative writing activities) were registered as the final score.

To address the second research question that examines statistically significant differences in the quantity and quality of writing of traditional and online collaboration, the researcher explored the statistical differences between pencil-and-paper and wiki writing collaboration. The null hypothesis states that there were no statistical differences between pencil-and-paper collaborative writing and wiki collaborative writing.

The study collected and evaluated three collaborative writing samples from the students (Appendix J). Writing quantity (number of words) and quality including total score and five elements of writing (Ferris & Hedgcock's analytical rating scale) were analyzed and the findings recorded for each collaborative writing assignment for the two writing groups. Again, descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) were conducted for the collaborative writing activities to determine whether or not there were significant differences between online and traditional

writing classrooms. Regarding the third research question that investigates the perceptions of undergraduate EFL students toward traditional and online collaborative writing, the researcher examined the students' perceptions toward the use of wiki and pencil-and-paper in collaborative writing. The null hypothesis states that the perceptions of both treatments (e.g., wiki users and notebook users) are the same. To determine the answer to this question, descriptive statistics of the collaborative writing questionnaire, and inferential statistics were conducted to analyze the results of this study (Table 3).

Qualitative

The fourth research question (what are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?), investigated the advantages, disadvantages, problems, and themes that may arise from online and traditional collaborative writing. To answer this question, the researcher conducted a content analysis of the student interviews. According to Creswell (2012), the initial stage before data analysis takes place should collect and organize transcribed data. The researcher spent a great deal of time reading the data closely (Creswell, 2012; Merriam, 2009). Following that initial reading, the researcher began to note and identify interesting and useful codes and categories in which to sort the data. According to Merriam (2009), being expansive in choosing the codes will enable researchers to stay open to all possibilities. This process facilitated understanding of the interview transcripts. During the coding process, the researcher adopted Creswell's (2012) method by starting with a short list of codes and categories (five to seven categories) and then broadening them while reviewing the data. Merriam (2009) suggested a researcher analyze data while collecting the data due to the fact that the results are "…shaped by the data that are collected and the analysis that accompanies the entire process" (p. 171); the current study

followed this method. Once the data were analyzed in the form of multiple themes and subcategories, the findings should answer the study's research questions (Merriam, 2009). As recommended by Perry (2005), having two evaluators involved in the analysis would help to ensure the reliability of the themes and the patterns revealed in the interviews. Table 3 summarizes the research questions for the study, the list of the instruments of the data collection, and data analysis procedures for each research question.

Reliability and Validity

Reliability

Reliability, which is equivalent to consistency, has the ability to evaluate the dependability of a specific instrument in different techniques that may lead to similar outcomes, (Huck, 2012). Techniques of reliability include test-retest, alternative-forms, internal consistency, and split-half. This study adopted Wu's (2015) collaborative writing questionnaire. Wu's pilot study was conducted with 16 students from traditional and wiki classrooms and the reliability was examined in two ways: test-retest reliability (r) and internal consistency reliability (α).

Test-retest reliability refers to the measuring of a single group of people in two different periods of time with the same instrument (Huck, 2012). Regardless of the interval of time between the two measurements, this test compares the two sets of scores to reveal the level of consistency between them. The test-retest reliability coefficient, also called the coefficient of stability, ranges from 0.00 indicating no reliability to 1.00 indicating high reliability. Applying test-retest reliability showed that the reliability of the collaborative writing questionnaire for the traditional group in Wu's study was .75 (n = 16; p = .001) (see Table 4) and for the wiki group was .64 (n= 16; p = .008) (see Table 5). Internal reliability seeks to determine consistency across

the parts of the instrument. Reliability close to 1.00 means parts of the instrument are more reliable among themselves (Huck, 2012). The internal reliability in Wu's study was checked for both traditional and wiki groups, and the results showed that this instrument was highly reliable (.93 and .95, respectively). Tables 6 and 7 display the internal reliability of each element of the questionnaire for both treatments.

Validity

Validity, which is equivalent to accuracy, is the extent to which the instrument measures what it is intended to measure (Huck, 2012). To assure whether an instrument is valid, the three most frequently types of validity testing (content, criterion-related, and construct) are utilized. According to Ferry (2006), content validity refers to the degree to which a set of items reflects a content domain. In other words, content validity requires some experts to thoughtfully measure the degree to which the questions in a survey, for example, are representative of the construct that they would be used to measure (Haynes, Richard, & Kubany, 1995). In Wu's research, the researcher validated research using the content validity technique. The background questionnaire and the collaborative writing questionnaire employed in Wu's study were reviewed by the research's doctoral committee members and two ESL writing experts. The items of the two surveys were also translated into the students' first language (Taiwanese) by two bilingual experts, the researcher and the English instructor.

Among several survey instruments measuring collaborative writing in an EFL context, Wu's collaborative writing questionnaire is appropriate for the current study for several reasons. First, as is presented above, Wu's collaborative writing questionnaire possesses a respectable degree of reliability and validity. Reliability was tested twice to ensure test-retest reliability and internal consistency reliability and validity was examined by means of a review of the

questionnaire by experts in the field. Second, this scale covers important factors to properly examine student perceptions. These factors are writing performance (collaborative writing via wiki is beneficial for my English writing), writing apprehension (*collaborative writing via wiki has helped me to be less afraid of writing English compositions*), collaborative writing (*I can fully interact with group members in the wiki environment*), and motivation of future use (*I hope the teacher will let us use wiki for collaborative writing next semester*). Third, the collaborative writing questionnaire contains simple and easy-to-read statements and can be completed in fewer than 20 minutes. Finally, the items of the questionnaire are easy to calculate, analyze, and report.

Chapter Summary

This chapter discussed the methodological approaches of the research, beginning with descriptions of the research design, setting, and participants. In addition, the roles of the teacher and the researcher were outlined; the research instruments as well as data collection procedures were also explained. Last, the researcher discussed the data analysis and concluded the chapter by reviewing the reliability and the validity of the instruments. Chapter Four presents the results of the research and discusses the findings.

CHAPTER 4

RESULTS

Introduction

Chapter Four presents the results of the current study. Specifically, the collected data answering the first three research questions were analyzed using descriptive and inferential statistics. The collected data answering the fourth research question, investigating the students' experiences of online collaborative writing as well as traditional (paper-and-pencil) collaborative writing, were analyzed qualitatively.

The purpose of this study was to determine the potential effect of the use of wiki compared with paper-and-pencil methods on students' writing performance. Conducted at Qassim University in Buraydah Saudi Arabia, the study examined students' performance over time and perceptions of their individual writing and collaborative writing in a classroom using online collaborative writing compared with a classroom using paper-and-pencil collaborative writing.

Four research questions were formulated to guide this study:

1. Are there any statistically significant differences in the improvement of individual writing between pencil-and-paper and online writing participants?

2. Are there any statistically significant differences in the improvement of collaborative writing between pencil-and-paper and online writing participants?

3. How do undergraduate EFL students perceive traditional methods of collaborative writing compared with wiki-supported experiences?

4. What are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?

Quantitative Results

The first task of the quantitative analysis was to examine and report the findings of the quantity (i.e., number of words) and the quality (i.e., total score, content, rhetorical structure, grammatical form, diction and tone, and mechanics) in a pretest and post-test of individual writing in both classrooms (i.e., before and after practicing collaborative writing in an online vs. traditional paper-and-pencil classroom) using descriptive and inferential statistical analyses. The goal was to compare the effectiveness of collaboration on individual writing performance before and after the treatment.

The second task investigated the quantity (i.e., number of words) and the quality (i.e., total score, content, rhetorical structure, grammatical form, diction and tone, and mechanics) of three collaborative writing assignments using descriptive and inferential statistical analyses. The goal of this analysis was to examine the efficacy of the two different experiences of collaborative writing on the students' writing ability. Finally, the last task of the quantitative analysis was to examine the students' perceptions and attitudes toward collaborative writing in online and traditional (i.e., paper-and-pencil) classrooms.

In this chapter, references will be made to specific types of quantitative analysis which may not be common knowledge to researchers unfamiliar with quantitative statistical methods. The first term is the *main effect of time*. The main effect for time tests whether or not there is an increase or decrease in average scores between time points overall, regardless of treatment received. The second term is the *main effect of treatment*. The treatment effect is used to see if there is, on average, a significant difference between learning methods regardless of time. Furthermore, if method of learning performs better overall, then main effect differences will be observed statistically in the main effect for treatment.

However, when there is a significant *time by treatment interaction*, this means that each treatment responds differently over time. Thus, if one treatment performs better than the other over time, a significant interaction will be observed. In the present research study, if the wiki method shows a greater increase in score over time than the traditional method, then a significant interaction will be observed. In this study, the interaction is of particular interest since it considers both time and treatment simultaneously and, if the effect is significant, the interpretation should be considered prior to looking at the interpretation main effects alone.

Individual Writing Performance

The students' individual writing performance measured the quantity (i.e., number of words) and the quality (i.e., total score, content, rhetorical structure, grammatical form, diction and tone, and mechanics) of student performance in each writing classroom (wiki and traditional paper-and-pencil collaborative writing). To address the first research question, a repeated measures analysis of variance (ANOVA) model was conducted to investigate potential significant differences between the two treatments (i.e., experimental and control) for the pretest and the post-test.

Quantity of Individual Writing

In this analysis, the number of words for both writing treatments (online and paper-and-pencil) were counted manually for the pretest and post-test. The quantity of individual writing was analyzed in order to report the descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the two individual writing assignments before and after the treatment. The results from a repeated measures ANOVA showed a significant difference in the number of words over time (pretest to

post-test) regardless of the treatment the students received. However, the main effect for treatment and the treatment by time interaction were not significant.

Descriptive analysis of the quantity of individual writing. All participants in the two writing classrooms ($N = 76$) completed two individual writing assignments (pretest and post-test) (Table 8; Figure 4). The data report that the lowest score for the pretest was 47 for the two treatments, while the highest was 340. In the post-test, both writing classes showed an increase in the number of words compared to the pretest (86 words); however, there was a slight drop in the number of words in the post-test from 340 to 312. The total mean score of the post-test ($M = 192.89$, $SD = 57.50$) was higher than the total mean score of the pretest ($M = 163.16$, $SD = 68.68$) by 29 words. In other words, the students in the two writing classrooms produced more words after taking part in the study's collaborative writing course regardless of whether it occurred in a wiki or traditional classroom; however, in the post-test, the wiki classroom produced more words than the traditional classroom by 15 words on average.

Inferential analysis of the quantity of individual writing. To investigate whether there were significant differences in the quantity of individual writing between the two writing classrooms for the pretest and post-test, the research design used a 2 × 2 factorial design (type of treatment: wiki classroom and traditional classroom × time: pretest and post-test). The primary analysis measured the influence of both teaching approaches (i.e., wiki and traditional classrooms) on the participants' writing development in terms of the number of words at two different times (i.e., pretest and post-test). The analysis showed that there was a substantial main effect for time, Greenhouse-Geisser F (1,74) = 24.04, $p = 000$, partial eta squared = .24 (Table 9; Figure 5), showing an increase in the number of words from the pretest ($M = 163.15$) to the post-test ($M = 192.89$) in both treatments. A *post-hoc* test showed that the difference between the

pretest and the post-test was significant (p = .000), indicating that there was about an 18% increase in the number of words after treatment. However, the main effect comparing the two types of treatments was not significant, F (1, 74) = 2.03, $p > .05$, partial eta squared = .027, suggesting that there was no difference in the number of words between the two teaching approaches (Table 10). Moreover, there was no significant treatment by time interaction between the type of treatment chosen and time, Greenhouse-Geisser F (1,74) = .253, p = .61, partial eta squared = .003 (Table 9).

Quality of Individual Writing

Assessing the quality of individual writing consisted of two parts: the total score (out of 100 points) of the individual participants in the two writing classrooms, and the distribution of the total score among five concepts of writing (i.e., content, rhetorical structure, grammatical form, diction and tone, and mechanics). This distribution of the total score covered the concepts of individual writing quality. The analysis of the first part, the total score, for both individual writing treatments, was graded twice (i.e., pretest and post-test) following the ESL Composition Rubric (Appendix I).

The total score was analyzed in order to report the descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the two individual writing assignments before and after the treatment. The findings from a repeated measures ANOVA indicated a statistically significant change in the total score over time, between treatment methods, and via a treatment by time interaction.

This change suggests that the total score in the wiki classroom was significantly higher than the total score in the traditional classroom, although both treatments performed well over

time. The difference between traditional and wiki treatments was statistically significant in the post-test.

Inter-Rater Reliability Regarding the Quality of Individual Writing

All individual writing samples were graded by two raters twice: once for the pretest and once for the post-test, following the ESL Composition Rubric. Using an intraclass correlation coefficient (ICC) yields an excellent degree of reliability between the two raters evaluating the pretest and the post-test. The average measure of the ICC between the two raters rating the pretest samples was .994 with a 95% confidence interval from .991 to .996 (F (75,75) = 168.93, p = .000) (Table 11). Again, an excellent degree of reliability was found between the two raters rating the post-test samples. The average measure of the ICC was .997, with a 95% confidence interval from .995 to .998 (F (75,75) = 291.18, p = .000) (Table 12).

Descriptive analysis of the quality of individual writing. During cleaning and preparing the data for analysis, there were no missing values, incorrect entries, or errors in the data set. For the pretest written activity, all of the students (N = 76) completed the assignment successfully (Table 13; Figure 6). The maximum score for the pretest was 97.5; however, some students scored as low as 27. In the post-test, the lowest score was higher than the pretest by 11 points, and the difference between the minimum and the maximum in the post-test was 62 points.

The total mean score of the pretest for both treatments was (M = 70.97) with a standard deviation of (SD = 13.43). However, the mean of the post-test scores increased substantially in the two writing classes (M = 78.27, SD = 13.86). The mean difference between the pretest (M = 69.03) and the post-test (M = 73.96) in the traditional classroom was only 4 points, while the difference in the wiki classroom (M = 72.90, M = 82.5) was over 10 points. Therefore, although

the mean of the participants in both treatments increased from the pretest to the post-test, the wiki classroom scored higher than the traditional classroom.

Inferential statistics of the quality of individual writing. A 2 x 2 (time x treatment) a repeated measures ANOVA was conducted to measure the impact of the total score of the two writing classrooms (wiki and traditional) on the participants' writing improvement between the pretest and post-test. The treatment was a between-subject variable and time was a within-subject variable. The main analysis measured between the impact of the two writing approaches on the students writing improvement of total score at two different times. The analysis revealed that the main effect of time was significant, Greenhouse-Geisser, F (1, 74) = 65.82, p = .000, Eta-squared = 6 (Table 14). Thus, the total scores of the post-test (M = 78.27) were higher than the total scores of the pretest (M = 70.97) for both treatments. Similarly, the main effect of treatment was also significant F (1.74) = 4.57, p < .05, Eta-squared = .058 (Table 15); therefore, the mean of the wiki classroom (M = 77.74) was higher than the mean of the traditional classroom (M = 71.50).

Also, a significant treatment x time intersection was obtained: Greenhouse-Geisser, F (1,74) = 6.97, p = .010, Eta-squared =.086 (Table 14; Figure 7). *Post-hoc* tests indicated that there was a significant difference between the pretest and post-test in the traditional classroom (p = .000) and wiki classroom (p = .000), showing that there was an increase from the pretest to the post-test by 4.9 points for the traditional treatment and 9.6 for the wiki treatment. Additionally, the difference in total score of the pretest between the traditional and wiki classrooms was not significant (p = .212); however, it was significant in the post-test (p = .006), where the mean of the wiki classroom outperformed the mean of the traditional classroom by 9.6 points for the total score.

Concepts of Individual Writing Quality

In the second part of the writing quality assessment, a total of 100 points was distributed among five concepts measuring the quality of writing. In this study, Ferris and Hedgcock's (2013) ESL Composition Rubric (Appendix I) was adopted to assess individual and collaborative writing qualities. The total of 100 points was not distributed evenly among the five concepts of writing quality. Specifically, the total score of content of writing was 27, the rhetorical structure was 23, the grammatical form was 20, diction and tone was 17, and mechanics was 13. In each writing concept of the ESL rubric, there were four different ranges of grades, starting from high to low, based on the writing quality of each student. Once the writing was evaluated, the scores of all the concepts were added together for a total out of 100 points.

Each concept of the quality of individual writing was analyzed in order to report the descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the two individual writing classes before and after the treatment. Overall, five separate repeated measures ANOVA were conducted in order to analyze whether there were significant changes in the five writing concepts observed between treatment methods, over time, and/or via a treatment by time interaction. In content, the analysis revealed a significant difference over time, both between the treatments and via treatment by time interaction. *Post-hoc* comparisons for the treatment by time interaction indicated that the wiki treatment maintained a significantly higher mean score than the traditional treatment, and the difference between the wiki and the traditional classroom scores during the post-test was significant. In rhetorical structure, the analysis indicated a significant main effect for time and between treatments. *Post-hoc* tests indicated that scores for both treatments significantly increased over time. Moreover, the difference between scores for the two treatments

was somewhat significant. In grammatical form, the main effect for time was significant. Thus, post-hoc comparisons showed an increase of mean score regardless of which treatment the students received. In diction and tone and mechanics, the main effect for time and treatment by time interaction was significant. *Post-hoc* tests indicated that the mean of the wiki treatment significantly outperformed the mean of the traditional treatment over time. Moreover, in the post-test, the mean of each treatment was significantly different.

Descriptive analysis of the concepts of individual writing quality. The total number of participants (N =76) carried out two individual writing assignments at two times (pretest and post-test). The students' writing was evaluated individually. In general, all students showed an improvement in the concepts of individual writing quality from the pretest to the post-test (Table 16, Figure 8). In content, for the pretest the minimum score of the total participants was 5 while the maximum score was 27. In the post-test, the minimum score increased by only 1 point while the maximum score remained the same. The mean score of the pretest in content (M = 19.45, SD = 4.48) was lower than the mean score of the post-test (M = 20.45, SD = 4.24). In rhetorical structure, the minimum scores ranged from 7 in the pretest to 9 in the post-test, while the maximum score was the same (23) for both. The total mean of student scores in rhetoric and structure in the post-test (M = 18.96, SD = 3.25) was significantly higher than the score of the pretest (M = 16.45, SD = 3.44). In grammar, there was a minimum score increase among all students by 2 points from the pretest (6) to the post-test (8), with the same maximum score in both tests (20). The mean score of the post-test (M = 15.07) was greater than the pretest (M = 14.33) by almost one point, with a slight standard deviation (SD = 3.10, 3.02 respectively). In diction and tone, the pretest scores were lower than the post-test by only 1 point, with a 2-point difference in the maximum score between the pretest and post-test. The mean of diction and tone

in the post-test (M = 13.76, SD = 2.75) was higher than the mean of the pretest (M = 11.89, SD = 2.66). Finally, in mechanics the lowest score in the pretest was 3, and 5 in the post-test, with 13 points as the highest score in both tests. The mean for the pretest (M = 8.88, SD = 2.43) was lower than the mean of the post-test (M = 10.28, SD = 1.83).

Inferential analysis of concepts of quality of individual writing. A repeated measures ANOVA was conducted to measure content under the influence of two treatments (i.e., traditional and wiki) on participants' scores across two periods of time (i.e., pretest and post-test). The analysis showed that there was a significant main effect for time, Greenhouse-Geisser = F (1, 74) = 8.72, $p < .05$, partial eta squared = .105 (Table 17). Thus, the scores in content after the treatment (M = 20.44) were higher than before the treatment (M = 19.44). Likewise, there was a substantial main effect for treatment, F (1, 74) = 7.53, $p < .05$, partial eta squared = .092 (Table 18). This indicates that the mean score in content for the wiki treatment (M = 21.18) was substantially higher than that for the traditional treatment (M = 18.71). The data also showed significant interaction between treatment and time, Greenhouse-Geisser = F (1, 74) = 5.43, $p <$ .05, partial eta squared = .068 (Table 17; Figure 9). *Post-hoc* analyses were conducted, and the results showed that there was no significant difference in content scores between the pretest and post-test for the traditional treatment (p = .661), whereas there was a significant difference for the wiki treatment (p = .000); the students' content score in the wiki classroom increased by 1.7 points from the pretest to the post-test. Additionally, there was no significant difference between the traditional and wiki groups in the pretest (p = .102), whereas there was a significant difference between the traditional and wiki groups in the post-test (p = .001); the students' score in the post-test increased by 3.2 points more through the wiki treatment compared to the traditional.

A repeated measures ANOVA was conducted to measure the rhetorical structure influence of the two treatments (i.e., traditional and wiki) on participants' scores in rhetorical structure across two periods of time (i.e., pretest and post-test). There was a significant main effect for time, Greenhouse-Geisser = F (1, 74) = 78.93, $p < .05$, partial eta squared = .516 (Table 19, Figure 10). *Post-hoc* comparisons were conducted, and the results indicated that the score in rhetorical structure after the treatment (M = 18.96) was significantly different (p = .000) than the score before the treatment (M = 16.44). In other words, the students' score in the two treatments combined increased by 2.5 points from the pretest to the post-test.

Moreover, there was a mildly substantial main effect for treatment, F (1, 74) = 4.03, p < .05, partial eta squared = .052 (Table 20, Figure 11). Another *post-hoc* test was conducted, and the findings showed that the mean score in rhetorical structure for the wiki group (M = 18.40) was slightly different (p = .048) from that of the traditional group (M = 17.00) for the two time periods. Stated another way, the students' score in the wiki classroom surpassed those in the traditional classroom by 1.4. The data also showed that there was no significant interaction between treatment and time, Greenhouse-Geisser = F (1, 74) = 1.14, $p > .05$, partial eta squared = .015 (Table 19).

In assessing grammatical form, there was a significant main effect for time, Greenhouse-Geisser = F (1, 74) = 4.95, $p <.05$, partial eta squared = 063 (Table 21; Figure 12). The scores in grammar for the post-test (M = 15.06) were higher than for the pretest (M = 14.32). A *post-hoc* test showed that the mean of the pretest was significantly lower than the mean of the post-test (p = .029), suggesting that the students' score in grammar increased by .73 over time for both treatments. However, there was no significant main effect for treatment = F (1.74) = 2.80, $p >$ .05, partial eta squared = .037 (Table 22). Thus, the mean scores of the traditional class (M =

14.18) and the wiki class (M = 15.21) were similar in grammar. Similarly, there was no significant interaction between treatment and time, Greenhouse-Geisser, F = (1, 74) = 1.23, p > .05, partial eta squared = .016 (Table 21).

There was a significant main effect on scores for time in diction and tone, Greenhouse-Geisser (F (1, 74) = 44.54, p <.05, =.376), with pretest (M= 11.89) and post-test (M= 13.76) scoring differently overall (Table 23). There was no significant main effect for treatment on diction and tone scores (F (1.74) = 9.04, p >.05, = .109) (Table 24), with similar scores for traditional (M = 12.51) and wiki (M = 13.14) classes. There was significant interaction between treatment and time, Greenhouse-Geisse, (F = (1, 74) = 26.94, p < .05, = .018) (Table 23; Figure 13). *Post-hoc* comparison found a significant difference between the pretest and post-test in the traditional (p = .011) and wiki (p = .000) classrooms. Students using paper-and-pencil increased 1 point from the pretest to post-test, but wiki scores increased 2.7 points. There was no significant difference between traditional and wiki treatments in the pretest (p = .733), whereas there was a significant post-test difference between the traditional and wiki (p = .019) groups; wiki students scored 1.4 points higher than traditional students.

There was a significant main effect for time in measuring mechanics, Greenhouse-Geisser (F (1, 74) = 35.41, p <.05, =.324), where the students' score on the pretest (M = 8.88) was significantly different than the post-test (M = 10.27) (Table 25). However, there was no significant main effect for treatment on mechanics scores (F (1.74) = .532, p > .05, = .007) (Table 26) as the traditional and wiki treatments scored almost the same (the traditional mean = 9.42, the wiki mean = 9.73). There was also a significant interaction between treatment and time, Greenhouse-Geisse, (F = (1, 74) = 5.55, p < .05, = .070) (Table 25; Figure 14). Post-hoc testing indicated a significant difference between the pretest and post-test for traditional (p = .013)

compared to wiki (p = .000) classrooms. Therefore, students in the traditional classroom increased by .84 points from the pretest to the post-test; however, the students' score in the wiki classroom increased by 1.9 points. Moreover, there was no significant difference between the traditional and wiki groups in the pretest (p = .674), yet in the post-test there was a significant difference between the traditional and wiki (p = .039) groups; therefore, the wiki students outperformed the traditional students by .86 points in the post-test.

Collaborative Writing Performance

To investigate collaborative writing, this study assessed five groups in each writing classroom, each group with eight students, and each class required three collaborative writing exercises throughout the semester. Therefore, there were a total of 30 collaborative writing groups in the two classrooms (five groups per classroom, each performing three collaborative writing assignments): 15 collaborative writing groups in the wiki classroom, and 15 collaborative writing groups in the traditional classroom. Each group produced a single five-paragraph essay following the collaborative writing process (Appendix H).

Quantity of Collaborative Writing

In this analysis, the number of words for all 30 collaborative writing assignments over the semester were counted manually (three collaborative writing assignments for each of five groups per collaborative writing classroom). The quantity of individual writing was analyzed in order to report the descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the three collaborative assignments for each writing section. The overall results from the repeated measures ANOVA indicated that the students produced more words in both treatments over time. *Post-hoc* tests indicated that the difference in word count between the first and the second, the first and third,

and the second and third assignments were significant. However, the results for the main effect for treatment and the treatment by time interaction were not significant.

Descriptive analysis of the quantity of collaborative writing. All groups in the two writing classrooms (N = 10) completed three collaborative writing assignments over a period of three months (Table 27, Figure 15). The data showed that the lowest number of words for the three collaborative writings were 152, 182, and 209 words respectively for the two treatments, while the highest number of words was 342, 352, and 401 respectively. In the traditional classroom, the mean difference in number of words from the first collaborative writing exercise to the second was 79 words and from the second collaborative writing to the third collaborative writing 43 words. On the other hand, the mean difference in number of words for the wiki classroom from the first collaborative writing to the second was 34 words, and 31 words from the second collaborative writing to the third. The mean number of words for both treatments in the third collaborative writing exercise (M = 328.10, SD = 61.36) was higher than the total mean of number of words of the first (M = 234.50, SD = 57.60) and second collaborative writing exercises (M = 291.60, SD = 50.76) by 148 and 91words, respectively. In general, the traditional and wiki classrooms both showed a constant increase in the number of words for both treatments; however, the traditional mean increased at a greater pace.

Inferential analysis of the quantity of collaborative writing. A repeated measures ANOVA compared the number of words between the two writing classes, a 2 x 3 (types of treatment: wiki and traditional x time: three collaborative assignments). The treatment was a between-subject variable and time was a within-subject variable. The primary analysis evaluated the students' writing performance in terms of the number of words produced in the wiki and traditional classrooms across three periods of time (i.e., first, second, and third assignments). The

analysis yielded a significant effect of time, Greenhouse-Geisser F (1.659, 13.275) = 14.687, p = 001, partial eta squared = .647 (Table 28; Figure 16), showing an increase in the number of words produced in both classes from the first collaborative writing exercise (M = 234.50) to the second (M = 291.60) and third (M = 328.10). The *post-hoc* assessment showed a significant difference between the first and the second (p = .017), the first and the third (p = .001), and the second and the third (p = .022) writing exercises. That is, the number of words increased by 24% from the first to the second, 40% from the first to the third, and 12.5% from the second to the third exercise. However, the main effect comparing the two types of treatments was not significant, F (1, 8) = .028, $p > .05$ (Table 29), partial eta squared = .003, suggesting that there was no difference in the in the number of words produced between the two collaborative writing treatments. Moreover, analysis reveals that there was no significant interaction between the type of treatment chosen and time, Greenhouse-Geisser F (1.659, 13.275) = .1.505, p = .252, partial eta squared = .158 (Table 28).

Quality of Collaborative Writing

The quality of individual writing refers to the total score of 100 points for each collaborative exercise; the concepts of collaborative writing are: content, rhetorical structure, grammatical form, diction and tone, and mechanics. The total score for both collaborative treatments in all three exercises was graded using the ESL Composition Rubric. Analysis of the quality of individual writing reported descriptive (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the two collaborative writing classes for three collaborative assignments. The findings of a repeated measures ANOVA indicated a statistically significant change in the total score over time and via a treatment by time interaction. *Post-hoc* comparisons suggested significant differences between

the three results in both groups. There were no significant differences among the first, second, and third collaborations in wiki and traditional classrooms; the main treatment effect was not significant.

Inter-Rater Reliability Regarding the Quality of Collaborative Writing

Two raters graded the collaborative assignments three times: one for each exercise, using the ESL Composition Rubric. Inter-rater reliability using intraclass correlation coefficient (ICC) yielded a high degree of reliability for the two raters evaluating the exercises. The average measure of the ICC in the first exercise was .988, with a 95% confidence interval from .951 to .997 (F (9,9) =81.356, p = .000) (Table 30). An excellent degree of reliability was also found between the two raters for the second exercise (Table 31). The average measure of ICC was .993, with a 95% confidence interval from .971 to .998 (F (9,9) =137.806, p = .000). In the third exercise, the average measure of the ICC was .980, with a 95% confidence interval from .918 to .995 (F (9,9) = 40.043, p = .000) (Table 32).

Descriptive analysis of the quality of the three collaborative writings. Five collaborative writing groups in two sections (N = 10) completed the assignment. The maximum scores for the three exercises in both treatments were 89, 95, and 100, respectively; some groups scored as low as 67.5, 71.5, and 80.5 (Table 33). The mean difference in total score from the first collaboration to the second in the traditional treatment was 3.7, and 7 from the second to the third. The mean difference in the total score for the wiki group from the first assignment to the second was 8.1, and from the second to the third was 5.4. The mean for both treatments in the third collaboration (M = 88.40, SD = 6.13) was higher than the total mean score in the first collaboration (M = 76.07, SD = 7.07), (M = 82.20, SD = 7.42) by 12.3 and by 6.2 words in the

second. Student scores increased after each collaborative writing via both wiki and traditional treatments, with a faster rate for the wiki classroom (Figure 17).

Inferential analysis of the quality of the three collaborative writings. A 2 x 3 repeated measures ANOVA measured the influence of the two writing approaches on the total score of the participants' writing performance across three periods of time (Table 34). The analysis revealed that the main effect of time was significant, Greenhouse-Geisser, F (1.983, 15.864) = 113.008, p = .000, Eta-squared = 934. Thus, the total score of the third collaborative writing assignment (M = 88.40) was higher than the total score of the second collaborative assignment (M = 82.20) and the first collaborative writing assignment (M = 76.30) for both treatments. However, the main effect of the treatment was not significant, F (1, 8) = .543, $p > .05$ (Table 35), Eta-squared = .064. Therefore, the mean of the wiki classroom (M = 80.70) was not different from that of the traditional classroom (M= 83.90). A significant treatment X time intersection was also substantial, Greenhouse-Geisser, F (1.983, 15.864) = 3.828, $p < .05$, Eta-squared = .324 (Table 34, Figure 18). *Post-hoc* comparisons indicated that there was a significant increase in total score in the traditional and wiki classrooms ($p < .05$) from the first collaborative assignment to the second and from the second to the third and from the first to the third. More precisely, the increased score in the traditional classroom between the first assignment and the second was 3.7 points, the first to the third was 10.7 points, and from the second to the third was 7 points. In the wiki treatment, the increased score between the first assignment and the second was 8.1 points, from the first to the third was 13.5 points, and from the second to the third was 5.4 points. On the other hand, there was no statistically significant difference between the traditional and wiki treatments across the three collaborative assignments ($p > .05$). Since the treatment by time interaction is only mildly statistically significant (p=0.044), and no differences were detected

between treatments during *post-hoc* comparisons, there is reason to believe that the interaction may be the result of a Type I error. As a result, statistically significant increases are observed over time ($p < 0.01$); however, the results are inconclusive in terms of whether the two learning methods are different from one another in this case.

Concepts of Collaborative Writing Quality

The total score of 100 points was divided into five concepts of writing following Ferris and Hedgcock's (2013) ESL Composition Rubric for grading collaborative writing assignments. The total was distributed in the following order: content of writing 27, rhetorical structure 23, grammatical form 20, diction and tone 17, and mechanics 13. Once the writing was evaluated, the scores of all the concepts added up together to a total out of 100 points.

Each concept of the quality of collaborative writing was analyzed in order to report the descriptive statistics (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (repeated measures ANOVA) of the two collaborative writing classes over the collaborative writing activities. The overall findings from the repeated measures ANOVA showed that in the writing concepts of content, rhetorical structure, diction and tone, and mechanics, the students' scores improved in both treatments over time. However, the main effect for treatment and the treatment by time interaction were not significant. In grammar, a Repeated Measures ANOVA indicated a significant difference in treatment by time interaction. *Post-hoc* comparisons showed that only the difference between the first and the third collaboration in the wiki classroom was significant. Moreover, only the third collaborative exercise showed a significant difference between the wiki and paper-and-pencil classrooms. However, even in this case, the main effect for time and the main effect for treatment was not significant.

Descriptive analysis of concepts of quality of the collaborative writing. The total number of groups (N = 10) in both collaborative writing classrooms performed three collaborative writing assignments over one semester. The groups' writing was evaluated as one text. Overall, all the groups demonstrated an improvement in the concepts of quality of writing over the three collaborative writing exercises (Figure 19).

In the content component, the minimum scores of the three collaborative assignments were 17, 14, and 20 respectively for the total collaborative groups in the two writing classrooms (Table 36) and the maximum scores were 23, 25, and 27 respectively. The mean content score for the third collaborative assignment (*M* = 23.30, *SD* = 2.12) was remarkably higher than the mean score of the second (*M* = 19,90 *SD* = 3.03) and first collaborations (*M* = 20.50, *SD* = 2.12). In rhetorical structure, the minimum scores were 15, 14, and 18 respectively for the three assignments, while the maximum scores were 20, 22, and 23 respectively (Table 36). The total mean scores in rhetorical structure for the groups increased consistently from the first assignment (*M* = 16.90, *SD* = 1.72) to the second (*M* = 18.60, *SD* = 2.41) and third (*M* = 21.00, *SD* = 1.56). The lowest grammar component score in the first and second writing assignments was the same (14) and decreased by one point in the third assignment (Table 36). The highest scores for the groups in the three collaborations were 18, 19, and 20 respectively. The mean score of the three were close: first collaboration *M* = 15.90, *SD* = 1.37, second *M* = 16.60, *SD* = 1.71, and third 16.80, *SD* = 2.53.

In terms of the diction and tone component, the minimum scores among the three collaborative writing assignments were similar at 12, 13, and 13 respectively, while the maximum score was the same at 17 (Table 36). The mean of the first assignment was 14.00 with a standard deviation 1.41. On the other hand, the mean scores of the second and third

assignments were identical (M = 15.10, SD = 1.41) and (M = 15.13, SD = 1.16). Last, the lowest scores for mechanics in the three collaborative writing assignments were 8, 10, and 10 respectively, and the highest scores were 12, 12, and 13 respectively for the three collaborative writings (Table 36). The mean for the three assignments was different, (M = 9.90, SD = 1.28), (M = 11.30, .675), and (M = 12.00, SD = .943) respectively.

Inferential analysis of concepts of quality of the collaborative writing. Repeated Measures ANOVA measured the impact of traditional and wiki treatments on content scores for three assignments and showed a significant main effect for time, Greenhouse-Geisser = F (1.659, 13.275) = 8.982, $p < .05$, partial Eta squared = .529 (Table 37; Figure 20). Content scores in the third assignment (M = 23.30) were higher than for the second and first (M = 19.90, M = 20.50). Post-hoc comparison showed no significant difference between the first and second assignments (p = .560); there were significant differences between the first and third (p = .002) and the second and third (p = .005). The content score increased by only .6 from the first assignment to the second, but by 2.8 from the first to the third and 3.4 from the second to the third. However, there was no significant main effect for treatment, F (1, 8) = 1.745, $p > .05$, partial eta squared = .153 (Table 38); the mean content score for the traditional classroom (M = 20.53) was identical to the mean for the wiki classroom (M = 21.93). The data showed no significant interaction between treatment and time, Greenhouse-Geisser = F (1.659, 13.275) = 7.714, $p > .05$, partial eta squared = .179 (Table 37).

Repeated Measures ANOVA measured the effect of the two treatments on participants' scores in rhetorical structure across three periods of time, showing a significant main effect, Greenhouse-Geisser = F (1.517, 12.139) = 27.674, $p < .05$, partial eta squared = .776 (Table 39; Figure 21). The score in rhetorical structure at the end of the semester (M = 21.00) was higher

than at the beginning (M = 16.90) and midway (M = 18.60). Post hoc test comparisons revealed a significant difference between the first collaboration and the second (p = .002), the first and the third (p = .000), and the second and the third (p = .006). Thus, the rhetorical structure ratio increased by 10% from the first collaborative writing assignment to the second, 24% from the first to the third, and 13% from the second to the third. On the other hand, there was no substantial main effect for treatment, F (1, 8) = .728, p > .05, partial eta squared = .083 (Table 40), indicating that the traditional classroom (M = 18.40) scored almost the same as the wiki classroom (M = 19.26). There was no statistically significant interaction between treatment and time, Greenhouse-Geisser = F (1.517, 12.139) = 3.022, p > .05, partial eta squared = .274 (Table 39).

Regarding grammatical form, there was no significant main effect for time, Greenhouse-Geisser = F (1.905, 15.242) = 1.752, p >.05, partial eta squared = .180 (Table 41). The scores in grammar for the first collaboration (M = 15.90) were similar to the second (M = 16.60) and the third (M = 16.80). Moreover, there was no significant main effect of treatment = F (1.8) = 3.177, p > .05, partial eta squared = .284 (Table 42). Therefore, the mean of the traditional classroom (M = 15.66) and the wiki classroom (M = 17.20) were similar for grammatical form. However, there was a significant interaction between treatment and time, Greenhouse-Geisser, F = (1.905, 15.242) = 7.242, p < .05, partial eta squared = .475 (Table 41; Figure 22). Post hoc testing found that there was no significant difference in grammatical form for either the traditional classroom or the wiki classroom (p > .05) across the three collaborative assignments, except the difference between the first and third assignments (p = .007) in the wiki classroom, where the score ratio increased from the first collaborative assignment to the third by 17%. Similarly, there were no statistically significant differences when comparing the traditional and wiki treatments to one

another across the three collaborative assignments ($p > .05$), except the difference between the traditional and wiki classrooms in the third assignment ($p = .012$) where the difference between the two classes was about 3.6 points. The treatment by time interaction was significant, but the main effects were not, possibly indicating that this analysis was somewhat underpowered; the results should be confirmed with a second, larger study.

In comparing diction and tone, there was a significant main effect for time, Greenhouse-Geisser (F (1.482, 11.855) = 6.323, p <.05, =.441) on students' scores (Table 43; Figure 23). The mean for the third collaborative assignment (M = 15.30) was slightly higher than the first (M = 14.00) and the second (M = 15.10). Post hoc comparisons showed that there was a significant difference between the first collaborative writing assignment and the second ($p = .034$) and the first and the third ($p = .023$); however, there was no significant difference between the second and the third ($p = .455$). Thus, the diction and tone score increased by 1.1 point from the first collaborative writing assignment to the second, by 1.3 point from the first to the third, and by only .2 point from the second to the third. However, there was no significant main effect for treatment on diction and tone scores (F (1.8) = .348, p >.05, = .042) (Table 44), with participants showing similar mean scores for the traditional (M = 14.60) and wiki classrooms (M = 15.00). Likewise, there was no significant interaction between treatment and time, Greenhouse-Geisse, (F = (1.482, 11.855) = 2.452, p >.05, = .235) (Table 43).

There was a significant main effect for time in measuring students' scores in mechanics, Greenhouse-Geisser (F (1.380, 11.037) = 21.108, p <.05, =.725), where the first collaborative assignment (M = 9.90) was significantly different than the second (M = 11.30) and the third (M = 12.00) (Table 45, Figure 24). *Post-hoc* comparisons revealed that there was a significant difference between the first collaborative writing assignment and the second ($p = .010$), the first

and the third (p = .000), and the second and the third (p = .014). Thus, the mechanics score increased by 1.4 point from the first collaborative writing assignment to the second, 2.1 points from the first to the third, and .7 point from the second to the third. However, there was no significant main effect for treatment on mechanics scores (F (1.8) = .060, p > .05, = .007) (Table 46); the traditional and wiki classrooms scored almost the same (traditional mean = 11.00; wiki mean = 11.13). Furthermore, there was no significant interaction between treatment and time, Greenhouse-Geisse, (F = (1.380, 11.037) = .431, p > .05, = .051) (Table 45).

The Students' Perceptions of Collaborative Writing

At the end of the study, a Collaborative Writing Questionnaire was distributed to the students in the traditional and wiki classrooms. The total (N = 72) responses were received, 36 participants for each. Traditional classroom students received a questionnaire about their experience of collaborative writing using paper-and-pencil; the wiki group received a questionnaire about using wiki as an online application. Analysis of the data revealed that the students in the traditional classroom felt more comfortable writing collaboratively than did those using the wiki format. However, both believed their writing had improved and their confidence had increased and that they would like to continue to write collaboratively.

Descriptive Statistics of the Students' Perceptions of Collaborative Writing

The Collaborative Writing Questionnaire contained four concepts, each with a set of questions: collaboration comprised items 1 to 6, writing performance 7 to 12, writing anxiety 13 to 18, and motivation for future use 19 to 22, with responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (Table 47). Analysis used median instead of mean scores, because data was not normally distributed. In collaboration, participants in the traditional classroom showed a higher score (*Med* = 4.16) than wiki participants (*Med* = 3.75) (Figure 25). The minimum score

for the traditional class was 1.17 compared to 1.00 for the wiki, while the maximum traditional score was 5.00 and wiki was 4.83. The writing performance median of the traditional classroom (*Med* = 4.00) was lower than that of the wiki classroom (*Med* = 4.16) (Figure 26). The minimum traditional format score was 1.00, and in wiki 1.67; however, both maintained the same maximum (5.00). Traditional classroom students had more writing anxiety (*Med* = 4.16), while wiki students experienced less (*Med* = 3.83) (Figure 27). Both treatments showed the same minimum score (*Min* = 1.00) and maximum score (*Max* = 5.00). Finally, in response to questions about future use, both groups showed some degree of interest; however, members of the traditional classroom (*Med* = 4.00) showed more interest than those in the wiki classroom (*Med* = 3.75) (Figure 28). Both groups maintained the same minimum (1.00) and maximum scores (5.00).

Inferential Statistics of the Students' Perceptions of Collaborative Writing

The normal distribution for each concept in the Collaborative Writing Questionnaire was checked before running a *t*-test to compare the mean scores of the traditional and wiki classrooms. The results showed that the mean of each item was not normally distributed; in other words, the distribution of the scores was skewed (Table 48). The Shapiro-Wilk was significant ($p = .000$) for all concepts. As a result, the data was run through Mann-Whitney U, and the median rather than the mean was used as the average score.

A Mann-Whitney test indicated that the score for collaboration was significantly greater for the traditional classroom (*Med* = 4.16) than for the wiki classroom (*Med* = 3.75), $U = 441.500$, $p = .02$, 2-tailed (Table 49). On the other hand, in writing performance, writing anxiety, and motivation for future use, the data showed that the differences between the two classrooms were not statistically significant, $U = 580.00$, $p > .05$, 2-tailed, $U = 561.50$, $p > .05$, 2-tailed, and

$U = 480.50$, $p > .05$, 2-tailed, respectively. These analyses indicate that the traditional classroom participants were more comfortable writing collaboratively than wiki participants. Nevertheless, both groups agreed that their writing had improved and they were less anxious when writing collaboratively. Moreover, students in both treatments said they would not mind taking the course again.

Summary of the Quantitative Results

This study was an attempt to investigate the impact of collaborative writing in wiki and paper-and-pencil formats on students' writing development.

Research Question One

The first research question tried to examine the effect of collaborative writing between wiki and traditional classrooms by comparing the results of the pretest and the post-test quantitatively and qualitatively.

Overall, multiple repeated measures ANOVA were conducted in order to analyze whether there were significant changes in the number of words, the total score, and the five writing concepts between treatment methods, over time and/or via a treatment by time interaction (Table 50). Regarding the number of words, the results showed that both treatments significantly increased the number of words over time. However, the main effect for treatment and treatment by time interaction was not significant. In total score, the main effect for time, the main effect for treatment, and the treatment by time interaction were all significant. *Post-hoc* tests indicated that, in terms of the number of words, the wiki students performed significantly better than those in the traditional classroom overall. Moreover, the post-test total score increased significantly more in the wiki classroom than in the traditional classroom. In content, the main effect for time, the main effect of treatment, and treatment by time were all significant. *Post-hoc* tests for the

treatment by time interaction showed a significant difference between the wiki group and the traditional group, and the post-test difference between the wiki and traditional groups was also significant. In measuring rhetorical structure, the main effect for time and treatment were significant. However, the treatment by time interaction was not significant. *Post-hoc* comparisons maintained that both treatments improved over time. Moreover, the difference between the wiki group and the traditional group was moderate. In grammatical form, the main effect for time was significant; however, the main effect between treatments and the treatment by time interaction was not significant. *Post-hoc* comparisons showed an increase of mean score regardless of the treatment. In diction and tone and in mechanics, the main effect for time and treatment by time interaction were significant. *Post-hoc* tests showed that the means of both treatments were significantly different over time. Moreover, in the post-test, the mean scores of wiki compared to traditional groups were significantly different.

Research Question Two

The second research question studied the effect of the three collaborative writing assignments on the students' writing performance. Results were taken from the following data set: number of words, total score, and the score of the five concepts of writing. Overall, multiple repeated measures ANOVA were conducted in order to analyze whether there were significant changes in the number of words, the total score, and the five writing concepts as analyzed between treatment methods, over time, and/or via a treatment by time interaction (Table 51). Regarding the number of words, the results revealed that both treatments increased the number of words the students produced in the three assignments over time; however, the main effects for treatment and treatment by time were not significant. In total scores, the main effect for time and treatment by time were significant. *Post-hoc* tests indicated that both treatments maintained

significant changes among the three collaborative writing assignments. However, there were no significant differences among the first, the second, and the third collaborative writing assignments between wiki and traditional classrooms. The main effect for treatment was not significant. In content, rhetorical structure, diction and tone, and mechanics, both treatments benefited from collaborative writing over time. However, the main effects for treatment and treatment by time were not significant. In grammatical form, there was only a significant difference detected in treatment by time interaction. A follow up *post-hoc* comparison indicated that in grammatical form the scores of all three collaborative writing assignments in both the traditional and wiki classrooms stayed the same, except that the score from the first and third collaborative writing assignment in wiki had significantly changed. Moreover, the score differences between the two treatments were not significantly different, except the score for the third collaborative writing assignment was higher in the wiki classroom than the traditional one.

Research Question Three

The third research question considered the perceptions of students in the wiki and traditional collaborative writing classrooms after the treatment. All participants completed a 5-point Likert scale questionnaire, and the responses indicated that the students in the traditional classroom were more in agreement with writing collaboratively in the future than those in the wiki classroom. However, both classes maintained that their writing levels had developed and their writing anxiety had decreased after the treatment and, as a result, they would not mind taking the course again.

Qualitative Results

Multiple in-depth interviews were conducted with participants in both the wiki and traditional writing classrooms in order to understand the practical experience of collaborative

writing. Four random participants were selected from each collaborative writing classroom to take part in this study. All interviews were conducted online through Skype for about 15-20 minutes. The findings of the interviews summarized the different experiences for each participant based on his own background and the way he evaluated the experience. The interviewees ($N = 8$) who came from the two writing classrooms were at *advanced*, *intermediate*, and *low* levels. The selection of participants was based on writing performance levels throughout the semester in the pretest, post-test, and three collaborative writing assignments. By choosing students at different levels it was possible to represent diverse perspectives. Pseudonyms were used for this study: the wiki classroom students were designated Waleed, Waseem, Jawad, and Terky, and the traditional classroom students were called Hatan, Tahseen, Tawfeeq, and Tamer. The following is a presentation of the analysis of the interviews with the online and traditional collaborative writing students, which are shown separately because the students in the two classrooms conveyed different experiences with the treatments. The fourth research question reveals the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing.

Qualitative Process Analysis

InqScribe software was used to type up the transcriptions of all the interviews immediately after recording. The interview transcripts had been translated from Arabic into English, the accuracy of which was checked by two bilingual experts – the researcher and the English writing instructor. The translation captured the actual verbal discussion and included non-verbal communication to be reviewed (e.g., laughter and pauses). Also, important comments were written down in a separate notebook throughout the interviews in order to organize the data after collection.

Several data analysis steps were followed to prepare data for analysis. First, data were collected, transcribed, and translated in order to prepare for analysis (Creswell, 2012). Second, a great deal of time was spent reading and rereading the data closely to get a sense of the information transcribed (Creswell, 2012; Merriam, 2009). Third, after the reading process, the codes and categories that were interesting and useful to the research question were written down. According to Merriam (2009), being expansive in choosing the codes enables researchers to stay open to all possibilities. Once the data were analyzed in the form of multiple themes and subcategories, the findings should answer the research question (Merriam, 2009). All verbal responses from the interviews and from the researcher were included in sorting out the codes and themes of the research.

Online Collaborative Writing

The transcriptions of all the interviews were reviewed multiple times to generate common themes and patterns to be identified and presented. The interviews with students collaborating online through wiki were categorized into six main themes: 1) general experience of collaborative writing via wiki; 2) usefulness of wiki; 3) scaffolding; 4) ease of wiki; 5) the writing process; 6) further issues regarding collaborative writing, such as the disadvantages of collaborative writing, and suggestions about and likelihood of future use of wiki in collaborative writing.

General Experience of Collaboration

Individual writing has been the only way of teaching writing in the English Department at Qassim University since it officially opened. Therefore, using collaborative writing activities in the treatment classrooms was not without challenges. As soon as the students had written their first collaborative assignment, the interviewees without exception significantly preferred

collaborative writing over individual writing. Almost all the interviewees expressed their feelings at the beginning of the interview by comparing collaborative writing with individual writing and remarking how collaborative writing changed the way they wrote. Jawad, for example, admired individual writing at the beginning of the semester because “this was the way we had been taught” (line 54). However, after engaging in a couple of collaborative writing assignments, he began to “favor collaborative writing although I...had taken at least 5 individual writing courses so far” (lines 56 -57). At the end of the semester, the outcome of Jawad’s writing was outstanding; he stated, “Now, I can tell the difference in my writing performance before and after this course” (line 69). In another interview, Waleed compared individual and collaborative writing by saying, “Before learning collaborative writing, I could write a paragraph and I would not be confident enough like I write now with a group of students. Group writing makes me worry less about my writing; I feel more confident” (lines 5-7). Similarly, Terky compared the two experiences by commenting, “When I compare [the collaborative writing] experience to the old way of writing [individual writing], I feel I can write more when I write with a group” (lines 20-21). Furthermore, Waseem admired collaborative writing over individual writing because discussing a topic in public may lead to more ideas to write about. He stated, “I used to write individually, and this experience was not very effective, because I needed to finish the writing in any way [I could]. However, sharing ideas with my friends who have the same background and similar level of proficiency, I feel they help me to write more” (lines 11-13). Terky conveyed a similar experience regarding individual writing, explaining that he preferred collaborative writing because.

> …in individual writing, I used to find it difficult to gather facts or remember things that I would like to write about. I used to have a stuck mind when it comes to writing, and I spent many hours trying to finish the essay by any means. (lines 21-23)

Furthermore, Waseem admired wiki as an online application over the traditional collaborative classroom because, "inside the classroom, people may get busy with their phones or not willing to participate for other reasons. In wiki, I can participate when I feel ready" (lines 71-72).

The Usefulness of Wiki Collaboration

All the interviewees in the wiki classroom generally evaluated online writing as a successful experience, although there were a few concerns about the application of wiki to collaborative writing that will be discussed below. The success of the experience can be seen in Jawad's own words: "In general, I have noticed that my writing has developed, and I think it is all because of collaborative writing via Wiki" (lines 37-38), and in Terky's perception, "This semester, I have experienced writing differently" (line 4). Two of the participants, Waseem and Jawad, found collaborative writing via wiki to be a new experience even though they had studied English in a English-speaking country for 2 years. Additionally, by the time the first collaborative assignment was done, all of the participants described it as a fun and interesting experience.

The first benefit of collaborative writing via wiki, as perceived by the students, was that it helped them become confident when sharing their writing with each other or when they published it in wiki for outside readers. This feeling was consistently expressed by all the participants throughout their interviews. For example, Waleed described his experience:,"The part I liked most about collaborative writing in wiki was that I feel more confident when it comes

to writing" (lines 52-53). Similarly, Jawad reported that collaborative writing "has positively affected the way I write, and I started to trust my writing when others read it" (lines 85-86).

The second benefit of wiki for collaborative writing was that the students could write and make comments on others' writing anywhere and at their convenience. Unlike writing in the classroom, online writing is not limited by a time or place to complete the writing assignment. Terky made that clear, saying, "In wiki, you can write at any time and in any place at the students' convenience. In writing, I need to clear my mind to feel ready to start writing, and I think I can do this with the use of wiki" (lines 46-67). Therefore, whenever "the students in a particular day are absent or unable to participate, the collaborative writing process will not be affected" (Waseem, lines 73-74).

The third benefit of wiki used as an online platform in the present study was that it had the ability to connect students and create relationships even when the students were new to each other. For instance, Jawad noticed, "I can communicate with different people who I do not know to discuss things about all sorts of writing" (line 93). Additionally, Waleed considered online communication a way to connect people under one roof and provide them with a suitable environment to write. Moreover, Terky found that collaborative writing via wiki encouraged the students to communicate, even those who were introverted, because "you are in front of a machine, and normally shy people can communicate more [easily that way] than in a classroom" (lines 69-70). Wiki was not only effective for the students, but also for the teacher, because learning was not limited to the classroom. As noted by Waseem, "Writing using wiki can connect the teacher with his students, and that means a lot to the learner, when learning is not limited to inside the classroom" (lines 69-70).

Wiki and the use of outside resources. *Wikispaces.com* has multiple features for creating a page for a collaborative project. One of the features is the ability to write an introduction to the topic and instructions to be followed when writing. All of the participants appreciated the introductory information about the topic more than the instructions and the requirements for how to write an essay. For example, Terky found the introduction to the topic useful because it helped him "to read more before starting to write about the topic" (line 24). Waseem also found that reading "the introduction about the topic…helped me to have rich information about the topic before actually writing" (Line 23-24).

Another feature of wiki is that the instructor can share interesting YouTube clips about the topic, which can help students when it comes to the actual writing by providing solid background in addition to the introduction to the topic. Three of the participants highly valued outside resources such as YouTube and online websites. For example, several times during the interview, Jawad emphasized the importance of watching YouTube videos about the topic, because they enabled him to write more extensively. Furthermore, Waseem and Terky repeatedly emphasized the positive relationship between online reading and writing improvement. For example, Terky noted, "Sometimes, I do extra reading online about the topic to get the big picture of it. This information can be used to write about the assigned essay" (lines 25-26).

Writing online can be done with various devices, including but not limited to iPhone, iPad and a personal computer (PC). One student commented on how easy it was to use his iPhone to participate in weekly collaborative writing on wiki, saying, "I can write on my phone better than using a computer. I feel more comfortable using my phone rather than using the computer, although I have a personal computer at home" (lines 17-19). In an additional online advantage, most of the interviewees used social media like WhatsApp to stay connected to their

group members, in addition to the wiki website, which encouraged a greater volume of participation. For example, one participant used WhatsApp for communicating about writing, as noted by Waseem, “I see him in class or I can contact him via social media like WhatsApp. We always discuss things about writing and exchange ideas and word choices” (lines 56-57).

Scaffolding

One form of scaffolding in learning ESL/EFL writing is collaborative writing, which is defined as joint writing accomplished by one group of people. Unlike scaffolding that comes from only the teacher in the individual writing classroom, in the collaborative writing classroom an additional source of assistance comes from other learners who write at different levels. All participants in this study highlighted the importance of scaffolding, which came in different forms throughout the semester. Some types of scaffolding that emerged in the interviews were student feedback, language learning, and knowledge exchange.

Scaffolding and feedback. Collaborative writing offers the ability to not only share ideas with others in the group, but provide feedback. Feedback is a powerful tool that enables students to publish a piece of writing with fewer mistakes due to peer input. In the two classes in the present study, feedback was provided in two types-- form feedback (i.e., surface errors) and content feedback (i.e., suggestions and comments). Form feedback was provided more often than content feedback in this particular course. Jawad commented on form feedback and how it helped him in writing development.

> In wiki, I have learned grammatical mistakes after my friends made comments on my writing. From my mistakes and other students’ mistakes, I think I have started to learn how to write well. In general, I have noticed that my writing has developed, and I think it is all because of collaborative writing via wiki. (lines 35-37)

Similarly, Waleed noted the benefits of feedback, “I learned how to avoid making grammatical mistakes. I think only by looking and comparing my writing to others’ could my writing improve” (lines 94-95). Content feedback was commented on by only one student, Terky, when he said that “feedback in collaborative writing has helped me to write a topic sentence and thesis statement and provide enough details in the body paragraph. It also helped me to understand the organization of an academic essay” (lines 76-77).

Scaffolding and language learning. Three of the participants emphasized that mutual discussion thorough wiki can lead to new vocabulary and expressions that could enhance their academic writing. Jawad and Waleed stated this clearly in their interviews. “I learned new vocabulary via wiki” (Jawad, line 99) and “I have learned new words from my friends in the group” (Waleed, line 58). Additionally, one student noted that he had benefited from interaction via wiki by acquiring academic expressions necessary in academic writing. Terky “found learning academic expressions and advanced vocabularies are possible because of collaborative interaction via wiki” (line 79).

Scaffolding and knowledge exchange. Knowledge exchange was discussed in the interviewees’ scripts at two levels-- language and information. In language, when students were able to review their essays in comparison to their friends’ writing, the students’ writing improved. For example, two of the language learners repeatedly highlighted that comparing their writing with that of others was an effective method to help them avoid making the same mistakes in the future. For example, Terky explained, “I thought my writing was good, but after comparing my writing to others' I started to realize I had made mistakes and needed a lot of work to make my writing free of grammar and spelling mistakes” (line 65). In a similar experience, Waseem noted,

> In a group of five or more people, I can learn from other students by following the way they write. For those who are good in writing, I can follow their ways of writing, and for those who are lower than my level of writing, I know they can benefit from me." (lines 27-29)

Waleed agreed with Terky. "Before taking this course I had one way to write a topic sentence, and later I found that way was wrong because I had a chance to compare my writing to others. Now I think of the topic sentence in a different way" (lines 32-33).

The information level meant the information that the students would like to write about. The interviewees found that discussing the topic in wiki enhanced their ability to make writing clear and comprehensible. Examples of topics that were discussed in public were reviewing facts and providing background information. For instance, Terky pointed out that,

> …this experience [of collaborative writing via wiki] allows us, as a group, to exchange knowledge and discuss the topic further by providing real facts and statistics. I also learned that this way we can write with more precise information. This may affect the way we write and can improve our writing. (lines 16-18)

Likewise, Terky argued that collaborating, where he could read his partners' writing in wiki, expanded his imagination, which helped him to express himself more. According to Terky, reading multiple contributions by his collaborative partners online encouraged the students to participate more often.

The Ease of Wiki Collaboration

Because collaborative writing in wiki, as an online application, was new to the students at Qassim University, at first they hesitated to participate in this study. One of the participants thought wiki could be a waste of time, while another student expected it to be complicated

because he had limited experience in technology. However, immediately after the training session that was conducted at the beginning of the semester, and especially after the first collaborative writing assignment, most of the students discovered the opposite to be the case. They found that the experience of logging in through wiki and writing collaboratively using the online application was easy. Terky described his experience as straightforward, in that,

> …wiki was easy and very simple to use even for beginners like me. All you have to do is sign in via wiki and read about the topic and your friends' writings, and then it is my turn to say what is on my mind every week" (lines 30, 31, 32).

Jawad also found signing in and finding the assignment online to be easy to do.

> …[Collaborative writing] was not difficult to accomplish after we received a detailed copy of how to sign into wiki. It had all the information that I needed. I followed the directions from the instruction paper for the first time, and then I started to explore wiki by myself by visiting the mini grammar lessons on the right side, the process of writing, and the collaborative assignment pages. (lines 81-83)

The Writing Process

All participants appreciated the process of writing in stages, as it facilitated the composition of academic writing. During the interviews, all participants expressed their preference for a writing process that starts with forming phrases and incomplete sentences and leads to developing a complete essay, rather than writing an essay from beginning to end without preparation. Waseem described the process of writing in stages as "a road map that can help me stay focused on what I am going to write" (line 32); it helped him to "organize the essay starting from the introduction to the conclusion" (line 36). Similarly, Waleed compared the old way of writing an essay with the new way using process writing.

> We were taught how to write a whole paragraph and essay at once, not following the writing process. That way I normally got stuck. I think the stages of writing helped me to organize my ideas. In brainstorming, for example, I can think of some incomplete sentences, and then I can write some sentences using the ideas from brainstorming in complete sentences and so on. At the end, I feel I can write a complete essay easily. (lines 60- 63)

Finally, Terky described his experience as one in which,

> …we followed the writing stages that were assigned this semester, and I really believe that my writing has developed. I was not sure that writing in stages would affect my writing to that level. Now, I can tell the difference in my writing before and after this curse. (lines 66-68)

One student, Jawad, preferred brainstorming over all the other processes of writing, because "it is one way to expand my mind to all possibilities" (line 115), while the other writing steps were "easy to complete once I find ideas to write about" (line 118). Jawad remarked that after this course he would practice the process of writing he learned in this course and apply it during final exams: "I would like to try starting my essay with brainstorming...although I think I need more practice applying this technique" (lines 96-97).

Other Themes Regarding Wiki

Disadvantages, suggestions, and future use of wiki. Although all participants appreciated the use of wiki in collaborative writing, they raised a few concerns about the application of this method in teaching writing. Most of the interviewees claimed that in group writing, where all participants were supposed to contribute extensively, some group members offered only limited contributions. As argued by Waseem, "Some students depended on other

members of the group and had limited participation. As a group, we seek and welcome all ideas and information, and only some students, not all, showed interest in sharing their writing" (lines 5-8). Some effective suggestions were raised by the students for tackling this problem. One possible solution was for students to take responsibility for their own writing assignments by choosing the topic. That way, students could find topics that were more interesting to them than the ones chosen by someone else. Another way to solve this problem could be to reduce the number of students to three or four in a group, which might increase participation because the students would feel more accountable to do their fair share. A third suggestion was to encourage students to increase their level of engagement by displaying their weekly number of contributions to the rest of the class. Finally, one interviewee suggested that, because collaborative writing was a new experience, there should be more collaborative assignments in the course to give students more practice; the more assignments they had, the more experience they would gain and the more participation they would offer.

Another limitation cited by the interviewees about using wiki in collaborative writing was that wiki, as a new online application, requires technical experience that some students may not possess. Although the course instructor organized a training session at the beginning of the semester and provided detailed instructions explaining how to sign up in wiki and how to participate, some students encountered minor technical difficulties. For example, two of the interviewees complained that they could not organize their essay in APA style because wiki does not support the APA format. To tackle this problem, one student suggested that writing could be done in Microsoft Word first and then transferred to the wiki website, rather than writing directly in wiki. In this way the essay could be viewed in APA style.

Four of the interviewees agreed they would take the course again if it were offered in the future. Moreover, two of the participants planned to revisit wiki to avoid repeating mistakes that had been corrected through their collaboration. Jawad highlighted that wiki is not limited to collaborative writing assignments, but he will also use it to prepare for the final exam and "to learn from my mistakes and from others" (line 28). He would also like to better organize his essays by learning "how to write the topic sentence, thesis statement, writing ideas in different ways" (lines 31-32). In addition to reviewing wiki in order to avoid common mistakes and organize essays, Waleed stated that he will "use wiki to learn some of the new academic vocabularies that were used in the collaborative assignments" (lines 128-129).

Traditional Collaborative Writing

The transcriptions of the control classroom interviews were reviewed multiple times to identify patterns and common themes to be presented in the following section. The traditional classroom interviews were categorized into six main themes. The first theme revealed the general experience of collaborative writing. The second theme conveyed the usefulness of collaborative writing. The third theme explored the ease of collaborative writing. The fourth theme concerned scaffolding. The fifth theme discussed the experience of the writing process when the students collaborated in person. Finally, the last theme presented the drawbacks of collaborative writing in the traditional classroom (paper-and-pencil) and suggested recommendations for future collaborative writing when using paper-and-pencil.

General Experience of Paper-and-Pencil Collaboration

The first theme discussed extensively throughout the interviews with members of the traditional collaborative classroom was the overall experience of individual writing compared with collaborative writing. The results of the discussion favored collaborative writing. Tawfeeq,

for example, described his own experience. “I had tried individual writing in the past and learned something, but I have learned a lot through collaborative writing in this course” (lines 91-92). Another experience was that of Tahseen.

> This is a new experience; I had taken many individual courses in the past, and I think group writing has been a very interesting way of writing. Also, I studied in Great Britain, and they did not use collaborative writing that much; mostly, they used individual writing in the classroom and a lot of practice in grammar. I think the collaborative writing experience is helpful for international students who speak English as a second language, because it provides the chance for students to help each other. (lines 52-55)

The new course in collaborative writing was easier than learning writing individually, according to Hatan. Collaborative writing was easy, as commented by Tamer, “because often I spent a lot of time writing a single sentence in individual writing; however, in collaborative writing I think as a group we help each other” (lines 24-25). He also noted one of the negative sides of individual writing. “Writing alone does not always improve writing ability, because I would repeat mistakes again and again and only the teacher could provide assistance” (lines 14-15).

The Usefulness of Paper-and-Pencil Collaboration

The second theme that appeared throughout the interviews with students in the traditional collaborative writing classroom was that collaborative writing was a helpful addition to learning writing, and the students expressed their appreciation for this experience in various ways. All the interviewees highly valued this experience and described it in one way or another as “a missing methodology in teaching writing” (Hatan, line 15). Tawfeeq considered collaborative writing to be “a fun and very beneficial experience” (line 47). Similarly, Tamer reviewed the experience by saying, “From day one, right after the instructor announced that we were going to use

collaborative writing, I liked the idea and I was excited to try a different experience that might help me to improve my writing" (lines 8-10). Meanwhile, at the beginning of the semester Tahseen thought this experience would not make any difference for him, because writing was a challenge. However, he subsequently expressed, "For the second and third assignments, we started to finish writing up the essay in class and had a lot of fun writing the essay together" (lines 10-11).

Two of the participants argued that collaborative writing is efficient and takes less work. Tahseen maintained that "collaborative writing saves a lot of time and a lot of effort" (line 30). In individual writing, the student is responsible for everything from beginning to end; therefore, when it comes to academic essay writing, students spend a lot of time on each step. On the other hand, in collaborative writing, students can distribute the work among themselves so that each one is accountable only one's own part. As Tamer observed, "Each is responsible for one part of an essay. I can spend less time on my part and complete other work for other courses" (lines 35-37).

Scaffolding

In the traditional classroom, all of the participants intentionally or unintentionally referred to scaffolding as a helpful means for improving the collaborative writing experience. Some forms of scaffolding that were presented in the interviews were meaning feedback, knowledge exchange, creating relationships, and community of practice.

Scaffolding and feedback. When the students recalled their experience with collaborative writing, one of the most helpful benefits they noted was feedback. Three out of four interviewees found that student feedback and comments were valuable for improving their writing. In general, Tahseen was in favor of mutual feedback between the other members of the

group and himself. "I get feedback from others and others get feedback from me; this is how we should learn writing" (lines 69-70). The feedback the students received was mostly in regard to sentence-level errors (i.e., grammar and spelling), although one student received content feedback as well. Tawfeeq received feedback on mechanics. "Some grammatical mistakes were corrected, especially the more complex ones like complex sentences" (lines 35-36). Tamer, on the other hand, reported that the content feedback received helped him to write differently; he "tried providing feedback and...liked having someone to correct not only grammar but also help me organize my writing, such as writing the topic sentence and providing supporting details that I used to lack this skill" (lines 51-52). Another example was provided by Tamer, who said, "In the body paragraph, I learned from my group that this example or explanation is too specific or too broad, and they helped me to rewrite it in the correct format" (lines 31-32)

Scaffolding and knowledge exchange. All participants considered collaborative writing to be a means of exchanging knowledge and helping one another. Tawfeeq, for example, reported that "sharing ideas with each other and exchanging knowledge among the learners in a group would really impact the learning process" (lines 65-66). He also provided one example of the knowledge exchange that he experienced when engaged in a collaborative writing activity.

> …I can write the topic sentence and some of my group members can add some important information to it and make it meaningful. On the other hand, my friend may need help in spelling or grammar, so I can help him and this way we benefit each other." (lines 68-71)

Moreover, Tahseen learned much in collaborative writing, even though his English level in general was more advanced than that of the rest of the group. He found that "although I helped my group a lot, I always learn something from them" (lines 76-77). Knowledge exchange helped

the students to support each other, because one student could start writing and others could finish that part in a meaningful way. Hatan made this point clear when he said,

> I always get a stuck mind, but not when I tried collaborative writing. In group writing, there are a couple of minds working at the same time to produce one piece of writing. For example, one starts with an idea, and then the other one completes it and so on." (lines 17-20),

Another example was provided by Tamer when he explained, "…when I write collaboratively, if my mind goes blank another student can help me and finish the sentence. Sharing ideas makes it interesting and easy" (lines 57-58).

Scaffolding and relationships. Because traditional collaborative writing requires students to get together face-to-face inside the classroom and discuss ideas about how to write a single piece collaboratively, they can create new relationships with other students and these relationships can encourage them to write more. In this study, Tawfeeq, noted that "sharing writing with others in the classroom helps me to communicate more and make friendships with other students" (lines 71-72). Tahseen also referred to collaborative writing as "a tool to discuss new ideas, such as new vocabularies and new academic expressions with new students, and that helps me to improve my own writing" (lines 21-22). Hatan also valued writing with new acquaintances, because working with old friends could lead to wasting time discussing off-topic issues rather than working collaboratively on the assigned project. He explained that "in group writing with new students, the only thing in common between us is writing about a certain topic, whereas with old friends we may talk about different things from outside the classroom" (lines 32-33).

Scaffolding and community of practice. Writing is labeled as a written communication of a language needing practice to master. One way to practice writing is to write collaboratively with others. As expressed by Tamer, in this way "writing [collaboratively] is the only chance to practice writing with real people: that is another reason why I prefer writing collaboratively in English" (lines 40-41). Communication with more than one student in a group can lead to creating a community of practice to improve writing performance. Tahseen evaluated collaborative writing as "the only place where we can practice writing and learn from each other" (lines 21-22). Tawfeeq supported this type of writing. "I feel communicating with people in English writing is a perfect way to practice the language and not only learn the theory about how to write, but also the actual writing" (lines 44-45). According to Hatan, "This experience opens new channels of communication to improve writing ability" (lines 15-16). Collaborative writing also includes more audience and reader input rather than only that of the writer. Hatan looked at collaborative writing like "a window to read more than your own writing and learn from their mistakes" (line 53).

The Ease of Paper-and-Pencil Collaboration

All participants agreed that writing collaboratively was easy because it made the assignment manageable. Tawfeeq, for example, stated that writing collaboratively "is very easy" (line 49) and Tamer maintained that

> when we distribute the work between more than one student, this makes writing easier. Each is responsible for one part of an essay. I can spend less time on my part and complete other work for other courses. I think this way...my job is much simpler." (lines 34-37)

The Writing Process

One of the participants, Tawfeeq, indicated that process writing, or writing in stages, was a new experience; however, the three other interviewees had used it more than once in individual writing. For Tahseen, "process writing was not effective until we used it in collaborative writing, [because] it helped us to exchange ideas and correct each other" (lines 63-64). Hatan thought that the process of writing in stages was useful, because "it was like a road map to begin writing from scratch" (lines 41-42), and Tahseen found that "it provides more explanation and detail to the topic" (lines 65, 66). For Tamer, process writing "expands different uses of vocabulary and different phrases" (lines 56-57). Tawfeeq detailed his experience when he tried process writing for the first time.

> Process writing helps me to picture my essay before writing about it. Writing an essay without preparation,…a lot of students find it difficult to find supportive information about the topic. Following the steps of writing really helped me, and I think I will try to use it in the future whether it is required in the class or not.…In my group, some of the students are way better than me in brainstorming and I think it helped me to start thinking like them. (lines 86-91)

Tahseen's experience in process writing was similar.

> To be honest, these writing stages simplified essay writing in a great way. These stages trained me to start from the easy level to the hard one; I can easily follow the steps one by one or step by step. I started to write more sentences than I used to. Also, I started to add more explanation and detail to my topic. After spending time brainstorming and editing, drafting becomes easier and I can write a complete essay without spending much time. Writing stages or process is better and easier than writing an essay from scratch. When I

write without process writing, I feel I do not have a complete idea of what to write and how to write it. (lines 55-62)

Tamer preferred drafting over brainstorming, because "drafting is the most important process for getting more ideas about the topic" and brainstorming "was repetitive to drafting" (lines 77-78). However, Tawfeeq favored brainstorming, because it "helps to start to picture the whole essay and how to connect [the ideas] together" (line 83). Also, as explained by Hatan, brainstorming was "the most difficult stage…but when I have three brains or more working with me at the same time, I feel I can get more ideas in a shorter time, and then I can write more" (lines, 45-46). Finally, Tamer said he might use drafting in the final step, and he hoped that "all students practice this approach until it becomes habitual, regardless of the level they possess" (lines 90-91).

Other Themes Regarding Paper-and-Pencil Collaboration

Disadvantages, suggestions, and future use of paper-and-pencil collaboration. Three out of four of the interviewees repeatedly argued that to make collaborative writing effective, "students need to participate generously," as stated by Tahseen (line 91). Similarly, Tahseen complained that students "have little participation and I feel I am the one who works a lot" (line 9). Tamer also found that in collaborative writing other students "provide some help, but they still need to participate more" (line 13). Likewise, Hatan found "some of the students have limited participation" (lines 53-54). The interviewees offered some reasons that students were not more active in participating. Tamer blamed the distribution process that stipulated that each group needed to include students from different levels. Tahseen raised the problem that "one hour was not enough to finish the assignment collaboratively" (line 27-28). Another problem was

that collaborative writing requires students to be present physically in class to share ideas. Tawfeeg found it difficult to share ideas when most the students in his group were absent.

To solve the problem of limited participation, two of the participants suggested that group members should be distributed according to their level of writing proficiency; each group should contain two advanced students, three intermediate students, and two lower-level students. This balance "would help the low-level students to learn from intermediate and high level" (lines 59-60). Additionally, Tawfeeq supported the idea of switching groups rather than staying with the same students for the whole semester, explaining that in this way "students will learn from diverse students' different collection of vocabulary, grammar use, and writing content" (lines 36-37). To tackle the problem of having limited time for collaborative writing, one student recommended that technology such as WhatsApp could be used side-by-side with the one hour spent inside the classroom. Adding an online program could also enable absent students to catch up and finish their part without delay. Finally, when the participants were asked whether they would use collaborative writing in the future, all them agreed and said they would not mind taking the course again in the future.

Summary of the Qualitative Results

Research Question Four

The qualitative results endeavored to answer the fourth research question, which was about the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing. Interviews with students in both the wiki and traditional classrooms revealed the same themes. Six themes arose during data analysis from the total of eight participants. These themes were experience of collaborative writing, usefulness of collaborative writing, scaffolding, ease of collaborative writing, process of collaborative writing,

and further issues regarding collaborative writing via wiki and paper-and-pencil.

The overall experience of collaborative writing in wiki was positive and outperformed individual writing. All participants believed that collaborative writing via wiki had improved their writing performance. More specifically, the wiki treatment had helped the students use online sources (i.e., YouTube and digital Wikipedia). Additionally, the wiki classroom offered opportunities for learners to assist each other whenever needed. Scaffolding was provided in different dimensions, including providing feedback, learning new academic vocabularies, and knowledge exchange. When it came to the academic (i.e., collaborative writing) and technical (i.e., use of the computer) experience, the students found that collaboration online made writing easier. Last, the four interviewees valued process writing in collaborative writing, and some of the students preferred certain parts of the writing process over others. A disadvantage of using wiki in collaborative writing was that the volume of participation was sometimes low. To tackle this limitation, the participants offered suggestions such as: choosing the assignment topic, limiting the number of students to three or four in one group, and encouraging students to participate by displaying the number of contributions each made. If these limitations were resolved, the students would take the course again if it were offered in the future.

In the same vein, all participants in the traditional classroom appreciated collaborative writing using paper and pencil and believed it could improve writing ability. Scaffolding in this class came in different ways that enabled knowledge exchange and mutual learning as experienced by the participants. All participants in this class believed that collaborative writing was an easy task and required little knowledge of how it works. All considered process writing to be a powerful writing technique. Some preferred one of the writing steps over the other, and some wanted to complete all the steps because they considered them an accumulated process.

Similar to the students in the wiki classroom, most of the traditional students gauged the effectiveness of collaborative writing by the amount of participation. In some groups, participation was limited to a couple of students and the rest of the group depended on them. To tackle this problem, a few suggestions were discussed by the participants. For example, one suggestion was that participants in each group should be distributed with more than one student at each level, advanced, intermediate, and low. Switching students between more than one group was another suggestion to compensate for the problem of low participation by some group members. All participants were positive about taking the course again if it is offered in the future.

Chapter Summary

Chapter 4 presented the findings of the quantitative and qualitative data analyses of the current dissertation in narrative, tabular and graphic formats. Chapter 5 will present Discussion, Limitations, Recommendations, and Conclusions of the study.

CHAPTER 5

DISCUSSION, LIMITATIONS, RECOMMENDATIONS, AND CONCLUSIONS

Introduction

The current study examined the impact on students' writing performance of collaborative writing using wiki and paper-and-pencil formats. Chapter 4 presented the findings of the study based on the data collected from students' individual writing, collaborative writing, student questionnaires, and interviews in Saudi Arabia in 2017. In Chapter 5, the quantitative (i.e., number of words, total score, and the score of the concepts of writing) and qualitative data (i.e., participants' interview responses) will be discussed in light of other relevant studies on this topic. This chapter also presents recommendations for future online and face-to-face pedagogical applications of the results of the current study.

ESL writing was a subject of considerable public discussion in the 1990s (Matsuda, 2003), and over the years, research studies have presented multiple theoretical and practical insights into teaching writing for non-English speakers. During the past few decades, the field of teaching writing has experimented with several writing pedagogies in seeking to achieve a higher level of student writing performance. Social learning has been viewed as one of the more effective writing pedagogies and one that interests most ESL writing scholars and researchers (Donato, 1988, 1994; Storch, 2005; Swain, 2006;). Face-to-face collaborative writing, one of the forms of social-traditional learning, has been investigated in previous studies, and the results reported that group writing facilitated writing performance (Dobao, 2012; Jafari & Ansari, 2012; Shehadeh, 2011; Storch, 2005, 2013; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). Moreover, collaborative writing via wiki has become a focus of growing interest, and the results of published research studies on the topic have supported online communication (Alias &

Siraj, 2013; Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2012, 2015; Kessler & Bikowski, 2010; Kost, 2011; Li 2013; Li, Chu, Kai, & Woo, 2012; Li & Kim, 2016; Ozkan, 2015; Wang, 2014; Woo, Chu, & Li 2013; Wu, 2015; Zhu, 2013).

Significance of the Findings

Online applications have been accepted as a fruitful alternative method for achieving socialization, with their potential to enable students to learn from one another. One challenge in implementing online learning is determining how to incorporate it into a system that has been dominated by teacher-centered instruction. This study endeavored to allow students to take an active role in their own learning, rather than a passive one. Various studies support the theory that online applications can be effective when used in ESL classrooms and lead to the conclusion that teachers, language instructors, and stakeholders should consider applying relevant technology or at least consider it an alternative way to augment student learning in higher education classrooms.

Collaborative writing and technology have not been widely used by most Arab universities; however, all student participants in the online and traditional classrooms in the current study were interested in the experience of collaboration and found it to be an innovative and beneficial method of learning writing. After the students emerged from this experience, they criticized the traditional writing pedagogies that relied on the production of individual rather than group writing, and supported collaborative writing.

The results of this study should introduce teachers to the effectiveness of online instruction, although some teachers may resist this innovation after so many years of teaching with more familiar methods in teacher-driven classrooms. There may be other administrative reasons for the limited use of technology in Arab universities. To tackle this problem, the current

research project encouraged teachers and administrative staff to consider updating their writing pedagogies to include the use of technology; its effectiveness has been demonstrated in various studies in different contexts. Online learning has become a necessary teaching approach, and the need to apply it in the classroom should not be ignored or delayed any longer.

Summary of the Study

This section summarizes the important features of the study by providing a summary of its purpose, research questions, and a summary of significant findings.

The purpose of the current study was to investigate the influence of wiki and paper-and-pencil learning on ESL/EFL students' writing performance. Additionally, the study attempted to explore student perceptions of collaborative writing. Finally, the study sought to examine the students' experience of online collaborative writing and traditional collaborative writing by analyzing selected participant interviews to understand the advantages, disadvantages, and problems encountered during this experience. The following research questions guided this study.

1. Are there any statistically significant differences in the improvement of individual writing between pencil-and-paper and online writing participants?
2. Are there any statistically significant differences in the improvement of collaborative writing between pencil-and-paper and online writing participants?
3. How do undergraduate EFL students perceive traditional methods of collaborative writing compared with wiki-supported experiences?
4. What are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?

The participants in this study were all male undergraduate Saudi students enrolled in Qassim University who possessed intermediate to upper-intermediate levels of English proficiency based on a pretest that was scored at the beginning of the study. There were 76 total participants who were students in two collaborative writing classrooms, one traditional (paper and pencil) and one experimental (online wiki). The data were collected from individual writing, collaborative writing, and collaborative writing questionnaires, as well as from interviews with students from each of the treatment classrooms. The data instruments used in this study were translated into Arabic to ensure comprehensibility by the subjects. Validity and reliability were checked to ensure the accuracy and consistency of the results.

The pretest, post-test, and three collaborative writing assignments were administered throughout the Fall semester of 2017. The background survey and collaborative writing questionnaires were distributed to the students through the Qualtrics website. The quantitative data were analyzed using an SPSS program, while content analysis analyzed the qualitative data. All data were collected, cleaned, analyzed, interpreted, and reported. For the first and second research questions, descriptive (i.e., frequency, maximum, minimum, mean, and standard deviation) and inferential statistics (i.e., repeated measures ANOVA) were utilized to analyze the data report any statistically significant differences in number of words, total scores, and elements of writing between the two collaborative writing classes. Similarly, descriptive and inferential statistics were used for data analysis of the third research question to report the students' perception of collaborative writing. Finally, results from the fourth research question were analyzed through content analysis of eight interviews from selected participants for the two collaborative writing classrooms.

Summary of Major Findings

Research Question One

The first research question compared student performance on individual writing assignments in the wiki and face-to-face writing classrooms. The summary of results is presented in the following section of this chapter. A repeated measures analysis of variance was performed in order to analyze whether there was a significant change in the number of words between treatment methods, over time, and/or via a treatment by time interaction. Significant pretest and post-test differences were observed in the average number of words produced by respondents over time regardless of the treatment ($p < 0.01$). The individual main effect for treatment and the treatment by time interaction was not significant. In analyzing the total score, a repeated measures analysis of variance was performed in order to determine whether there was a significant change between treatment methods, over time, and/or via a treatment by time interaction. Treatment, time, and the treatment by time interaction were all found to be statistically significant ($P < 0.05$). Furthermore, *post-hoc* tests revealed that students who received the wiki treatment improved more in their total scores compared to students who learned using the traditional method. Another *post-hoc* test for the treatment by time interaction indicated a significant difference between the wiki and traditional classrooms for the post-test ($p<0.01$); however, no difference was observed for the pretest.

To analyze content, a repeated measures analysis of variance was performed in order to analyze whether a significant change was observed between treatment methods, over time, and/or via a treatment by time interaction. Treatment, time, and the treatment by time interaction were all found to be statistically significant ($P < 0.05$). Furthermore, post-hoc tests for the treatment by time interaction revealed that the wiki classroom had a significantly higher mean

score than the traditional classroom. Also, a significant difference was observed between the wiki and traditional classrooms during the post-test ($p<0.01$); however, no difference was observed during the pretest.

Two separate repeated measures analyses of variance were performed in order to discover whether there was a significant change in rhetorical structure and grammatical form between treatment methods, over time, and/or via a treatment by time interaction. Both main effects for treatment and time showed statistically significant differences in rhetorical scores ($P < 0.05$). However, the treatment by time interaction was not significant. Thus, students earned overall significantly higher average scores using the wiki treatment compared with the traditional treatment; however, rhetorical scores significantly increased over time regardless of the treatment method.

Significant pretest and post-test differences in grammatical scores were observed over time regardless of the treatment received ($p < 0.05$). The individual main effect for treatment and treatment by time interaction was not significant. Two other separate repeated measures analyses of variance were performed in order to ascertain whether significant changes in diction and tone and mechanics were found between treatment methods, over time, and/or via a treatment by time interaction. In both cases, time and the treatment by time interactions were statistically significant ($P < 0.05$). Thus, students' scores on both measures over time were dependent upon the treatment received. *Post-hoc* tests revealed that students who received the wiki treatment demonstrated greater increases in diction and tone and mechanics when compared with students who learned using the traditional method. Furthermore, there was no difference observed between the two classrooms in the pretest evaluation, whereas significant differences were

observed between the two classrooms in the post-test with the wiki treatment outperforming the traditional treatment ($P < 0.05$).

Research Question Two

The second research question compared student performance in collaborative writing between wiki and face-to-face writing classrooms. The summary of the results is presented in the following section of this chapter. A repeated measures ANOVA was performed in order to find whether there was a significant change in the number of words between treatment methods, over time, and/or via a treatment by time interaction. Significant differences between the three collaborative writing assignments were observed in the average number of words produced by respondents over time regardless of the treatment received ($p < 0.01$). Thus, the students produced significantly more words over time in both groups. The main effect for treatment and the treatment by time interaction was not significant. A repeated measures analysis of variance was performed in order to determine whether there was a significant change in total score between treatment methods, over time, and/or via a treatment by time interaction. Time and the treatment by time interaction were found to be statistically significant ($p < 0.05$); however, the main effect for treatment was not significant. Furthermore, *post-hoc* tests for the treatment by time interaction revealed that the wiki students scored significantly higher than the traditional students in terms of improvement across the three collaborative writing assignments ($p=0.044$). However, no significant difference was observed in comparing the wiki and traditional classrooms across the three collaborative writing assignments during *post-hoc* evaluations. Because the treatment by time interaction was mildly significant ($p = .044$), and the treatments were not significant during the *post-hoc* tests, the interaction may be the result of a type I error. As a result, the main effect for the treatments cannot be considered significant.

Four separate repeated measures ANOVA were performed in order to establish whether there were significant changes in the score of four writing concepts: content, rhetorical structure, diction and tone, and mechanics, and between treatment methods, over time, and/or via a treatment by time interaction. The main effect for time was statistically significant; *post-hoc* tests indicated that there was a significant increase in the mean score of the four concepts of writing over time regardless of the treatment received. Finally, a repeated measures analysis of variance was performed in order to ascertain whether a significant change in grammar was observed between treatment methods, over time, and/or via a treatment by time interaction. Treatment by time interaction was found to be statistically significant ($p < 0.05$); however, the main effects for treatment and time were not significant. Furthermore, *post-hoc* tests for the treatment by time interaction revealed no significant difference across the three collaborative writing assignments in both treatments, except between the first and third collaborative writing assignments in wiki. Also, there was no significant difference between the two treatments over time, except between the traditional and wiki in the third collaborative writing task. Because the interaction was significant and both main effects for time and between treatments were not, this indicated that another study with a larger sample size may be necessary to confirm these results.

Research Question Three

The third research question examined student perceptions of using a traditional or online/wiki approach to collaborative writing. The perceptions of the students revealed that the traditional group wrote collaboratively more often than the wiki group. However, both classes agreed that their respective treatments allowed them to improve their writing and reduce their writing anxiety; they indicated that they would prefer to continue using collaborative writing in the future.

Research Question Four

The fourth research question examined the advantages, disadvantages and challenges when working in a collaborative writing classroom using both traditional and online/wiki approaches.

In considering the overall experience of collaborative writing, this study found that collaborative writing using both wiki and paper-and-pencil treatments had positively improved the students' writing performance through different forms of scaffolding, including feedback, knowledge exchange, and mutual learning. The students in the two writing classrooms made it clear that collaborative writing was easy to grasp and that they had not encountered any particular problems or technical difficulties with it. Both groups appreciated applying the stages of the writing process in collaborative writing and believed this experience lessened their anxiety about writing. However, one of the biggest problems raised by the students in the two writing classrooms was the lack of participation among members of the group. To solve this problem, some students suggested limiting the number of participants in a group to encourage them to become more engaged. Another solution was to switch groups for each collaborative writing assignment. All participants without exception were willing to repeat the experience in the future.

Discussion of Quantitative Research Results

This section explores the qualitative and quantitative results of the current study, along with discussion of the previous studies and theories that have guided this project. The first, second, and third research questions were answered quantitatively, and the results were compared to ascertain student performance using individual writing criteria (including number of

words, total score, and concepts of writing), collaborative writing (including number of words, total score, and concepts of writing), and students' perceptions of collaborative writing. The fourth question discussed the experience of collaborative writing using wiki and paper-and-pencil qualitatively by analyzing participant interviews.

Individual Writing Performance

Research question one. The first research question investigated whether there was a statistically significant difference in the improvement of individual writing between a wiki and traditional (paper-and-pencil) classroom. An analysis of the pretest and post-test showed that the two treatments were significantly different in the main effect for time in the quantity of writing (number of words) and grammar, suggesting that the writing of wiki students and face-to-face participants improved by taking the course. The main effect for treatment and treatment by time was not significant. However, in total scores measuring content, rhetorical structure, diction and tone, and mechanics, both groups showed a significant difference indicating that, although both treatments showed improvement over time, the wiki students had significantly different post-test results than the control group. The data revealed no significant difference in the main effect for treatment and treatment by time interaction in number of words and grammatical form. This lack of difference may be caused by several factors: the total sample size in this study was limited (N = 76) and some of the results revealed insignificant differences; the application of the study was limited to one semester; the students may have needed more collaborative writing activities to significantly influence individual writing performance.

The significant results of the present study shared similar findings with the study of Alshumaimeri (2011) regarding the significant differences in the components of individual writing---content, rhetorical structure, grammatical form, diction and tone, and mechanics.

Alshumaimeri's results from the pretest and post-test revealed a significant difference in individual writing performance between the experimental and traditional groups. The results showed that both groups performed well over time, and that the wiki group outperformed the face-to-face group in writing quality and accuracy.

Similarly, Wu (2015) investigated the effect of collaborative writing on students' individual writing and found that the quality of writing (i.e., the quality and accuracy of writing) was significantly different between online and face-to-face collaborative writing tasks; however, differences in quantity of writing (i.e., number of words and total score) were not significant. In the same vein, Lin (2009) found a positive effect for online collaborative writing when the pretest and post-test showed that students using online applications for communication outperformed the face-to-face collaborators in writing quality (i.e., writing accuracy and quality). Thus, all these studies concluded that online collaborative writing had improved individual student writing. Nobles and Paganucci (2015) examined the quality of writing using wiki and pencil-and-paper applications among high school English students. The results of a questionnaire and interviews showed that the wiki method surpassed the paper-and-pencil method in quality of writing. Li, Chu, and Ki (2014) examined the potential effect of wiki on writing ability and concluded that the overall difference between wiki and traditional classrooms was significantly different. Additionally, the quality and quantity of writing in wiki surpassed that of paper-and-pencil writers.

On the other hand, some other studies concluded that the difference between the two writing experiences (i.e., online collaborative writing and face-to-face communication) were not statistically significant. For example, Wichadee (2013) observed that the score of the wiki and traditional groups were not significantly different. Moreover, Özdemir and Aydins (2015)

maintained that the pretest and post-test results proved that blog writing compared to paper-and-pencil was not significantly different and that blogs did not help in improving students' individual writing performance.

Collaborative Writing Performance

Research question two. The second research question compared the statistically significant difference in the improvement of collaborative writing between wiki and traditional treatments. An analysis of the three collaborative writing assignments regarding the quantity of writing (i.e., number of words), the quality of writing (i.e., total score), the concepts of writing (i.e., content, rhetorical structure, grammatical form, diction and tone, and mechanics), found that both treatments were not significantly different from one another. Although the students in both wiki and traditional classrooms showed significant improvement over time, there were no significant differences between the two treatments. However, the results showed a significant difference between the two treatments in grammar and total score, but this could be due to a type I error. Therefore, further studies are needed to confirm the results of the current findings. Another reason for the type I error could be the limited time or sample size of this study.

Face-to-face collaborative writing studies conducted in previous research yielded evidence of improvement in student writing performance (Dobao, 2012; Jafari & Ansari, 2012; Shehadeh, 2011; Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). Storch (2005) argued that writing collaboratively could lead to an improvement in writing accuracy and quality; however, the study showed no evidence that this practice might lead to extensive writing ability gains. In the same vein, Dobao (2012) concluded that writing quality and accuracy could be enhanced by collaborative writing. On the other hand, collaborative writing practices could encourage students to focus on grammar and mechanics (Jafari & Ansari,

2012; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). However, in the development of writing quality, Shehadeh's (2011) study concluded that collaborative writing helped in the improvement of writing content, organization, and vocabulary, but not grammar and mechanics. A comparison between wiki and face-to-face collaborative writing that yielded results similar to those of the current study has been found in only one other instance; the work of Wu (2015) confirmed the findings of the current research. The results indicated that the difference in quality (i.e., total score, writing quality and accuracy) and quantity (i.e., number of words) between blog-supported classes and face-to-face collaborative writing classes was not significant (Wu, 2015).

On the other hand, some studies compared collaborative writing assignments via wiki only (Kost, 2011; Li, Chu, & Ki, 2014; Li, Chu, Ki, & Woo, 2012; Mak & Coniam, 2008). The difference between the three collaborative writing assignments via wiki conducted in the present study was statistically significant, a finding similar to that of the previous studies. Li, Chu, Ki, and Woo (2012) examined the effect of wiki as a tool for mutual writing in terms of the quantity of student collaborative writing (i.e., number of words) and the quality of student writing, more specifically, total score. That study included 14 groups in three collaborative writing tasks, and the last two collaborative assignments were compared to establish the difference. The number of words and total score were significantly different between the second and third collaborative assignment. However, Li et al. (2012) did not include a traditional collaborative method to investigate the difference between wiki and paper-and-pencil treatments. Similarly, Kost (2011) investigated the impact of pairing in wiki on the number of words and total number of revisions in student writing. The study concluded that one group out of five met the required number of words the teacher assigned at the beginning of the study, and the other four groups exceeded the

number of words in the range of 35-94%. Thus, collaborative writing via wiki had helped the students to write more. Additionally, the findings of Mak and Coniam (2008) proved that collaborative writing via wiki positively affected the quantity and quality of student writing. In this case, the online collaborative writing activities over the course of a month yielded an increased number of words (writing quantity) and improvement in grammar and coherence (writing quality); as a result, the total score was enhanced. Likewise, Woo, Chu, Ho, and Li (2011) investigated the influence of wiki on students' writing improvement, finding that collaborative writing via wiki improved student performance in grammar, vocabulary, and organization. Finally, Li, Chu, and Ki (2014) investigated the possible influence of collaborative writing via wiki on writing performance, finding that the difference between the first collaborative writing in wiki and the fourth was not significant although overall writing performance improved.

Perceptions of Collaborative Writing

Research question three. The third research question sought to examine perceptions of the students in both treatment classes concerning the collaborative writing process. Their perspectives were disclosed in response to a collaborative writing questionnaire, which examined writing performance, collaborative writing, writing anxiety, and motivation for future use. Overall, the results from the input of 76 participants indicated that the students had a positive experience with collaborative writing via both wiki and paper-and-pencil. More specifically, the students from the two writing classrooms asserted that their writing performance had developed and writing anxiety had been decreased and, therefore, they were willing to take another collaborative writing course in the future. However, students in the traditional classroom were more comfortable writing collaboratively than those in the wiki classroom.

Comparing the means of the concepts of the questionnaire for the two treatments, student in the traditional classroom reported more positive responses than those in the wiki classroom. This result could be explained by considering that face-to-face interaction enables more genuine communication. Another reason could be that students used to a traditional classroom might find classroom interaction easier than online communication. A third possibility is that, collaborative writing using wiki being a new experience, students may have needed time to practice this writing approach before replacing face-to-face collaborative writing. Finally, the mean of writing collaboration in the wiki classroom (M = 3.83) was in the upper-mid range, which could be explained by some students finding the online experience to be somewhat intimidating. On the other hand, the traditional students were more confident about collaborative writing (M = 4.16) and, as a result, they collaborated more (M = 4.16) than the wiki students.

In previous studies, collaborative writing had been introduced either to compare paper-and-pencil with wiki or to show the results of collaborative writing via wiki only or paper-and-pencil only. Overall, the results of the studies expressed positive perceptions by students, teachers, and parents. In all previous studies that were reviewed, there was a positive correlation between collaborative writing and improvement of writing performance.

Studies that compared wiki and traditional methods of writing revealed results similar to those of the present study. Wu (2015) showed that students' writing performance, collaborative writing, and writing anxiety improved and that they intended to write collaboratively in the future. Shehadeh (2011) compared collaborative writing via wiki and individual writing using paper-and-pencil and found a sufficient level of satisfaction among the wiki users because their writing vastly improved as a result of the treatment. Nobles and Paganucci (2015) investigated the use of blogs and paper-and-pencil for collaboration, and their quantitative and qualitative

data revealed that collaborative writing enhanced students' writing, decreased their writing apprehension, and resulted in their wish to repeat this experience in the future. Similarly, Ozkan (2015) compared collaborative writing in wiki and individual writing using blogs, and the results from the interviews and the questionnaire suggested that students were satisfied with both online programs because they believed their writing performance was likely to improve. Likewise, Miyazoe and Anderson (2010) compared writing in the online applications of forums, blogs, and wiki. The participants were optimistic about using all platforms, because each offered a collaborative atmosphere to support writing.

The results of the current study reflect the findings of the previous studies conducted to gauge student perceptions of the use of wiki in collaborative writing. The earlier studies support the findings of this research that collaborative writing via wiki positively affected students' writing performance (Demirbilek, 2015; Dewitt, Alias, & Siraj, 2013; Gielen & Wever, 2012; Hadjerrouit, 2014; Kessler & Bikowski, 2010; Kessler, Bikowski, & Boggs, 2012; Kost, 2011; Lee, 2010; Li, 2013; Li, Chu, Kai, & Woo, 2012; Li, Chu, & Ki, 2014; Li & Kim, 2016; Li & Zhu, 2013; Mak & Coniam, 2008; Portier, Peterson, Tavares, & Rambaran, 2013; Wang, 2014). Some of these studies also concluded that students found wiki to be a helpful tool for reducing writing anxiety as they became more confident in their writing abilities (Portier, Peterson, Tavares, & Rambaran, 2013; Wang, 2014). Some students also reported that online applications (i.e., wiki) motivated them to write (Li, Chu, Kai, & Woo, 2012; Wang, 2014).

Regarding their experience of the paper-and-pencil classroom, the students in the current study shared similar feelings with those in previous studies (Dobao, 2012; Jafari & Ansari, 2012; Shehadeh, 2011; Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). The perceptions of the students in these studies were assessed quantitatively and qualitatively

using various instruments and results showed that the students supported collaborative writing because it improved their writing skills and enabled meaning negotiation.

The mean scores of the concepts of students' perceptions of collaborative writing in wiki were: 3.75, 4.16, 3.83, and 3.75, and technically these concepts were located on the scale between Neutral and Agree. Several factors may explain why the wiki students were not completely positive toward this experience. First, the use of an online site was a new experience to the students at Qassim University and, therefore, the actual results for this experience require a longer time frame than one semester to enable students to become comfortable with the technology. Second, due to the restrictions that were imposed by the English Department at Qassim University when designing this course, the collaborative writing assignments could not exceed three per semester; more collaborative writing assignments might be needed to provide accurate and complete reviews of the students' experience. Third, some interviewees reported a lack of participation by other group members, so their neutral responses could reflect their uncertain feelings about this experience. Finally, the questionnaire was distributed at the end of the semester, so some of the students may have been preoccupied with final exams and therefore did not treat the questionnaire seriously or have enough time to thoroughly examine their perceptions.

Discussion of Qualitative Research Results

Research question four. The qualitative data from multiple interviews conducted with students in both treatments sought to answer the fourth research question, which asked students for their detailed reflections on their online and face-to-face collaborative writing experience, including, but not limited to, the advantages, disadvantages, issues, and problems regarding this treatment. Eight volunteers agreed to participate in this study from the two classrooms. Six

themes arose during data analysis of the interviews. These themes were: the experience with collaborative writing, helpfulness of collaborative writing, scaffolding, ease of collaborative writing, process of collaborative writing, and further issues regarding collaborative writing via wiki.

Experience with collaborative writing. First and foremost, almost all of the participants in both composition classrooms had positive reviews when they evaluated the collaborative writing experience. The comparison between individual writing and collaborative writing seemed to be the introductory statement when they explained their current experience. All eight interviewees believed that collaborative writing outperformed individual writing because it enabled them to work as a team to support each other throughout the process of writing. Moreover, one student repeatedly extolled the virtues of collaborative writing because he became more confident by writing with a group of peers.

The reviews of the traditional participants in this study were supported by previous research studies that were conducted to compare collaborative writing with individual writing using paper-and-pencil activities (Dobao, 2012; Jafari & Ansari, 2012; Shehadeh, 2011; Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). The common conclusions among the research articles showed that collaborative writing had benefited the students more than individual and supported the idea that mutual participation could foster writing improvement and language learning.

Other studies investigated individual and collaborative writing approaches (Ozkan, 2015; Miyazoe & Anderson, 2012). The online collaborative and individual writing comparison was found in Ozkan's (2015) article. Forty-four ESL English learners, who took English as a mandatory course, were involved in this study. The students were distributed into groups; some

were tasked with writing collaboratively via wiki, and the rest were asked to write individually using blogs. Two sets of data were collected in the study (i.e., questionnaire and interview), and the results concluded that both online applications were beneficial, especially when the activities were carefully designed. Miyazoe and Anderson (2012) also investigated the effect of wiki in addition to blogs, and forums on student writing performance. They compared the use of wiki in collaboration, blogs in individual free writing, and forums for discussion. The results showed that all three online tools were useful for improving writing. More specifically, wiki was a useful tool for collaboration, while blogs were used for reflection and forums were applied for discussion. However, some students preferred to work individually because they concentrated on grades rather than the actual learning that wiki seemed to offer.

The current study was theoretically grounded on the work of Vygotsky (1978, 1962) who believed that cognitive development could only occur when students were engaged in social interaction. The Zone of Proximal Development (ZPD) was the central theory proposed by Vygotsky to explain social interaction in learning. Social interaction promised to offer better learning opportunities over individual learning, and therefore to achieve learning improvement. Accordingly, four participants from the wiki classroom and one from the traditional classroom strongly believed that the numerous thoughts discussed in their group caused them to immerse themselves in these thoughts, and therefore compose more. For these students, it can be concluded that collaborative writing, as a type of social learning, could lead to frequent thinking. More thinking and discussion over form and meaning among the students might promote more writing, and therefore writing would improve (Bruffee, 1984). Thus, in the current study, collaborative writing encouraged students to participate, participation turned into writing, and as a result their writing was enhanced. The outcomes of this study support the benefits of social

learning by concluding that collaborative writing was a more effective, enjoyable, and anxiety-free experience for students in both traditional and wiki classrooms, and therefore their writing improved.

Helpfulness of collaborative writing. The second theme discussed by the students interviewed from the two classrooms was that collaborative writing was a useful experience. Although collaborative writing was a new writing approach for them, all of the participants (*N* = 8) believed that it was an enjoyable and interesting experience, because the relaxed environment that collaborative writing engenders motivates students to write. According to Krashen (1982), to achieve success in L2, there are five key hypotheses for language acquisition. One of these hypotheses is the Affective Filter Hypothesis, which supports the premise that students with high motivation, high self-esteem, and a low level of anxiety seem to be able to learn faster than those who are not motivated. In Reid (1993) and Dornyei's (2004) books, collaborative writing can increase motivation and decrease the level of writing apprehension. It is argued in the current study that the students felt interested and excited when they composed collaboratively, because collaboration lowered their level of anxiety, and therefore the level of motivation increased. As a result, the students' writing improved, and they wrote faster. However, in the literature, motivation is a controversial topic that cannot be examined easily because of the many factors associated with it.

Unlike the face-to-face collaborative writers, the wiki collaborators enjoyed the freedom to write anytime, develop better peer relationships, and use outside resources. These features could not be found in the traditional classroom. First, there were no time and place limits for wiki users to complete their writing assignments collaboratively. Almost all of the participants from the wiki classroom appreciated that this feature allowed them to write at their convenience

whenever they felt ready to write. Second, the online collaborators were able to connect with each other more easily, in more ways, and more often. Third, the online collaborators had the advantage of access to online resources for extra research and inspiration. Three out of four of the participants appreciated having access to online media so they could read and watch videos about the assigned topic.

The connection between reading and writing has been proven to effectively improve writing performance for ESL/EFL learners (Lee & Hsu, 2009; Mason & Krashen, 1997; Lee & Krashen, 1996; Tsang, 1996). These research studies confirmed that the more reading EFL learners were engaged in, the better their writing performance. Similarly, Lee and Hsu (2009) reported that improvement in reading can be transmitted into improvement in writing in the following areas: content, organization, fluency, language use, lexicon, and mechanics.

Scaffolding. Scaffolding and knowledge sharing are the heart of collaborative learning, where learners can solve a problem, accomplish a task, and achieve a goal with the help of peers. This study was influenced by the work of Bruner (1984) where he argued that learners can acquire a language in a social environment where peers communicate with each other to construct meaningful knowledge. Scaffolding is a temporary assistance and is very effective up to the time when the learners acquire the new skill and can function independently. Siemens (2004) and Downes (2007) also argued that new technologies facilitate new types of scaffolding among learners. Wiki, as a powerful tool for collaboration, has the ability to function as a scaffolding device. The flexible nature of wiki can effectively turn learners into reflective thinkers, helping them to gather and process information and implement knowledge. Wiki also can build a community where ideas can be shared and exchanged. In this study, scaffolding has

been defined as assistance throughout the process of writing. Scaffolding was shown to positively affect the students' writing, because they wrote more in less time.

In both treatments, the students observed collaborative support in providing feedback, learning new vocabularies, and mutual learning. Feedback, as one form of scaffolding that enables collaborators to help each other, was discussed by all participants in both groups. Bruffee (1984) stressed the important role of social interaction in providing meaningful feedback. Peer and group feedback as a powerful tool in improving writing ability through social communication was also supported by Donato (2000) and Swain (2000). Peer and group feedback appeared before collaborative writing (Hyland, 2000), and it has been examined to evaluate its effectiveness in face-to-face and online collaborative writing. For the traditional classroom, a large body of research has found that scaffolding feedback has the potential to improve learners' L2 writing, and it has helped in constructing knowledge.

In terms of wiki, the current study supports previous studies conducted on the effectiveness of form and content feedback on improving student learning, and more specifically writing (Aydin & Yildiz, 2014; Demirbilek, 2015; Gielen & Wever, 2012; Jung & Suzuki, 2015; Lee, 2010; Woo, Chu, Ho, & Li, 2011; Woo, Chu, & Li, 2013). Regarding the type of feedback, the students in this study concentrated mostly on form feedback (i.e., grammar, punctuation, and spelling) rather than content feedback (i.e., purpose, organization, and audience). This finding did not concur with other studies that found that collaborative feedback focused on meaning rather than form (Woo, Chu, Ho & Li, 2011; Woo, Chu, & Li, 2013).

Ease of collaborative writing. Regarding the ease of collaborative writing, by the end of the study interviewees from both classrooms confirmed that this experience was easy and straightforward. One wiki student admitted that he used his smart phone to complete the

assignments, and this made collaborative writing even easier than spending his time in the English Language Lab. Some thought that signing into wiki would be a complicated process due to the fact that they did not have either sufficient experience with technology or an email account to communicate in case of a problem. However, the training session conducted at the beginning of the semester was enough to get them signed in and acclimated before leaving the university. The ease of collaborative writing using the online application in this study was similar to other studies that addressed the same issue (Ebersbach, Glaserand & Heigl, 2006; Imperatore, 2009; Wu, 2015). The current study suggested that one possible reason students may under-participate in collaboration could be insufficient experience with technology rather than poor English writing performance. This issue needs to be considered among teachers and language instructors before implementing an online application in a writing class.

Process writing. Process writing was a preferable method of learning writing by all of the interviewees from both classrooms. They strongly believed that the process of writing in stages had helped them become successful writers. The wiki interviewees showed that process writing simplified their experience of writing a five-paragraph essay. Also, it helped them to organize the essay; one of them described it as a "roadmap" to complete the task successfully. For the paper-and-pencil interviewees, process writing was a simple and effective approach to learning academic vocabularies and different uses of phrases. One participant described the first two stages as if "somebody takes a second and closer look at a fuzzy picture, and it becomes clearer and clearer." Also, it helped the students to generate more information in less time, because "three minds are better than one."

The findings of this study were supported by another study (Bayat, 2014; Tavsanli, 2015) where process writing had been evaluated as a necessary tool to improve writing performance. In

this course, all of the students received detailed instructions on how to apply the process of writing and how this writing approach can be applied to collaborative writing projects. The method was not new to the students, but in most cases it had not been applied frequently, possibly because the time it takes is more clearly worthwhile for collaborative writing than for individual writing, which is still the norm at Qassim University. The process of writing, including brainstorming, drafting, revision and editing, and final draft, was mandatory when the students wrote collaboratively in this course. Some students emphasized starting from the brainstorming stage, while others preferred to begin at the drafting stage because brainstorming and drafting share similar information. Process writing as a shift from the end product to the authentic step-by-step process of writing (Leki, 1991) has influenced the fluency (Hedge, 2005) and quality of students' writing (Raimes, 1983). The combination of process writing and wiki has proven to be a perfect match because of the edit, draft, and share features that wiki offers (Lee, 2010; Kontogeorgi, 2014).

Further issues regarding collaborative writing via wiki. Although it appeared in the above discussion that both wiki and paper-and-pencil collaborative writing treatments were a success, there were some concerns and challenges that need to be addressed when wiki is applied in the future. One shared concern between the wiki and traditional classrooms, which almost all of the participants complained about, was the limited contribution of some group members to the collaboration, although participation was graded. The following studies have discussed the reasons behind some students' limited volume of participation in collaborative writing. One possible reason could be poor course design (Cole, 2009; Lee, 2010). For another, some students prefer to write individually (Lee, 2010) because they lack confidence to write collaboratively (Jung & Suzuki, 2015) or to edit others' work (Ozkan, 2015). Also, some students do not trust

their academic writing skills and are concerned that their feedback may be not effective (Mcloughlin & Lee, 2007).

In the current study, the interviews suggested that, because collaborative writing was a new experience, students might need more time to grasp it and value its effectiveness before increasing their participation. Second, although the students in both classrooms provided positive responses about their feelings toward collaborative writing, they might still lack the confidence to review others' work. Finally, the overall students' scores were low to moderate; therefore, meaningful contribution and feedback could be limited because of the limited peer writing skills, as discussed by Mcloughlin & Lee (2007).

A number of suggestions were raised by the wiki interviewees to help increase collaborative writing participation. These include giving students the chance to choose their own topic; reducing the number of students in a group so each participant is more accountable; displaying the number of contributions made by each participant to encourage frequency; and increasing the number of collaborative assignments so that confidence can build to boost involvement. The paper-and-pencil interviewees came up with similar ideas, such as distributing students equally based on their level of writing proficiency, and switching groups for each assignment.

The second problem that some of the wiki interviewees encountered was related to essay organization. For this course, APA style format was a requirement, yet wiki seemed not to support the APA format; therefore, students faced the problem of reorganizing their final essay to meet the requirement. This finding was discussed in the literature when Woo, Chu, and Li (2013) noted that students who lacked technical experience might need direct assistance from the

course instructor or lab technician. One way to tackle this problem would be to have students write their drafts in Microsoft Word and then copy the final essay and paste it into wiki.

The last two challenges the traditional students faced were the reliance on their peers to physically show up to class and the limited time for participation. To solve the two problems, one student suggested adding an online application that could be used for discussing and sharing outside of the classroom. This solution was in line with a previous study (Li & Zhu, 2012; Lund, 2008) that suggested that adding online applications to a regular classroom could support students to compose collaboratively. This suggestion could be applied to a traditional or wiki classroom. Regarding continuing to use collaboration in writing, whether online or face-to-face, all of the interviewees without exception were ready to try this experience again.

Theoretical and Practical Implications

The analysis of the qualitative and quantitative data argued that the collaborative writing experience was positive in both the wiki and face-to-face classrooms and resulted in improvement in both individual and collaborative writing, regardless of the challenges that the students encountered. In general, there was a noticeable development for both classrooms from pretest to post-test, suggesting that collaborative writing had improved writing performance. However, the wiki classroom outperformed the traditional classroom. In collaborative writing both groups performed well, and it was believed that the students' writing ability improved regardless of the treatment received. Regarding writing anxiety, both classrooms enjoyed a relaxed attitude toward collaborative writing. Consequently, both classrooms were ready to try this experience again in the future. This section offers points for discussion when teachers and language instructors consider trying collaborative writing to enhance students' writing performance. The theoretical and practical implications drawn from the present study follow.

1. Teachers should take caution when implementing an online tool for collaboration by asking questions such as: Why do I need an online application? Which online application would be suitable for my students? Will my students benefit from the online experience and the mutual discussions it facilitates? Will online collaborative writing be more effective than traditional collaborative writing? Should I apply collaborative writing for beginners or advanced students? Who are my students: what are their backgrounds and capabilities?
2. Designing a syllabus that contains a detailed description of the goal of the collaborative writing component and how this experience would be expected to enhance writing performance would be one of the priorities. The syllabus should also maintain a clear guideline for the time-frame for collaborative writing steps, participation requirements, due dates, and expectations for the final paper. Also, the teacher needs to choose interesting topics for discussion, because irrelevant topics may not motivate the students to write collaboratively. The writing course should include reading as this has been proven to improve writing performance. Therefore, the teacher should provide outside resources to help students learn about the topic.
3. Collaborative writing, whether using paper-and-pencil or an online application, can be a new experience for ESL/EFL students. Therefore, conducting a training session at the beginning of the semester is highly recommended to explain the purpose of collaborative writing, how to participate, and why it is important for each student to contribute in collaborative writing.
4. Collaborative writing differs from individual writing in that students need to understand their individual responsibilities. These include: Who will lead the group? Who will

provide outside resources? Who will provide feedback? Also, the distribution of students into groups should be based on their individual levels of proficiency and their relationships, if any, with each other. Finally, students should be taught how to use online technology wisely, in an academic environment.

5. The syllabus should also specify the assessment policy, especially when collaborative writing is new to the students and the teacher. The teacher should decide whether the evaluation is only on the collaboration or includes the collaboration and the final draft, and if the latter, how the teacher will distribute the grade between the collaboration and the final draft of the collaborative writing project.
6. Collaborative writing is a shift from teacher-oriented to student-oriented learning. Therefore, students should be given sufficient trust to manage their own learning. The teacher's role is to facilitate, assist, guide, and support the student to become an independent, active learner, reflective thinker, and problem solver. Also, teachers should be available to aid the students and help solve any problems encountered technically or with writing.
7. Technology could be a successful supplement for teaching language; however, adding more than one online application in one course may be overwhelming and therefore confusing to students.
8. For the traditional collaborative writing classroom, an online application is a recommended addition to enable students to communicate outside the classroom and complete any work that was not finished inside the classroom.
9. Both collaborative writing treatments (i.e., wiki and paper-and-pencil) benefited student writing performance in this study. Therefore, teachers should choose between these

approaches based on their own and their students' familiarity with technology and its availability.

10. In collaborative writing, students may require more motivation to stay active; this can be achieved by implementing creative design and new ideas. The more care the teacher takes in preparing an innovative lesson plan, the more students will be engaged.
11. Finally, it is suggested that decision-makers should be included in the discussion of benefits and appropriate implementation of collaborative writing as a supplementary approach to individual writing in teaching English as a second language.
12. Based on the results of the study, the researcher feels that collaborative writing, which requires students to engage in social interaction to construct knowledge and solve a problem, has the ability to enhance learners' cognitive development and provide a comfortable atmosphere for students throughout the process writing until the publishing stage. Collaborative writing could extend its benefit to include teachers due to the fact that when students are engaged in constructive feedback, the workload would be reduced for the teachers and the students do not have to solely rely on their teachers.
13. When comparing collaborative writing classrooms using paper-and-pencil with collaborative writing using wiki, the researcher suggests that the later has more opportunities to keep students connected regardless of time and place restrictions. This feature may help students write at their convenience and may positively affect the quality of writing.
14. Moreover, it is important to highlight that online classrooms could also improve the quality of the students' writing due to the availability of outside resources that allow students to read about the topic online and watch some educational YouTube videos to

help students have a solid background about the topic and collect additional information to be used in writing.

Recommendations for Future Research

This study was conducted in the English Department at Qassim University in Buraydah, Saudi Arabia. This quasi-experimental study examined the potential influence of face-to-face and online collaborative writing on student writing improvement. The study also sought to investigate student perceptions of the two writing experiences. The findings generated several suggestions for future researchers interested in collaborative writing in wiki and paper-and-pencil. These suggestions follow.

1. The quantitative and qualitative results from this study suggest additional research is needed to examine online and paper-and-pencil collaborative writing approaches carried out in various contexts to support or reject the findings of the current study.
2. Researchers are advised to expand the period of the experiment, include a larger number of students, and include a sufficient number of collaborative writing assignments to explicitly examine the difference between the two writing approaches.
3. Researchers may include additional variables, such as gender, age, technology experience, and writing performance to understand the correlation between these variables and writing improvement via online and traditional collaboration.
4. This study included the perceptions of students toward the two collaborative writing approaches. Future research may investigate the attitude of teachers toward collaborative writing from their perspective as a language facilitator.

Chapter Summary

This chapter summarized and discussed the results of the present study. Moreover, it provided theoretical and practical implications for future English writing teachers in light of the findings of the study. Finally, the chapter concluded by offering recommendations for future research into related aspects of collaborative writing in the wiki and traditional classroom.

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APPENDICES

Appendix A

ENG 141: English Writing Syllabus

Fall 2018
Monday 8:00 a.m- 8:50 a.m, Wednesday 10:00 a.m - 10:50 a.m, and Friday 8:50 a.m
Qassim University in Buraydah

Course Description:
The course is mainly designed for intermediate ESL third year students. This course is required and credited for all undergraduate students who successfully passed writing 2 (ENGL201). The course provides three contact hours per week and includes integrated unites of study in writing for intermediate level. The primarily focus of this course is to introduce EFL learners to paragraph format, organization, and grammatical structure through a combination of English literacy (reading and writing). The ultimate goal of this course is to prepare the students to write strong, well-organized, and well-supported paragraphs in a variety of rhetorical styles from basis to longer essays.

Course Objectives:
Upon completion this course, you will be able to:

1- Develop and understand the main structure of an essay (i.e. topic sentence, thesis statement, essay organization).
2- Provide meaningful arguments, examples, and supporting details.
3- Apply writing processes, including brainstorming, developing ideas, and editing writing.
4- Develop critical thinking in writing.
5- Connect three writing paragraphs in a creative way.
6- Produce simple and complex sentences.
7- Identify the importance of audience and the purpose for writing a short essay

Required Texts and Online Material:

Oshima, A., & Ann, H. (2013). *Longman academic writing series 3: Paragraph to Essays.* NJ: Pearson Education ESL.
Miller, J., & Cohen, R. (2014). *Longman academic reading series 3: Reading skills for college.* NJ: Pearson Education ESL.
Glenn, C., & Gray, L., (2012). *The writer's Harbrace Handbook*. Boston: Wadsworth.
Online collaborative writing program (wiki)

Course Requirement and Evaluation

Required assignments:
Students have to check the syllabus for the assignments on a weekly basis. There will be five main assignments during the semester. All assignments must be submitted on due date as indicated in the syllabus. Any late assignments would be accepted for the first time and after that they would be evaluated out of 8 instead of the full grade 10.

Required Exam:
There will be two exams during the semester: midterm exam and final exam. Students would take the exams in the English lab. They have to access their account in English department lab in order to take the exam. There will be a detailed information about the nature of the two exams prior the actual test.

Attendance:
Class attendance during the whole semester is obligatory. Students have no more than three absences. Missing four or more classes may result in an unnecessary class failure. Continually late students will be panelized (three times of late show equal one class absence). No excuses would be accepted unless students are approved by the Absence Committee in the department. Students must send me the excuses via email. They also have to find out what they were missing in wiki. Students who attend all the classes will get extra points.

Participation Policy:
I expected all the students to come to class on time and prepare well for class readings and homework. Students are also expected to participate effectively and collaboratively in class discussions and activities. Cell phones are not allowed inside the classroom. Students may leave the class to answer the phone only for emergency calls.

Plagiarism and Cheating: All students are required to do their own work. All forms of academic dishonesty are absolutely forbidden. Students who cheat, plagiarize (intentionally stealing someone else's ideas, writings, essays, etc.) or commit other acts of academic dishonesty, will be subject to immediate disciplinary action ranging from failure on the assignment to failure for the course.
Updating the syllabus:
This syllabus is tentative and it could be changed to meet the student's needs and desires. Changes and updates will be discussed in the classroom.

Evaluation		**Percentage**
1.	Attendance and Participation	30%
2.	Five Collaborative Assignments	30%
3.	Extra Credit	+5%
4.	Midterm Exam	20%
5.	Final Exam	20%

A+	95- 100
A	90- 94
B+	85-89
B	80-84
C+	75-79
C	70-74
D+	65-69
D	60- 64
F	59- ↓

The Schedule for the Whole Semester:

Week	**Teaching Pedagogy**
One	Course Introduction Exploring Wiki Features. **Background Survey** **Pre-Test**
Two	Ch.1 Writing About People Reading and Writing Demo

	Collaborative Writing Training
Three	Ch. 1 Writing About People Reading and Writing Demo Collaborative Writing Training
Four	Ch. 2 Narration Reading and Writing Demo Collaborative Writing 1
Five	Ch. 2 Narration Reading and Writing Demo Collaborative Writing 1
Six	Ch. 3 Description Reading and Writing Demo Collaborative Writing 2
Seven	Ch. 3 Description Reading and Writing Demo **MID-TERM EXAM** Collaborative Writing 2
Eight	Ch. 4 Paragraph Organization Reading and Writing Demo Collaborative Writing 3
Nine	Ch. 4 Paragraph Organization Reading and Writing Demo Collaborative Writing 3
Ten	Ch. 5 More About Paragraph Organization Reading and Writing Demo Collaborative Writing 4
Eleven	Ch. 5 More About Paragraph Organization Reading and Writing Demo Collaborative Writing 4
Twelve	Ch. 6 Essay Organization Reading and Writing Demo Collaborative Writing 5
Thirteen	Ch. 6 Essay Organization Reading and Writing Demo Collaborative Writing 5 **Collaborative Writing Questionnaire**
Fourteen	Ch. 7 Logical Division of Ideas Reading and Writing Demo **Post-test** **Interview**
Fifteen	Ch. 7 Logical Division of Ideas Reading and Writing Demo **FINAL EXAM**

Appendix B

Individual Writing Prompt (Pre-Test)

Pre-Test Writing Task
Name:
Student ID #:

Context:
For some college students, setting goals and making them real is all about being successful in academia. Others believe that college students need to focus on what fascinates them rather than achieving the highest grades on tests. In your opinion, what makes a college student successful? Is it setting priorities? Or is it aiming for the stars?

Directions:
Individually, write a complete essay of about 150 words to convince your readers of how to be a successful college student. You have 50 minutes to complete this task. Be sure to include specific reasons and examples to make your argument convincing.

Content:
Bear in mind that this activity should be organized in the following order:

- Introduction: In this section, you should include the topic sentence and the thesis statement as clearly as you can.
- Body: Discussion should include reasons and examples that explain specifically why you believe in your argument. Be convincing!
- Conclusion: Finally, wrap up your essay by summarizing your main idea.

Assessment:
This essay will be evaluated according to Ferris & Hedgcock's (2013) composition rubric.

Appendix C

Individual Writing Prompt (Post-Test)

Post-Test Writing Task
Name:
Student ID #:

Context:
Most people have hobbies that they enjoy when they have leisure time. Some people, for example, like to play soccer. Others prefer reading books. What is your hobby? In your opinion, what are the things you enjoy doing in your free time that you feel strongly and passionately about? Who trained you to be proficient in this hobby? When did you first begin your hobby? Or, is there a new hobby that you would like to begin? Just tell us what it is.

Directions:
Individually, write a complete essay of about 150 words to convince your readers of what your special hobby is that you enjoy when you have free time. You have 50 minutes to complete this task. Be sure to include specific reasons and examples to make yourself clear.

Content:
Bear in mind this activity should be organized in the following order:

- Introduction: In this section, you should include a topic sentence and a thesis statement as clearly as you can.
- Body: Discussion should include reasons and examples that explain specifically why you believe in your argument. Be convincing!
- Conclusion: Finally, wrap up your essay by summarizing your main idea.

Assessment:
This essay will be evaluated according to Ferris & Hedgcock's (2013) composition rubric.

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Appendix D

Background Survey

Completed by both groups (experimental and control)			
#	Items	Answer	
1	I feel anxious when I write a composition in English. اشعر بقلق عندما اكتب مقالا باللغة الإنجليزية.	Yes	No
2	I like to write a composition in English. أحب أن أكتب مقالا باللغة الإنجليزية.	Yes	No
3	I consider myself to be a good writer in English. أعتبر نفسي كاتبا جيدا باللغة الإنجليزية.	Yes	No
4	I know what collaborative writing is. اعرف تماما ماهي الكتابة التعاونية.	Yes	No
5	I have the experience of writing collaboratively. لدي الخبرة بالكتابة التعاونية باللغة الإنجليزية.	Yes	No
6	I prefer (1) individual writing or (2) collaborative writing. أفضل الكتابة الفردية باللغة الإنجليزية (١) أو أفضل الكتابة التعاونية باللغة الإنجليزية (٢).	1	2
Completed by experimental group only			
7	I have the experience of composing using technology. عندي الخبرة بالكتابة باللغة الإنجليزية باستخدام الحاسب.	Yes	No
8	I prefer to compose (1) using pen-and-paper or (2) using technology. أفضل الكتابة باللغة الإنجليزية باستخدام القلم (١) أو باستخدام الحاسب (٢).	1	2
9	I know what online collaborative writing is. أعلم ماهي الكتابة التعاونية باستخدام الانترنت (او الحاسب).	Yes	No

10	I have the experience of online collaborative writing. أمتلك الخبرة في الكتابة الجماعية باستخدام الانترنت (او الحاسب).	Yes	No
11	I am interested in online collaborative writing. أرغب بالكتابة التعاونية باستخدام الانترنت (او الحاسب).	Yes	No
12	I own a computer. أمتلك حاسب (كمبيوتر).	Yes	No
13	I have Internet access at home. عندي انترنت في البيت.	Yes	No
14	I know what a wiki is. أعلم ما هي غرف التواصل عن طريق الإنترنت (الويكي).	Yes	No
15	I visit wiki often. أزور غرف التواصل عن طريق الإنترنت في بعض الأحيان (الويكي).	Yes	No
16	I have a wiki. عندي غرفة للتواصل عن طريق الإنترنت.	Yes	No
17	I know how to use wiki. أعلم كيفية استخدام غرف التواصل عن طريق الإنترنت.	Yes	No

Appendix E

Collaborative Writing Questionnaire for Experimental Group

#	Items	SD	D	N	A	SA
1-	I can fully interact with group members in the wiki environment. أستطيع التواصل مع أعضاء المجموعة في ويكي.	1	2	3	4	5
2-	I can collaborate with group members easily in the wiki environment. أستطيع التعاون مع أعضاء المجموعة بسهولة في ويكي.	1	2	3	4	5
3-	I can easily write collaboratively with group members in the wiki environment. أستطيع أن اكتب بشكل تعاوني مع أعضاء المجموعة بسهولة في ويكي.	1	2	3	4	5
4-	Writing collaboratively with group members in wiki environment, I do not feel lonely. لا أشعر بالوحدة في الكتابة التعاونية مع أعضاء المجموعة في ويكي.	1	2	3	4	5
5-	Writing collaboratively with group members in wiki environment, I obtain encouragement and support. أحصل على الدعم والتشجيع في الكتابة التعاونية مع أعضاء المجموعة في ويكي.	1	2	3	4	5
6-	Writing collaboratively with group members in wiki environment, I feel comfortable. أشعر بالاطمئنان في الكتابة التعاونية مع أعضاء المجموعة في ويكي.	1	2	3	4	5
7-	Collaborative writing via wiki is beneficial for my English writing. الكتابة التعاونية في ويكي مفيدة للكتابة باللغة الإنجليزية.	1	2	3	4	5
8-	Collaborative writing via wiki has helped me to write an English composition with more quantity. الكتابة التعاونية في ويكي ساعدتني في الكتابة باللغة الإنجليزية بكمية أكبر.	1	2	3	4	5
9-	Collaborative writing via wiki has helped me to write faster in English.	1	2	3	4	5

	الكتابة التعاونية في ويكي ساعدتني في الكتابة باللغة الإنجليزية بشكل أسرع.					
10-	Collaborative writing via wiki has helped me to know how to revise my writing better. الكتابة التعاونية في ويكي ساعدتني في مراجعة كتابتي بشكل أفضل.	1	2	3	4	5
11-	Collaborative writing via wiki has helped improve my English writing. الكتابة التعاونية في ويكي ساعدتني في تحسين الكتابة باللغة الإنجليزية.	1	2	3	4	5
12-	Collaborative writing via wiki has helped me to express myself in English better. الكتابة التعاونية في ويكي ساعدتني في التعبير عن نفسي في الكتابة باللغة الإنجليزية بشكل أفضل.	1	2	3	4	5
13-	Collaborative writing via wiki has helped me to be less afraid of writing English compositions. الكتابة التعاونية في ويكي ساعدتني في التقليل من الخوف من الكتابة باللغة الإنجليزية.	1	2	3	4	5
14-	Collaborative writing via wiki has helped to be less nervous about writing English compositions الكتابة التعاونية في ويكي ساعدتني في التقليل من التوتر من الكتابة باللغة الإنجليزية.	1	2	3	4	5
15-	Collaborative writing via wiki has motivated me to writing English compositions. الكتابة التعاونية في ويكي شجعتني في الكتابة باللغة الإنجليزية.	1	2	3	4	5
16-	Collaborative writing via wiki has increased my interest in writing English compositions. الكتابة التعاونية في ويكي زادت عندي الرغبة في الكتابة باللغة الإنجليزية.	1	2	3	4	5
17-	Collaborative writing via wiki has made me feel that writing English compositions is interesting. الكتابة التعاونية في ويكي جعلت الكتابة باللغة الإنجليزية ممتعة.	1	2	3	4	5
18-	Collaborative writing via wiki has made me feel that writing English compositions is interesting. أشعر بالاستمتاع في الكتابة باللغة الإنجليزية في ويكي.	.1	2	3	4	5
19-	I enjoy using wiki for collaborative writing this semester.	1	2	3	4	5

	استمتعت في الكتابة التعاونية في ويكي هذا الفصل.					
20-	I will keep using wiki for collaborative writing to improve my English writing after this semester. سأواصل استخدام ويكي المستخدم في الكتابة التعاونية لتطوير مهارة الكتابة باللغة الإنجليزية بعد هذا الفصل.	1	2	3	4	5
21-	I will invite my friends to participate in writing collaboratively via wiki. سأدعو أصدقائي للمشاركة في الكتابة التعاونية في ويكي.	1	2	3	4	5
22-	I hope the teacher will let us use wiki for collaborative writing next semester. أتمنى من الأستاذ المواصلة في استخدام ويكي في الفصل القادم.	1	2	3	4	5

Appendix F

Collaborative Writing Questionnaire for Control Group

#	Items	SD	D	N	A	SA
1-	I can fully interact with group members using paper-and-pencil. أستطيع التواصل مع أعضاء المجموعة في الكتابة الورقية.	1	2	3	4	5
2-	I can collaborate with group members easily in using paper-and-pencil. أستطيع التعاون مع أعضاء المجموعة بسهولة في الكتابة الورقية.	1	2	3	4	5
3-	I can easily write collaboratively with group members using paper-and-pencil. أستطيع أن اكتب بشكل تعاوني مع أعضاء المجموعة بسهولة في الكتابة الورقية.	1	2	3	4	5
4-	Writing collaboratively with group members using paper-and-pencil, I do not feel lonely. لا أشعر بالوحدة في الكتابة التعاونية مع أعضاء المجموعة في الكتابة الورقية.	1	2	3	4	5
5-	Writing collaboratively with group members using paper-and-pencil, I obtain encouragement and support. أحصل على الدعم والتشجيع في الكتابة التعاونية مع أعضاء المجموعة في الكتابة الورقية.	1	2	3	4	5
6-	Writing collaboratively with group members using paper-and-pencil, I feel comfortable. أشعر بالاطمئنان في الكتابة التعاونية مع أعضاء المجموعة في الكتابة الورقية.	1	2	3	4	5
7-	Collaborative writing using paper-and-pencil is beneficial for my English writing. الكتابة التعاونية في الكتابة الورقية مفيدة للكتابة باللغة الإنجليزية.	1	2	3	4	5
8-	Collaborative writing using paper-and-pencil has helped me to write an English composition with more quantity. الكتابة التعاونية في الكتابة الورقية ساعدتني في الكتابة باللغة الإنجليزية بكمية أكبر.	1	2	3	4	5
9-	Collaborative writing using paper-and-pencil has helped me	1	2	3	4	5

	to write faster in English. الكتابة التعاونية الورقية ساعدتني في الكتابة باللغة الإنجليزية بشكل أسرع.					
10-	Collaborative writing using paper-and-pencil has helped me to know how to revise my writing better. الكتابة التعاونية الورقية ساعدتني في مراجعة كتابتي بشكل أفضل.	1	2	3	4	5
11-	Collaborative writing using paper-and-pencil has helped improve my English writing. الكتابة التعاونية الورقية ساعدتني في تحسين الكتابة باللغة الإنجليزية.	1	2	3	4	5
12-	Collaborative writing using paper-and-pencil has helped me to express myself in English better. الكتابة التعاونية الورقية ساعدتني في التعبير عن نفسي في الكتابة باللغة الإنجليزية بشكل أفضل.	1	2	3	4	5
13-	Collaborative writing using paper-and-pencil has helped me to be less afraid of writing English compositions. الكتابة التعاونية الورقية ساعدتني في التقليل من الخوف من الكتابة باللغة الإنجليزية.	1	2	3	4	5
14-	Collaborative writing using paper-and-pencil has helped to be less nervous about writing English compositions. الكتابة التعاونية الورقية ساعدتني في التقليل من التوتر من الكتابة باللغة الإنجليزية.	1	2	3	4	5
15-	Collaborative writing using paper-and-pencil has motivated me to writing English compositions. الكتابة التعاونية الورقية شجعتني في الكتابة باللغة الإنجليزية.	1	2	3	4	5
16-	Collaborative writing using paper-and-pencil has increased my interest in writing English compositions. الكتابة التعاونية الورقية زادت عندي الرغبة في الكتابة باللغة الإنجليزية.	1	2	3	4	5
17-	Collaborative writing using paper-and- pencil has made me feel that writing English compositions is interesting. الكتابة التعاونية الورقية جعلت الكتابة باللغة الإنجليزية ممتعة.	1	2	3	4	5
18-	Collaborative writing using paper-and- pencil has made me feel that writing English compositions is interesting. أشعر بالاستمتاع في الكتابة باللغة الإنجليزية في الكتابة الورقية.	1	2	3	4	5

19-	I enjoy using paper-and- pencil for collaborative writing this semester. استمتعت في هذا الفصل من الكتابة التعاونية الورقية.	1	2	3	4	5
20-	I will keep using paper-and- pencil for collaborative writing to improve my English writing after this semester. سأواصل استخدام الكتابة الورقية التعاونية لتطوير مهارة الكتابة باللغة الإنجليزية بعد هذا الفصل.	1	2	3	4	5
21-	I will invite my friends to participate in writing collaboratively via wiki. سأدعو أصدقائي للمشاركة في الكتابة التعاونية الورقية.	1	2	3	4	5
22-	I hope the teacher will let us use wiki for collaborative writing next semester. أتمنى من الأستاذ المواصلة في استخدام الكتابة التعاونية الورقية في الفصل القادم.	1	2	3	4	5

Appendix G

Interview Questions

Interview Questions for the Traditional and the Control Groups

1. You have been in collaborative writing course using a wiki/traditional notebook for over three months. Can you tell me your general experience of collaborative writing?
2. During collaborative writing via wiki/traditional notebook, tell me what it is like to interact with the members of your group in order to compose a piece of writing?
3. In one sentence, can you describe your collaborative writing experience via wiki/traditional notebook?
4. Is wiki/traditional notebook collaborative writing easy to use? Why? Or why not?
5. Is wiki/traditional notebook collaborative writing helpful? Why? Or why not?
6. Based from your own experience, can you think of advantages and disadvantages of collaborative writing via wiki/traditional notebook?
7. Can you describe your experience of the process of writing (e.g., brainstorming, drafting, editing, and publishing) in collaborative writing via wiki/traditional notebook?
8. In the future, do you think you will use wiki/traditional notebook in collaborative writing?
9. Do you have any suggestion about how to use wiki/traditional notebook in collaborative writing in the future?

Appendix H

Group Directions on Collaborative Writing

Collaborative Writing Directions

1. Brainstorming: At this stage, students are asked to start thinking thoroughly about the topic and how to organize their essay by various means, such as outlining and drawing a map or diagram. All students have to write their own ideas together on wiki/notebook, and then each student has the opportunity to read their peers' ideas and comment on them. Grammatical errors should not be a concern at this level, as the main purpose is to generate as many ideas as possible to cover the topic. All ideas are welcomed as long as they are relevant to the topic, and later the students may organize their thoughts together.
2. Rough Draft: As a group, the students need to write collaboratively a rough draft (the writing is still in progress). This stage shows whether the writer(s) holds clear ideas about the topic. This draft may not be considered a complete nor error-free draft.
3. Revision and Editing: This time, however, all group members need to reread the draft paper in terms of topic sentence, thesis statement, supporting details, and conclusion in order to collaboratively discuss the word choice, grammar, and organization.
4. Final Draft: When the group polishes their paper from sentence structure errors, they have to publish their work on wiki/notebook to be seen by the public audience (e.g., the students from other groups, the teacher, and the researcher).

- Writing Assessment: Each student has to evaluate the final draft by filling out Ferris & Hedgcock's (2013) ESL composition rubric provided for each qualitative writing task. The mean score of all students' evaluations will be taken as the score of the collaborative writing.

Group Members' Boundaries and Responsibilities

Collaborative writing can be a challenging experience for some students since the individual writing is the dominant way of writing they have experienced so far. Therefore, little support and encouragement may be needed as the semester goes by. Comments should be clear, focused on the problems, and stated in a polite manner. They should also highlight negative and positive part of the writing to train group members gain great experience of writing creative feedback. Rather than providing harsh feedback such as "your ideas are not clear!", one could provide a helpful comment like "your argument is clear, however we may need some additional examples!" Each group has to assign a leader and editor. The leader's tasks are to distribute responsibilities among the group members evenly and motivate his colleagues in his group to work collaboratively. The editor is accountable for providing feedback throughout the writing process.

Appendix I

Ferris and Hedgcock's (2013) ESL Composition Rubric

Name: Date		Essay Title:	Reviewer:
Recorded Score	Grade	Score Rating	
Content			
	A	24-27	Superior understanding of topic and writing context; valuable central purpose/thesis defended and supported with sound generalizations and substantial, specific, and relevant details; rich, distinct content that is original, perceptive, and /or persuasive; strong reader interest.
	B	22-23	Accurate grasp of topic and writing context; worthwhile central purpose/thesis clearly defined and supported with sound generalizations and relevant details; substantial reader interest.
	C	19-21	Acceptable but cursory understanding of topic and writing context; routine purpose/thesis supported with adequate generalizations and relevant details; suitable but predictable content that is somewhat sketchy or overly general; occasional repetitive or irrelevant material; one or two unsounded generalizations; average reader interest.
	D/F	5-18	Little or no grasp of the topic or writing context; central purpose/thesis not apparent, weak, or irrelevant to assigned task; inadequate supporting points or details; irrelevant material, numerous unsound generalizations, or needless repetition of ideas; insufficient, unsuitable, unclear, vague, or weak content; minima or no reader interest; less than specified length.
Rhetorical Structure			
	A	21-23	Exceptionally clear plan connected to thesis/purpose; plan developed with consistent attention to proportion, emphasis, logical order, flow, and synthesis of ideas; paragraphs coherent, unified, and effectively developed; striking title, introduction and conclusion
	B	18-20	Clear plan related to thesis; plan developed with proportion, emphasis, logical order, and synthesis of ideas; paragraphs coherent, unified, and adequately developed; smooth transitions between paragraphs; effective title, introduction, and conclusion
	C	16-17	Conventional plan apparent but routinely presented; paragraphs adequately unified and coherent, but minimally effective and development; one or two weak topic sentences' transitions between paragraphs apparent but abrupt mechanical, or monotonous, routine title, introduction, and conclusion

	D/F	5-15	Plan not apparent, inappropriate, undeveloped with irrelevance, redundancy, inconsistency, or inattention to logical progression; paragraphs incoherent, underdeveloped, or not unified; transitions between paragraphs unclear, ineffective, or nonexistent; weak or ineffective title, introduction, and conclusion.
Grammatical Form			
	A	18-20	Sentences skillfully constructed, unified, coherent, forceful, effectively varied; deftness in coordinating, subordinating, and emphasizing ideas; harmonious agreement of content and sentence design; impressive use of grammatical structures.
	B	16-17	Sentences accurately and coherently constructed with some variety; evident and varied coordination, coordination, and emphasis of ideas; no errors in complex patterns; effective and clear use of grammatical structure.
	C	14-15	Sentences constructed accurately but lacking in distinction; minimal skill in coordinating and subordinating ideas; little variety in sentence structure; clarity weakened by occasional awkward, incomplete, fused, and /or improperly predicted clauses and complex sentences; marginal to adequate use of grammatical structures.
	D/F	1-13	Sentences marred frequently enough to distract or frustrate the reader, numerous sentences incoherent, fused, incomplete, and /or improperly predicated; monotonous, simple sentence structure; unacceptable use of grammatical structures
Diction and Tone			
	A	16-17	Diction distinctive; fresh, precise, concrete, economical, and idiomatic word choice; word from mastery; appropriate, consistent, and engaging tone.
	B	14-15	Clear, accurate, and idiomatic diction; minor errors in word form and /or occasional weaknesses in word choice; generally clear, appropriate, and consistent tone.
	C	12-13	Satisfactory diction; generally accurate, appropriate, and idiomatic word choice, though occasionally predictable wordy, or imprecise; limited vocabulary; clarity weakened by errors in S-V and pronoun agreement, point of view, word forms; mechanical and/or inconsistent tone.
	D/F	1-11	Diction unacceptable for a college-level essay; inappropriate, non-idiomatic, and/or inaccurate word choice that distracts the reader or obscures content; numerous word form errors; inappropriate and/or inconsistent tone
Mechanics			

	A	12-13	Clarity and effectiveness of expression enhanced by consistent use of conventional punctuation, capitalization, and appalling; appealing manuscript from.
	B	10-11	Flow of communication only occasionally diverted by errors in conventional punctuation, capitalization, and spelling attractive manuscript from.
	C	8-9	Adequate clarity and effectiveness of expression, though diminished by punctuation, capitalization, and/or spelling errors; satisfactory manuscript from
	D/F	1-7	Communication hindered or obscured by frequent violations of punctuation, capitalization, and/or spelling conventions; manuscript from unattractive
Total 100	Grade		*Comments*:

Appendix J

Collaborative Writing Prompt Sample

You have read some articles about *travel* in the classroom. As a group, it is your turn to write your own experience about the advantages and disadvantages of traveling. Please remember that you need to follow the writing process of brainstorming, rough drafting, revising and editing, and final draft. You have the right to use some vocabularies and expressions from the textbook. This assignment is due in 2 weeks. Remember, this assignment should contain at least three paragraphs.

Appendix K

Permission from the Head of the English Department at Qassim University

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Higher Education
Qassim University
College of Arabic Language & Social Studies
Department of English Language & Translation

المملكة العربية السعودية
وزارة التعليم العالي
جامعة القصيم
كلية اللغة العربية والدراسات الاجتماعية
قسم اللغة الإنجليزية والترجمة

الرقم : التاريخ : / / ١٤٣ هـ

المرفقات : الموضوع :

18/05/2017

To Whom It May Concern,

This letter verifies that Mr Bandar Al Jafen has requested permission to conduct his dissertation study entitled, 'Traditional vs Wiki: Saudi Students' Performance in and Perceptions of Collaborative Writing in a Wiki' in the English Language and Translation Department at Qassim University, Saudi Arabia, during the first semester of the academic year 2017/2018. It is understood that Mr Al Jafen will be working with one of the lecturers of ENG 244 (Advanced Writing).

Both the researcher and the lecturer concerned will be collecting data from the students using a survey for all students participating in the study. Some of these students may also give permission to be interviewed by Mr Al Jafen as well.

The English Language and Translation Department at Qassim University understands that the lecturer assigned for this task and all participants will give their written informed consent to be subjects in the study, and realise that they may withdraw at any time, without any penalty. The students realise that their participation in the research study will not impact their grades for the ENG 244 course.

Additionally, under no circumstance will the identities of the lecturer or the students who are participating in Mr Al Jafen's research be made public at any time prior to, during, or following the study.

The English Language and Translation Department at Qassim University gives its permission to Mr Al Jafen to conduct his research study, which should abide with the regulations of Qassim University and with the above-mentioned information. The Department of English Language and Translation holds no responsibility for the process of this study.

For further information, please do not hesitate to contact us on Eng.Cas@qu.edu.sa.

Head of English Language and Translation Department

Dr Abdulrahman Abdullah Al-Thawab

Qassim University
Qassim University
Dept. of English & Translation

P.O.Box: 6611 - Buraidah: - Tel:(06) 3220271 - Fax:(06) 3220112
ص.ب: ٦٦١١ - بريدة: - هاتف: ٣٢٢٠٢٧١ (٠٦) - فاكس: ٣٢٢٠١١٢ (٠٦)

Appendix L

IRB Approval Letter

THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

August 22, 2017

Bandar Saleh Al Jafen,
UTK - Coll of Education, Hlth, & Human - Coll of Education,Hlth,&Human Sciences

Re: UTK IRB-17-03822-XP
Study Title: Traditional vs Wiki: Saudi Students' Performance in and Perceptions of Collaborative Writing in a Wiki

Dear Bandar Saleh Al Jafen:

The UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. It determined that your application is eligible for expedited review under 45 CFR 46.110(b)(1), categories (5), (6), and (7). The IRB has reviewed these materials and determined that they do comply with proper consideration for the rights and welfare of human subjects and the regulatory requirements for the protection of human subjects.

Therefore, this letter constitutes full approval by the IRB of your application (version 1.2) as submitted, including:
Study Consent document (Week 1) version 3 (v3.2)
Study Consent document (Week 1) Arabic translation version 3 (v3.0)
Skype Consent Statement (Week 14) Version 3 (v3.0)
Skype Consent Statement (Week 14) Arabic Translation Version 3 (v3.0)
Week 1- Recruitment email (invitation to study- link to consent and background survey) Version 3 (v3.0)
First Email Reminder (v1.0)
Second Email Reminder (v1.0)
Third Email Reminder (v1.0)
Week 1- Background Survey (v1.1)
Week 2 and Week 14- Email script Instructions for pre-test and post-test Version 3 (v3.0)
Week 2 and Week 14- Instrument Pre test and Post test writing assignments (v1.0)
Week 4,6,8,10,12 Email script Instructions for Collaborative writing Version 3 (v3.0)
Week 13- Qualtric Instrument -Collaborative Writing Questionnaire for Control (traditional class) group Version3 (v3.0)
Week 13- Qualtric- Instrument Collaborative Writing Questionnaire for Experimental (online class) Group Version 3 (v3.0)
Week 13,14- Email script Instructions for Qualtric- collaborative Questionnaire for control-traditional Version 3 (v3.0)
Week 14- Email script invitation to Skype interview (with link to consent) Version 3 (v3.0)
Week 14 Instrument - Skype interview questions Version 3 - (Version 3.0)
Week 15- Skype interview questions (v1.0)

Institutional Review Board | Office of Research & Engagement
1534 White Avenue Knoxville, TN 37996-1529
865-974-7697 865-974-7400 fax irb.utk.edu

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Flagship Campus of the University of Tennessee System ut

The listed documents have been dated and stamped IRB approved. Approval of this study will be valid from August 22, 2017 to August 21, 2018.

Waiver of Documentation of Informed Consent for interviewed participants 46.117(d)(2).

In the event that subjects are to be recruited using solicitation materials, such as brochures, posters, web-based advertisements, etc., these materials must receive prior approval of the IRB. Any revisions in the approved application must also be submitted to and approved by the IRB prior to implementation. In addition, you are responsible for reporting any unanticipated serious adverse events or other problems involving risks to subjects or others in the manner required by the local IRB policy.

Finally, re-approval of your project is required by the IRB in accord with the conditions specified above. You may not continue the research study beyond the time or other limits specified unless you obtain prior written approval of the IRB.

Sincerely,

Colleen P. Gilrane

Colleen P. Gilrane, Ph.D.
Chair

Institutional Review Board | Office of Research & Engagement
1534 White Avenue Knoxville, TN 37996-1529
865-974-7697 865-974-7400 fax irb.utk.edu

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Flagship Campus of the University of Tennessee System ut

Appendix M

Permission Letter from the Developer of Collaborative Writing Questionnaire

WH

wu hueiru <wuhueiruru@gmail.com>
Reply all |
Tue 5/2/2017, 10:58 PM
Al Jafen, Bandar Saleh

Dear Bandar Aljafen,

I am happy to grant you the permission to use my instruments.

Wish you a successful dissertation defense.

Best,
Hui-Ju Wu

Appendix N

Dissertation Tables and Figures

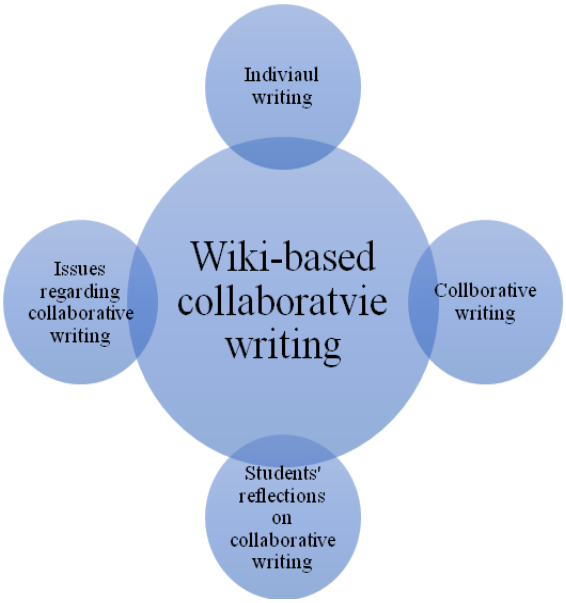

Figure 1. Four dimensions of the study.

Figure 2. Lev Vygotsky's Zone of Proximal Development (ZPD).

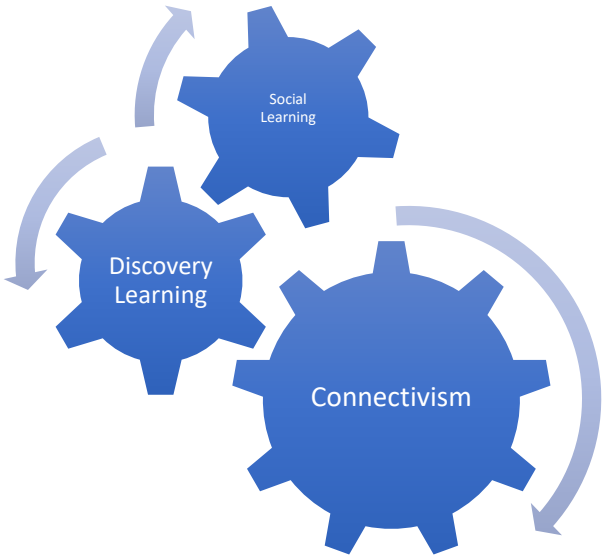

Figure 3. The relationship between the three theories of the theoretical framework.

Table 1

The Background Survey of the Current Participants

Traditional and Wiki classrooms				
	Responses			
Items	Traditional Class		Wiki Class	
	Yes (1)	No (2)	Yes (1)	No (2)
I feel anxious when I write a composition in English.	22 (61%)	14 (39%)	19 (51%)	18 (49%)
I like to write a composition in English.	24 (67%)	12 (33%)	12 (32%)	25 (68%)
I consider myself to be a good writer in English.	7 (19%)	29 (81%)	10 (27%)	27 (73%)
I know what collaborative writing is.	18 (50%)	18 (50%)	17 (46%)	20 (54%)
I have the experience of writing collaboratively.	7 (19%)	29 (81%)	9 (24%)	28 (76%)

Table 1 Continued

Traditional and Wiki classrooms				
Items	Responses			
	Traditional Class		Wiki Class	
	Yes (1)	No (2)	Yes (1)	No (2)
I prefer (1) individual writing or (2) collaborative writing.	25 (69%)	11 (31%)	22 (60%)	15 (41%)
Wiki Classroom Only				
I have the experience of composing using technology.	X	X	16 (43%)	21 (57%)
I prefer to compose (1) using pen-and-paper or (2) using technology.	X	X	19 (51%)	18 (49%)
I know what online collaborative writing is.	X	X	12 (32%)	24 (65%)
I have the experience of online collaborative writing.	X	X	7 (19%)	30 (81%)
I am interested in online collaborative writing.	X	X	24 (65%)	13 (35%)
I own a computer.	X	X	34 (92%)	3 (8%)
I have Internet access at home.	X	X	36 (97%)	1 (3%)
I know what a wiki is.	X	X	10 (27%)	27 (73%)
I visit wiki often.	X	X	4 (11%)	33 (89%)
I have a wiki.	X	X	7 (19%)	30 (81%)
I know how to use wiki.	X	X	9 (24%)	28 (76%)

Table 2

The Timeline of the Data Collection

Week	Wiki Class	Paper-and-Pencil Class
1	1. Pre-test of Individual Writing 2. Background Survey 3. Training Session: 4. Grouping and Assigning Roles. 5. Setting up Wiki Groups. 6. Actual Practice of Wiki Collaborative Writing.	1. Pre-Test of Individual Writing 2. Background Survey 3. Training Session: 4. Grouping and Assigning Roles. 5. Setting up Face-to-Face Groups. 6. Actual Practice of Traditional Collaborative Writing.
2-3	Collaborative Writing 1	
4-5	Collaborative Writing 2	
6-7	Collaborative Writing 3	
8-9	Collaborative Writing 4	
10-13	Collaborative Writing 5	
	Collaborative Writing Questionnaire	
14-15	Post-Test of Individual	
	Interviews.	

Table 3

Summary of Research Questions, Data Collection, and Data Analysis

Research Questions	Data Collection	Data Analysis
Are there any statistically significant differences in the improvement of individual writing between pencil-and-paper and online writing participants?	Pre-Test and Post-Test	Descriptive Statistics and Repeated Measures ANOVA
Are there any statistically significant differences in the improvement of collaborative writing between pencil-and-paper and online writing participants?	Three Collaborative Writing Tasks	Descriptive Statistics and Repeated Measures ANOVA
How do undergraduate EFL students perceive traditional methods of collaborative writing compared with wiki-supported experiences?	Collaborative Writing Questionnaire	Descriptive Statistic and Independent *t*-Test
What are the advantages, disadvantages, problems, and themes that may arise in online and traditional collaborative writing?	Interview	Content Analysis

Table 4

Test-Retest Reliability (r) of the Traditional Collaborative Writing Questionnaire

		First Administration	Second Administration
First Administration	Pearson *r*	1	.753**
	Sig. (Two-tailed)		.001
	N	16	16
Second Administration	Pearson *r*	.753**	1
	Sig. (Two-tailed)	.001	
	N	16	16

**$p < .01$

Table 5

Test-Retest Reliability (r) of the Online Collaborative Writing Questionnaire

		First Administration	Second Administration
First Administration	Pearson *r*	1	.636**
	Sig. (Two-tailed)		.008
	N	16	16
Second Administration	Pearson *r*	.636**	1
	Sig. (Two-tailed)	.008	
	N	16	16

**$p < .01$

Table 6

Reliability of Each Element of the Traditional Collaborative Writing Questionnaire

Element	Item	Reliability (α) First Administration	Reliability (α) Second Administration
Collaborative Writing	1,2,3,4,5,6	.76	.88
Writing Performance	7,8,9,10,11,12	.78	.85
Writing Apprehension	13,14,15,16,17,18	.86	.88
Future Motivation Use	19,20,21,22	.92	.90

N=16

Table 7

Reliability of Each Element of the Online Collaborative Writing Questionnaire

Element	Item	Reliability (*α*) First Administration	Reliability (*α*) Second Administration
Collaborative Writing	1,2,3,4,5,6	.97	.94
Writing Performance	7,8,9,10,11,12	.92	.90
Writing Apprehension	13,14,15,16,17,18	.88	.92
Future Motivation Use	19,20,21,22	.85	.76

N=16

Table 8

Descriptive Analysis of the Quantity of Individual Writing at Two Times Between Two Treatments

Treatment	Time	*N*	Min	Max	*M*	*SD*
Traditional	Pretest	38	47	338	152.26	69.62
	post-test	38	86	301	185.05	61.75
Wiki	Pretest	38	60	340	174.05	66.87
	post-test	38	117	312	200.74	52.57
Total	Pretest	76	47	340	163.16	68.68
	post-test	76	86	312	192.89	57.50

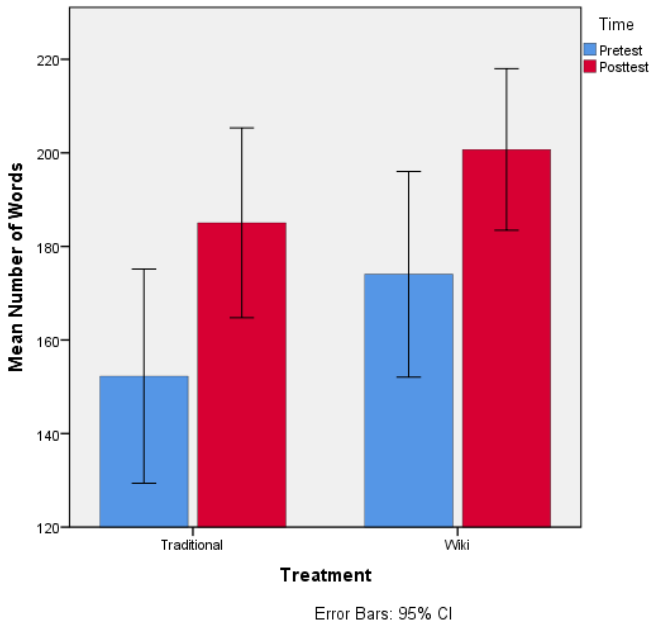

Figure 4. Representation of descriptive analysis of the quantity of individual writing at two times between two treatments.

Table 9

Summary of Repeated Measures ANOVA for the Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	33602.632	1	33602.632	24.044	.000	.245
Time * Treatment	Linear	354.105	1	354.105	.253	.616	.003
Error (Time)	Linear	103417.263	74	1397.531			

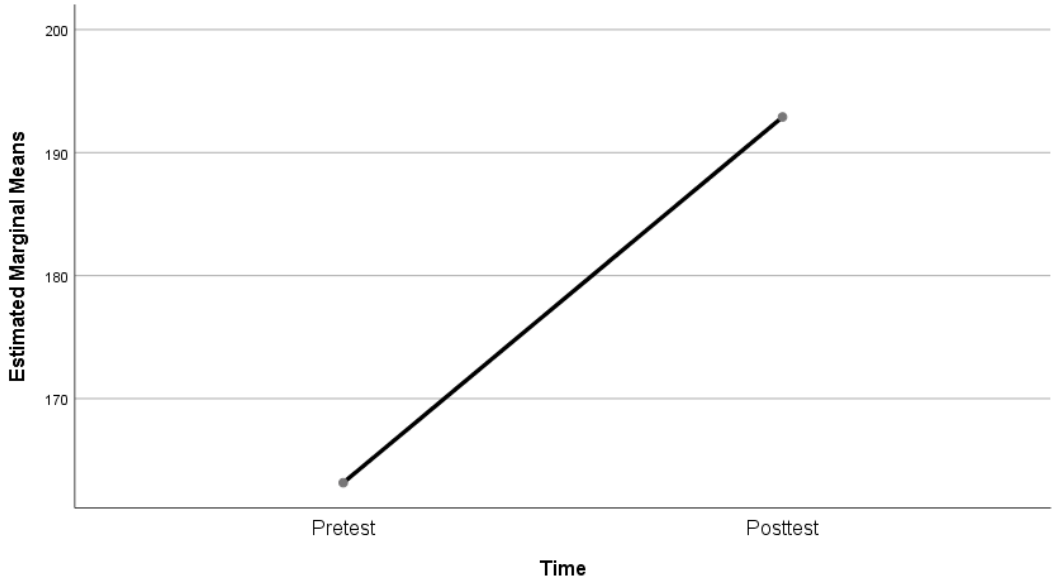

Figure 5. The quantity of individual writing at two times.

Table 10

Summary of Repeated Measures ANOVA for the Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	4817392.105	1	4817392.105	735.369	.000	.909
Treatment	13340.632	1	13340.632	2.036	.158	.027
Error	484773.263	74	6550.990			

Table 11

Pretest Intraclass Correlation Coefficient (ICC) of Individual Writing

	Intraclass Correlation	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Single Measures	.988	.981	.993	168.935	75	75	.000
Average Measures	.994	.991	.996	168.935	75	75	.000

Table 12

Post-test Intraclass Correlation Coefficient (ICC) of Individual Writing

	Intraclass Correlation	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Single Measures	.993	.989	.996	291.182	75	75	.000
Average Measures	.997	.995	.998	291.182	75	75	.000

Table 13

Descriptive Analysis of the Quality of Individual Writing at Two Times Between the Two Treatments

Treatment	Time	*N*	Min	Max	*M*	*SD*
Traditional	Pretest	38	27	97.5	69.03	15.51
	post-test	38	38	100	73.96	14.93
Wiki	Pretest	38	54	97.5	72.90	10.83
	post-test	38	60.5	100	82.57	11.32
Total	Pretest	76	27	97.5	70.97	13.43
	post-test	76	38	100	78.27	13.86

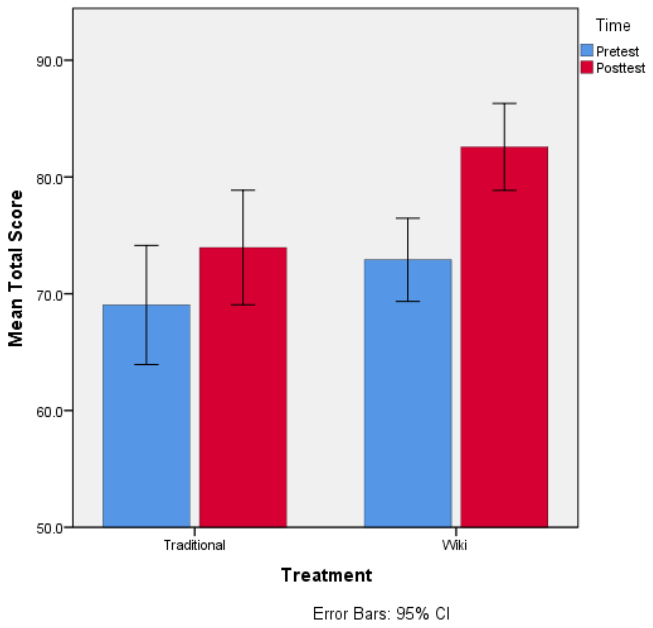

Figure 6. Representation of a descriptive analysis of the quality of individual writing at two times between the two treatments.

Table 14

Summary of a Repeated Measures ANOVA for the Quality of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	2022.831	1	2022.831	65.821	.000	.471
Time * Treatment	Linear	214.344	1	214.344	6.975	.010	.086
Error (Time)	Linear	2274.201	74	30.732			

Table 15

Summary of a Repeated Measures ANOVA for the Quality of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	846396.752	1	846396.752	2612.786	.000	.972
Treatment	1481.252	1	1481.252	4.573	.036	.058
Error	23971.872	74	323.944			

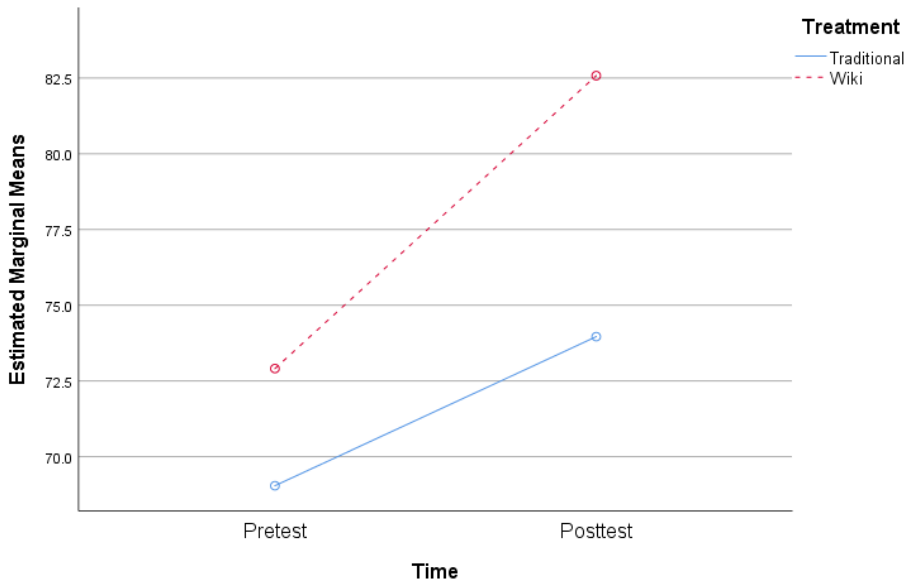

Figure 7. The quality of individual writing at two times between the two treatments.

Table 16

Descriptive Analysis of the Concepts of Quality of Individual Writing at Two Times Between the Two Treatments

Concepts of Individual Writing	*N*	Min	Max	*M*	*SD*
Pre-content	76	5	27	19.45	4.48
Post-content	76	6	27	20.45	4.24
Pre-rhetorical structure	76	7	23	16.45	3.44
Post-rhetorical structure	76	9	23	18.96	3.25
Pre-grammatical form	76	6	20	14.33	3.02
Post-grammatical form	76	8	20	15.07	3.10
Pre-diction and tone	76	6	17	11.89	2.66
Post-diction and tone	76	7	19	13.76	2.75
Pre-mechanics	76	3	13	8.88	2.43
Post-mechanics	76	5	13	10.28	1.83

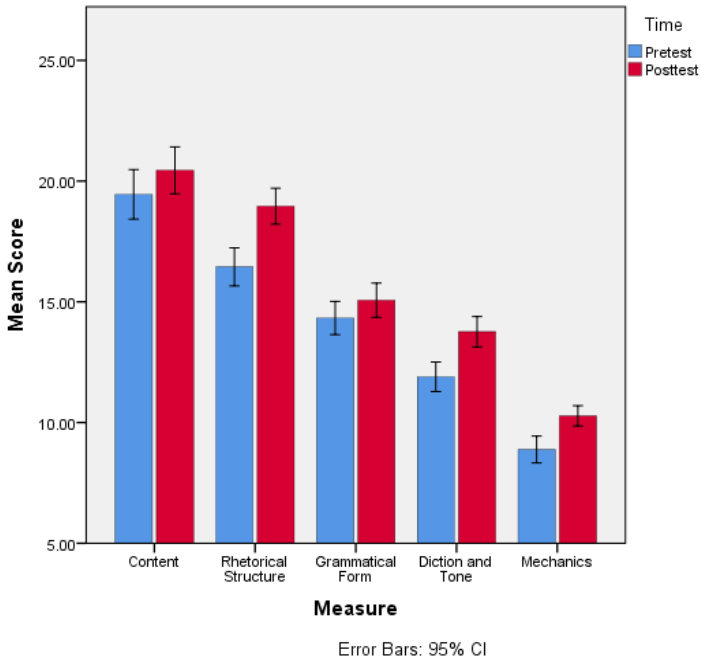

Figure 8. A representation of a descriptive analysis of the score of concepts of individual writing quality at two times in both treatments.

Table 17

Summary of a Repeated Measures ANOVA for the Content of Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	38.000	1	38.000	8.724	.004	.105
Time * Treatment	Linear	23.684	1	23.684	5.438	.022	.068
Error (Time)	Linear	322.316	74	4.356			

Table 18

Summary of a Repeated Measures ANOVA for the Content of Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	60480.421	1	60480.421	1960.336	.000	.964
Treatment	232.526	1	232.526	7.537	.008	.092
Error	2283.053	74	30.852			

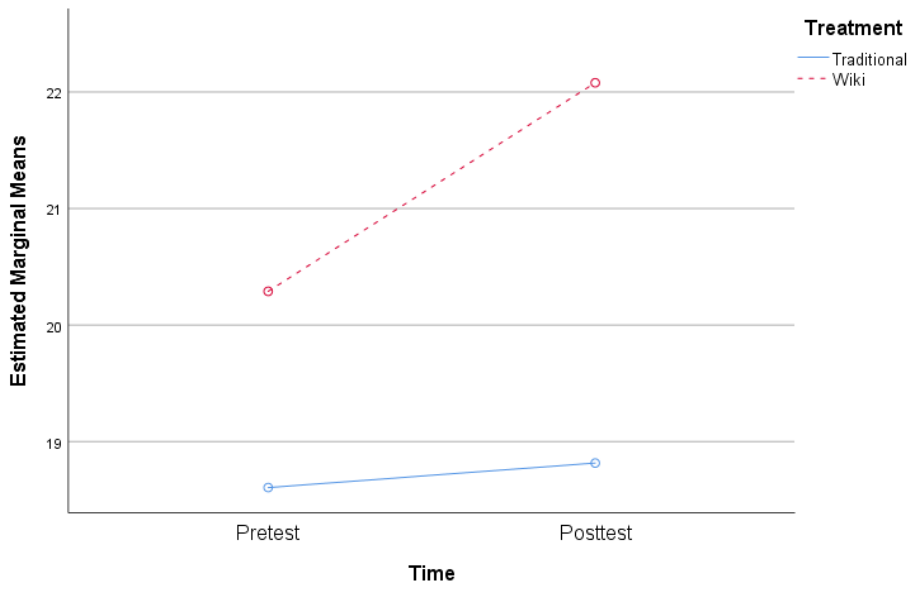

Figure 9. A representation of the scores for individual writing content at two times between the two treatments.

Table 19

Summary of a Repeated Measures ANOVA for the Rhetorical Structure of Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	240.007	1	240.007	78.931	.000	.516
Time * Treatment	Linear	3.480	1	3.480	1.145	.288	.015
Error (Time)	Linear	225.013	74	3.041			

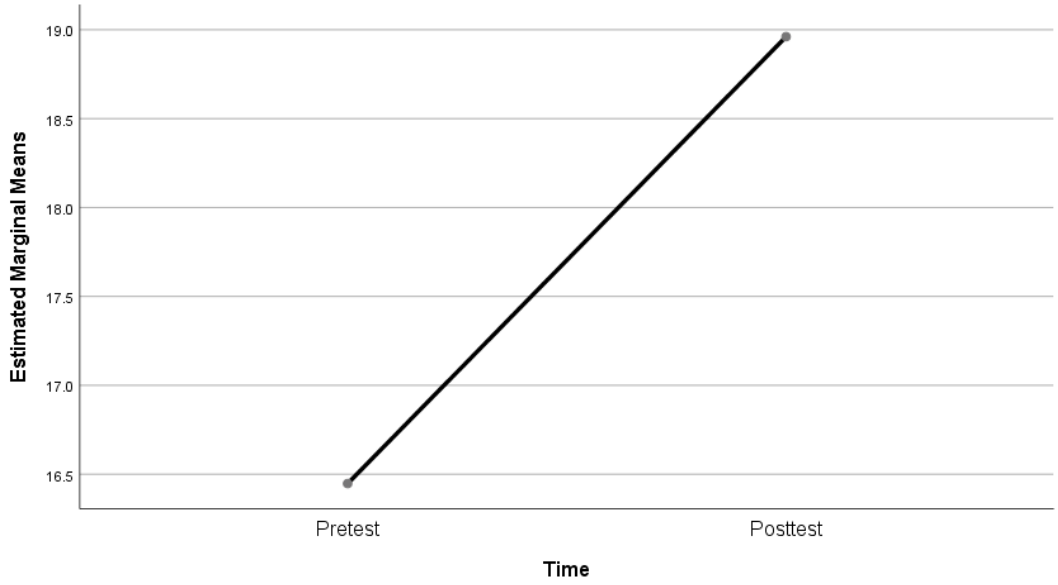

Figure 10. A representation of the score of rhetorical structure of individual writing at two times.

Table 20

Summary of a Repeated Measures ANOVA for the Rhetorical Structure of Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	47641.322	1	47641.322	2551.250	.000	.972
Treatment	75.322	1	75.322	4.034	.048	.052
Error	1381.855	74	18.674			

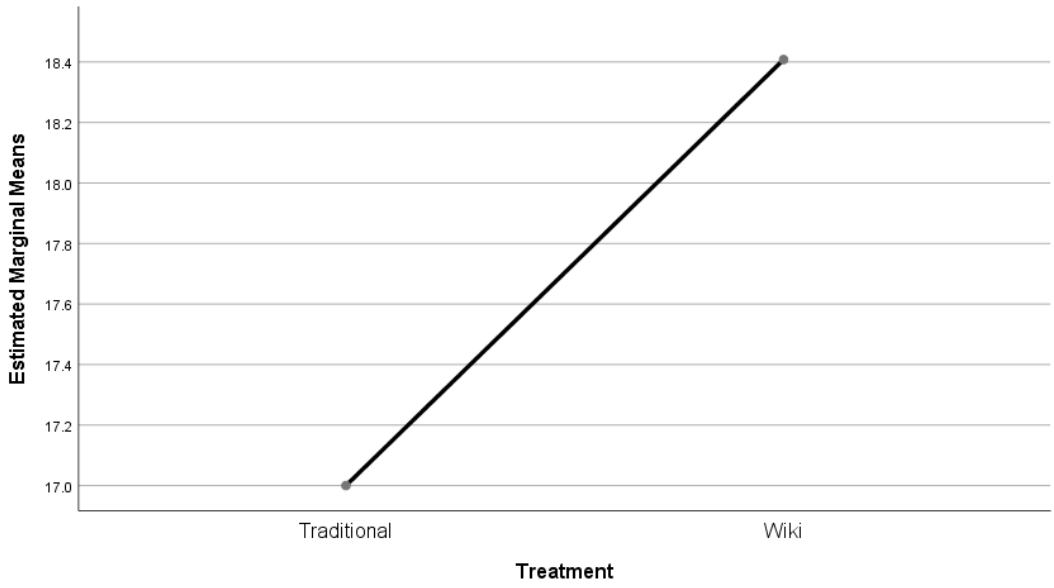

Figure 11. A representation of the score of rhetorical structure of individual writing between the two treatments.

Table 21

Summary of a Repeated Measures ANOVA for the Grammatical Form of Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	20.632	1	20.632	4.954	.029	.063
Time * Treatment	Linear	5.158	1	5.158	1.238	.269	.016
Error (Time)	Linear	308.211	74	4.165			

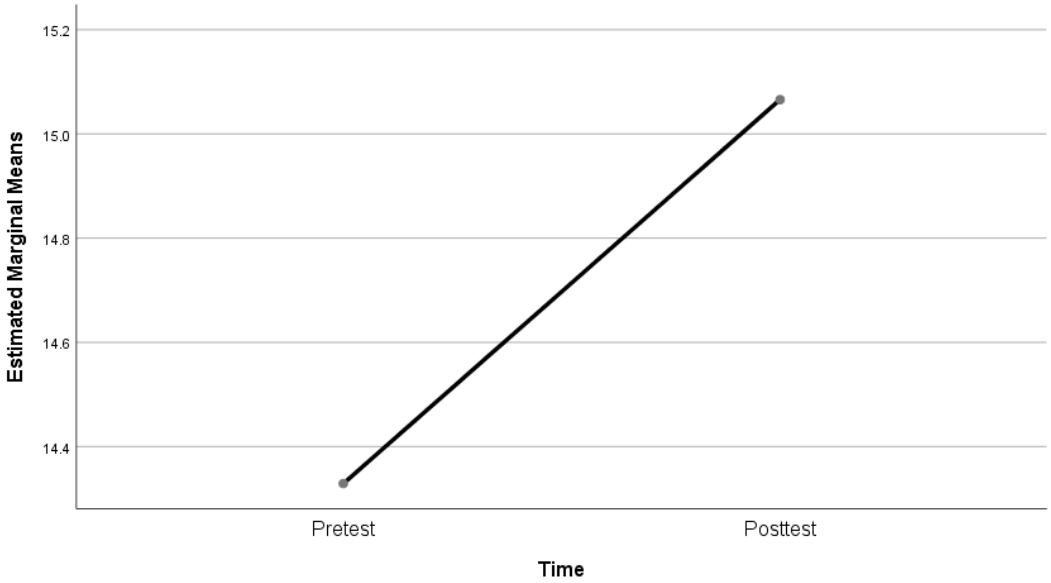

Figure 12. A representation of the score of grammatical form of individual writing at two times.

Table 22

Summary of a Repeated Measures ANOVA for the Grammatical Form of Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	32833.921	1	32833.921	2300.747	.000	.969
Treatment	40.026	1	40.026	2.805	.098	.037
Error	1056.053	74	14.271			

Table 23

Summary of Repeated Measures ANOVA for the Diction and Tone of Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	132.658	1	132.658	44.541	.000	.376
Time * Treatment	Linear	26.947	1	26.947	9.048	.004	.109
Error (Time)	Linear	220.395	74	2.978			

Table 24

Summary of a Repeated Measures ANOVA for the Diction and Tone of Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	25016.447	1	25016.447	2202.795	.000	.967
Treatment	15.158	1	15.158	1.335	.252	.018
Error	840.395	74	11.357			

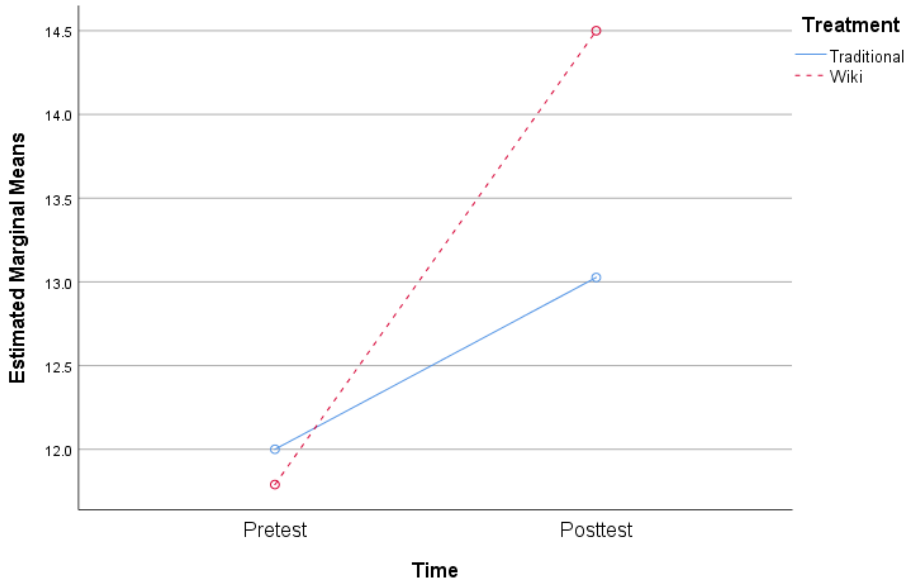

Figure 13. A representation of the score of diction and tone of individual writing at two times between the two treatments.

Table 25

Summary of a Repeated Measures ANOVA for the Mechanics of Quantity of Individual Writing at Two Different Times

Source	Time	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Linear	73.921	1	73.921	35.412	.000	.324
Time * Treatment	Linear	11.605	1	11.605	5.559	.021	.070
Error (Time)	Linear	154.474	74	2.087			

Table 26

Summary of a Repeated Measures ANOVA for the Mechanics of Quantity of Individual Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	13946.947	1	13946.947	1957.417	.000	.964
Treatment	3.789	1	3.789	.532	.468	.007
Error	527.263	74	7.125			

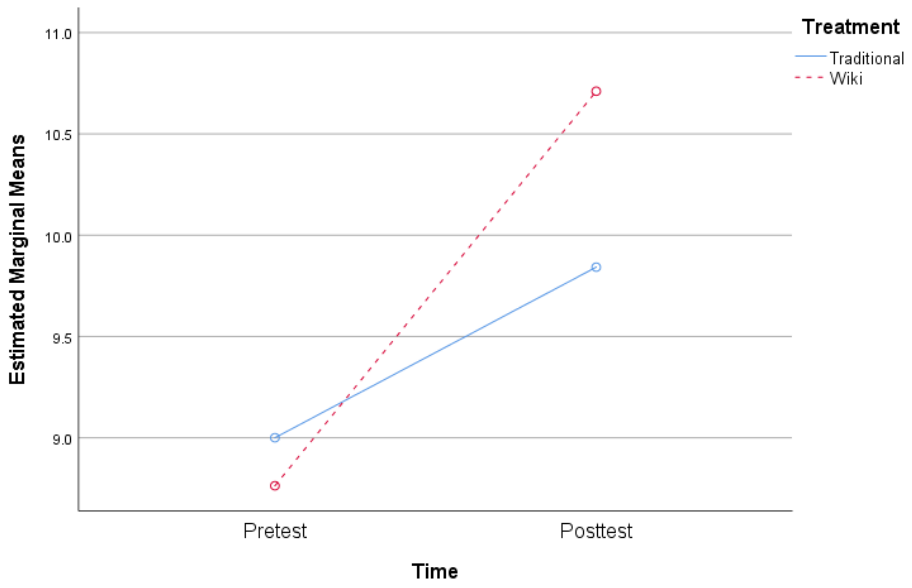

Figure 14. Representation of the score of individual writing mechanics at two times between two treatments.

Table 27

Descriptive Analysis of the Quantity of Collaborative Writing at Three Times Between the Two Treatments

Treatment	Time	*N*	Min	Max	*M*	*SD*
Traditional	1st CW	5	152	294	220.00	51.64
	2nd CW	5	182	352	299.80	68.30
	3rd CW	5	257	401	342.20	59.62
Wiki	1st CW	5	199	342	249.00	65.37
	2nd CW	5	249	330	283.40	31.05
	3rd CW	5	209	375	314.00	66.49
Total	1st CW	10	152	342	234.50	57.60
	2nd CW	10	182	352	291.60	50.76
	3rd CW	10	209	401	328.10	61.36

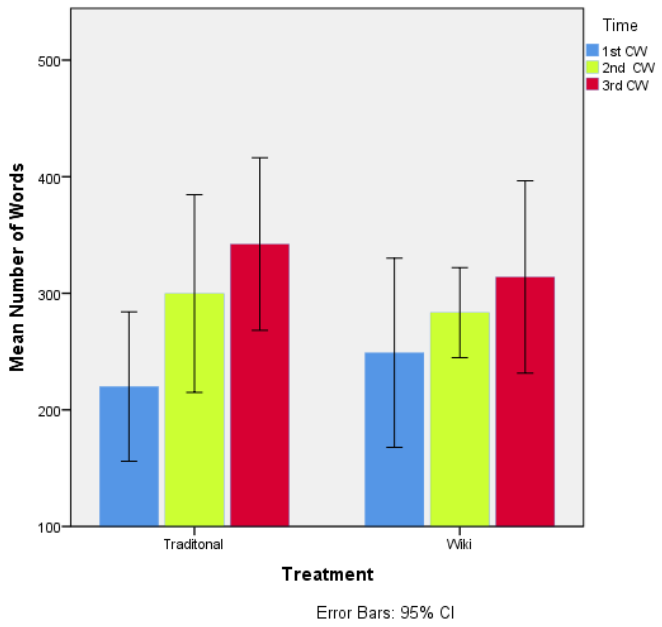

Figure 15. A representation of the descriptive analysis of the quantity of collaborative writing at two times between two treatments.

Table 28

Summary of a Repeated Measures ANOVA for the Quantity of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	44512.067	2	22256.033	14.687	.000	.647
	Greenhouse-Geisser	44512.067	1.659	26824.938	14.687	.001	.647
	Huynh-Feldt	44512.067	2.000	22256.033	14.687	.000	.647
	Lower-bound	44512.067	1.000	44512.067	14.687	.005	.647
Time * Treatment	Sphericity Assumed	4560.200	2	2280.100	1.505	.252	.158
	Greenhouse-Geisser	4560.200	1.659	2748.178	1.505	.255	.158
	Huynh-Feldt	4560.200	2.000	2280.100	1.505	.252	.158
	Lower-bound	4560.200	1.000	4560.200	1.505	.255	.158
Error (Time)	Sphericity Assumed	24245.067	16	1515.317			
	Greenhouse-Geisser	24245.067	13.275	1826.394			
	Huynh-Feldt	24245.067	16.000	1515.317			
	Lower-bound	24245.067	8.000	3030.633			

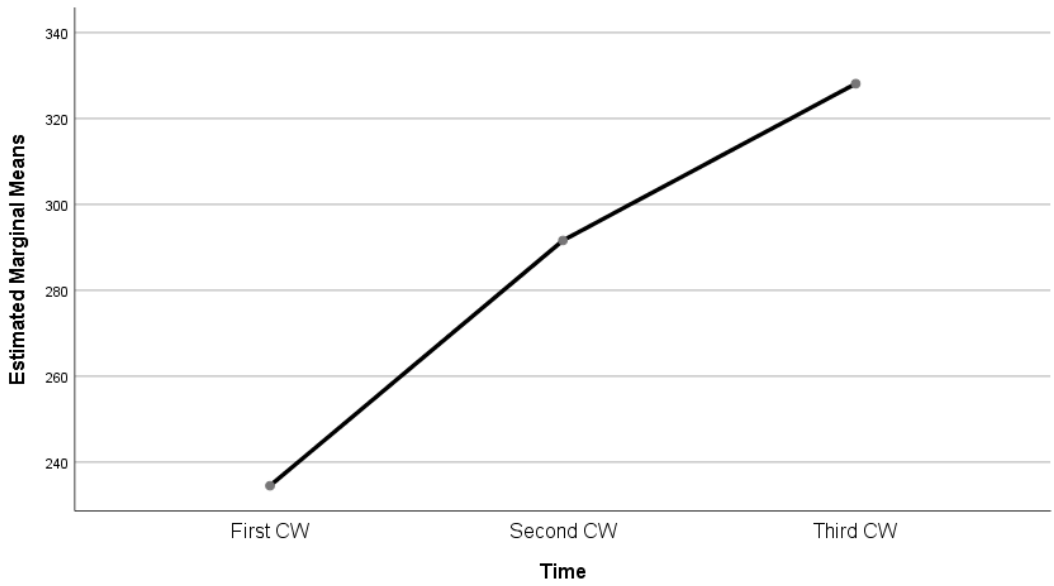

Figure 16. Representation of the quantity of collaborative writing at three times.

Table 29

Summary of Repeated Measures ANOVA for the Quantity of Collaborative Writing Between Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	2432192.133	1	2432192.133	335.801	.000	.977
Treatment	202.800	1	202.800	.028	.871	.003
Error	57943.733	8	7242.967			

Table 30

Intraclass Correlation Coefficient for the First Collaborative Writing

	Intraclass Correlation	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Single Measures	.976	.906	.994	81.356	9	9	.000
Average Measures	.988	.951	.997	81.356	9	9	.000

Table 31

Intraclass Correlation Coefficient for the Second Collaborative Writing

	Intraclass Correlation	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Single Measures	.986	.943	.996	137.806	9	9	.000
Average Measures	.993	.971	.998	137.806	9	9	.000

Table 32

Intraclass Correlation Coefficient for the Third Collaborative Writing

	Intraclass Correlation	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Single Measures	.960	.848	.990	49.043	9	9	.000
Average Measures	.980	.918	.995	49.043	9	9	.000

Table 33

Descriptive Analysis of the Quality of Collaborative Writing at Three Times Between Two Treatments

Treatment	Time	*N*	Min	Max	*M*	*SD*
Traditional	1st CW	5	67.5	82	75.90	6.11
	2nd CW	5	71.5	90	79.60	7.17
	3rd CW	5	80.5	92	86.60	4.20
Wiki	1st CW	5	68.5	89	76.70	8.64
	2nd CW	5	75.5	95	84.80	7.46
	3rd CW	5	80.5	100	90.20	7.66
Total	1st CW	10	67.5	89	76.07	7.07
	2nd CW	10	71.5	95	82.20	7.42
	3rd CW	10	80.5	100	88.40	6.13

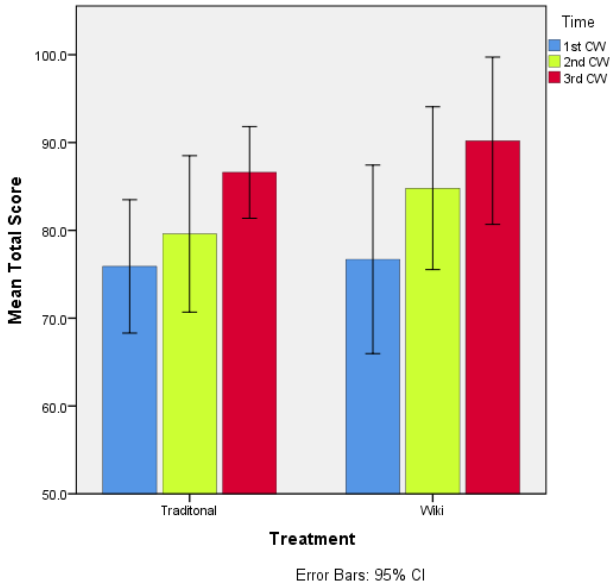

Figure 17. A representation of the descriptive analysis of the quality of collaborative writing at two times between two treatments.

Table 34

Summary of a Repeated Measures ANOVA for the Quality of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	732.200	2	366.100	113.008	.000	.934
	Greenhouse-Geisser	732.200	1.983	369.247	113.008	.000	.934
	Huynh-Feldt	732.200	2.000	366.100	113.008	.000	.934
	Lower-bound	732.200	1.000	732.200	113.008	.000	.934
Time * Treatment	Sphericity Assumed	24.800	2	12.400	3.828	.044	.324
	Greenhouse-Geisser	24.800	1.983	12.507	3.828	.044	.324
	Huynh-Feldt	24.800	2.000	12.400	3.828	.044	.324
	Lower-bound	24.800	1.000	24.800	3.828	.086	.324
Error (Time)	Sphericity Assumed	51.833	16	3.240			
	Greenhouse-Geisser	51.833	15.864	3.267			
	Huynh-Feldt	51.833	16.000	3.240			
	Lower-bound	51.833	8.000	6.479			

Table 35

Summary of Repeated Measures ANOVA for the Quality of Collaborative Writing Between Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	203198.700	1	203198.700	1437.091	.000	.994
Treatment	76.800	1	76.800	.543	.482	.064
Error	1131.167	8	141.396			

Figure 18. Representation of the quality of collaborative writing at three times between two treatments.

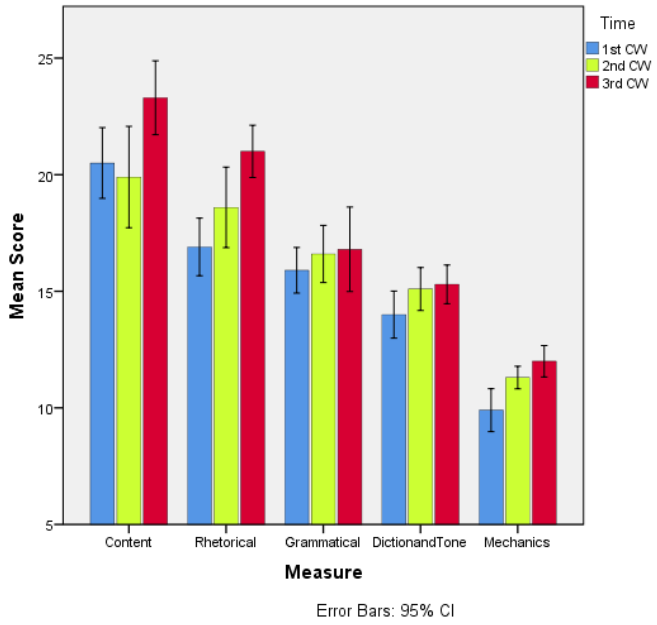

Figure 19. A representation of the descriptive analysis of the five concepts of writing in collaborative writing assignments at three times.

Table 36

Descriptive Analysis of the Concepts of Quality of Collaborative Writings at Three Times Between the Two Treatments

Concepts of Writing	*N*	Min	Max	*M*	*SD*
1st Content	10	17	23	20.50	2.12
2nd Content	10	14	25	19.90	3.03
3rd Content	10	20	27	23.30	2.12
1st Rhetorical Structure	10	15	20	16.90	1.72
2nd Rhetorical Structure	10	14	22	18.60	2.41
3rd Rhetorical Structure	10	18	23	21.00	1.56
1st Grammatical Form	10	14	18	15.90	1.37
2nd Grammatical Form	10	14	19	16.60	1.71
3rd Grammatical Form	10	13	20	16.80	2.53
1st Diction and Tone	10	12	17	14.00	1.41
2nd Diction and Tone	10	13	17	15.10	1.28
3rd Diction and Tone	10	13	17	15.30	1.16
1st Mechanics	10	8	12	9.90	1.28
2nd Mechanics	10	10	12	11.30	.675
3rd Mechanics	10	10	13	12.00	.943

Table 37

Summary of Repeated Measures ANOVA for the Content of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	65.867	2	32.933	8.982	.002	.529
	Greenhouse-Geisser	65.867	1.659	39.695	8.982	.005	.529
	Huynh-Feldt	65.867	2.000	32.933	8.982	.002	.529
	Lower-bound	65.867	1.000	65.867	8.982	.017	.529
Time * Treatment	Sphericity Assumed	12.800	2	6.400	1.745	.206	.179
	Greenhouse-Geisser	12.800	1.659	7.714	1.745	.213	.179
	Huynh-Feldt	12.800	2.000	6.400	1.745	.206	.179
	Lower-bound	12.800	1.000	12.800	1.745	.223	.179
Error (Time)	Sphericity Assumed	58.667	16	3.667			
	Greenhouse-Geisser	58.667	13.275	4.419			
	Huynh-Feldt	58.667	16.000	3.667			
	Lower-bound	58.667	8.000	7.333			

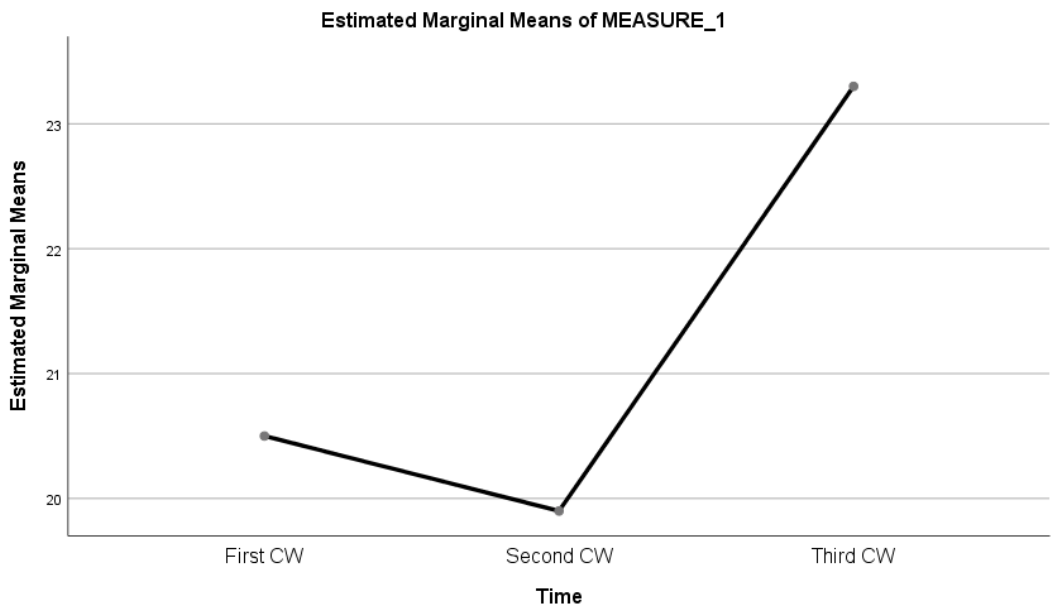

Figure 20. A representation of the score of content of collaborative writing at three times.

Table 38

Summary of a Repeated Measures ANOVA for the Content of Collaborative Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	13525.633	1	13525.633	1330.390	.000	.994
Treatment	14.700	1	14.700	1.446	.264	.153
Error	81.333	8	10.167			

Table 39

Repeated Measures ANOVA for Rhetorical Structure of Collaborative Writing at Three Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	84.867	2	42.433	27.674	.000	.776
	Greenhouse-Geisser	84.867	1.517	55.929	27.674	.000	.776
	Huynh-Feldt	84.867	2.000	42.433	27.674	.000	.776
	Lower-bound	84.867	1.000	84.867	27.674	.001	.776
Time * Treatment	Sphericity Assumed	9.267	2	4.633	3.022	.077	.274
	Greenhouse-Geisser	9.267	1.517	6.107	3.022	.096	.274
	Huynh-Feldt	9.267	2.000	4.633	3.022	.077	.274
	Lower-bound	9.267	1.000	9.267	3.022	.120	.274
Error (Time)	Sphericity Assumed	24.533	16	1.533			
	Greenhouse-Geisser	24.533	12.139	2.021			
	Huynh-Feldt	24.533	16.000	1.533			
	Lower-bound	24.533	8.000	3.067			

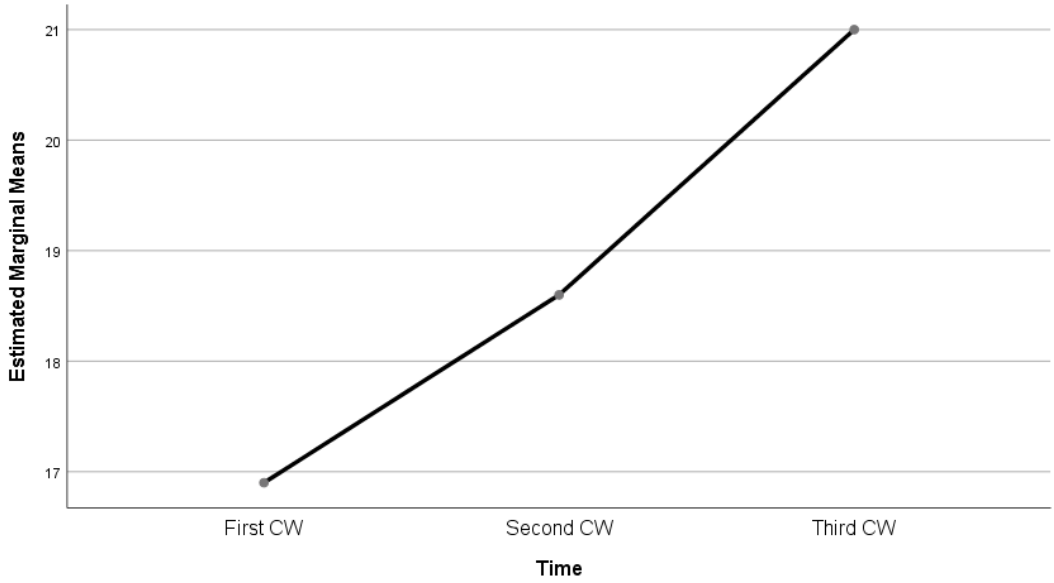

Figure 21. Representation of the scores of rhetorical structure of collaborative writing at three times.

Table 40

Summary of a Repeated Measures ANOVA for the Rhetorical Structure of Collaborative Writing Between Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	10640.833	1	10640.833	1375.970	.000	.994
Treatment	5.633	1	5.633	.728	.418	.083
Error	61.867	8	7.733			

Table 41

Summary of a Repeated Measures ANOVA for the Grammatical Form of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	4.467	2	2.233	1.752	.205	.180
	Greenhouse-Geisser	4.467	1.905	2.344	1.752	.207	.180
	Huynh-Feldt	4.467	2.000	2.233	1.752	.205	.180
	Lower-bound	4.467	1.000	4.467	1.752	.222	.180
Time * Treatment	Sphericity Assumed	18.467	2	9.233	7.242	.006	.475
	Greenhouse-Geisser	18.467	1.905	9.692	7.242	.007	.475
	Huynh-Feldt	18.467	2.000	9.233	7.242	.006	.475
	Lower-bound	18.467	1.000	18.467	7.242	.027	.475
Error (Time)	Sphericity Assumed	20.400	16	1.275			
	Greenhouse-Geisser	20.400	15.242	1.338			
	Huynh-Feldt	20.400	16.000	1.275			
	Lower-bound	20.400	8.000	2.550			

Table 42

Summary of a Repeated Measures ANOVA for the Grammatical Form of Collaborative Writing Between Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	8101.633	1	8101.633	1459.754	.000	.995
Treatment	17.633	1	17.633	3.177	.113	.284
Error	44.400	8	5.550			

Figure 22. Representation of the scores of grammatical form of collaborative writing at three times between two treatments.

Table 43

Summary of a Repeated Measures ANOVA for the Diction and Tone of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Time	Sphericity Assumed	9.800	2	4.900	6.323	.009	.441
	Greenhouse-Geisser	9.800	1.482	6.613	6.323	.019	.441
	Huynh-Feldt	9.800	1.967	4.983	6.323	.010	.441
	Lower-bound	9.800	1.000	9.800	6.323	.036	.441
Time * Treatment	Sphericity Assumed	3.800	2	1.900	2.452	.118	.235
	Greenhouse-Geisser	3.800	1.482	2.564	2.452	.137	.235
	Huynh-Feldt	3.800	1.967	1.932	2.452	.119	.235
	Lower-bound	3.800	1.000	3.800	2.452	.156	.235
Error (Time)	Sphericity Assumed	12.400	16	.775			
	Greenhouse-Geisser	12.400	11.855	1.046			
	Huynh-Feldt	12.400	15.733	.788			
	Lower-bound	12.400	8.000	1.550			

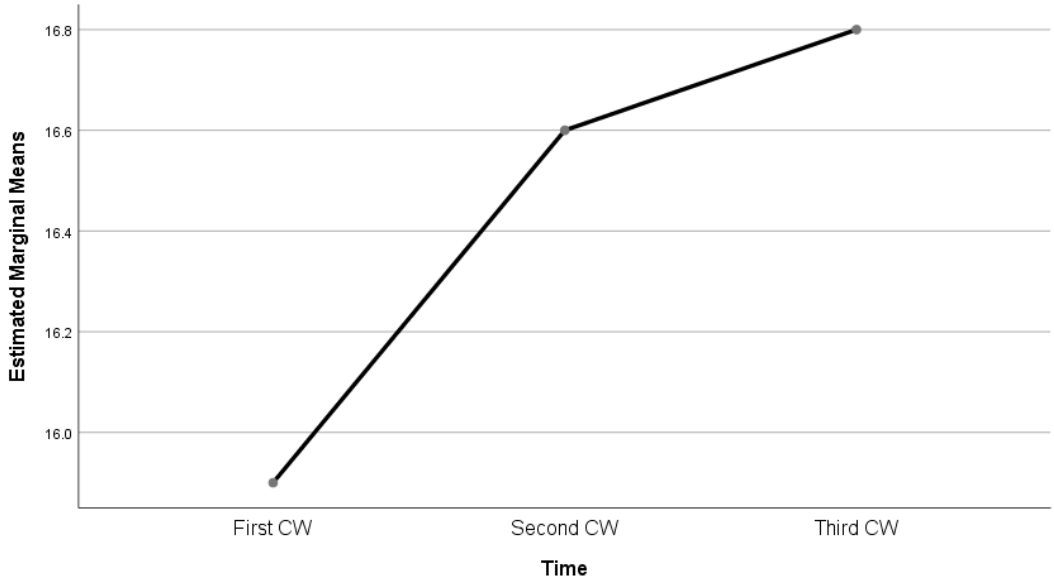

Figure 23. Representation of the scores of diction and tone of collaborative writing at three times.

Table 44

Summary of a Repeated Measures ANOVA for the Diction and Tone of Collaborative Writing Between the Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	6571.200	1	6571.200	1904.696	.000	.996
Treatment	1.200	1	1.200	.348	.572	.042
Error	27.600	8	3.450			

Table 45

Summary of a Repeated Measures ANOVA for the Mechanics of Collaborative Writing at Three Different Times

Source		Type III Sum of Squares	*df*	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	22.867	2	11.433	21.108	.000	.725
	Greenhouse-Geisser	22.867	1.380	16.575	21.108	.000	.725
	Huynh-Feldt	22.867	1.782	12.834	21.108	.000	.725
	Lower-bound	22.867	1.000	22.867	21.108	.002	.725
Time * Treatment	Sphericity Assumed	.467	2	.233	.431	.657	.051
	Greenhouse-Geisser	.467	1.380	.338	.431	.588	.051
	Huynh-Feldt	.467	1.782	.262	.431	.636	.051
	Lower-bound	.467	1.000	.467	.431	.530	.051
Error (Time)	Sphericity Assumed	8.667	16	.542			
	Greenhouse-Geisser	8.667	11.037	.785			
	Huynh-Feldt	8.667	14.254	.608			
	Lower-bound	8.667	8.000	1.083			

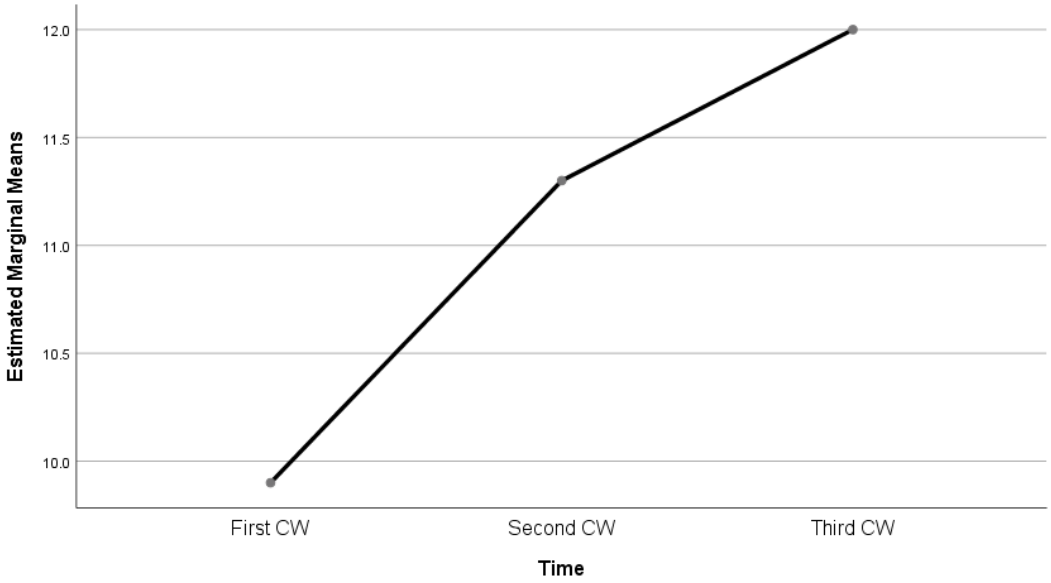

Figure 24. Representation of the summary of the scores of mechanics of collaborative writing at three times.

Table 46

Summary of a Repeated Measures ANOVA for the Mechanics of Collaborative Writing Between Two Treatments

Source	Type III Sum of Squares	*df*	Mean Square	F	Sig.	Partial Eta Squared
Intercept	3674.133	1	3674.133	1657.504	.000	.995
Treatment	.133	1	.133	.060	.812	.007
Error	17.733	8	2.217			

Table 47

Descriptive Analysis of the Students' Perceptions of Collaborative Writing

Treatment	Questionnaire Concept	*N* of Items	*N*	Min	Max	*Median*
Traditional	Possibility of Collaboration	1,2,3,4,5,6	36	1.17	5.00	4.16
	Writing Performance	7,8,9,10,11,12	36	1.00	5.00	4.00
	Writing Anxiety	13,14,15,16,17,18	36	1.00	5.00	4.16
	Motivation for Future Use	19,20,21,22	36	1.00	5.00	4.00
Wiki	Possibility of Collaboration	1,2,3,4,5,6	36	1.00	4.83	3.75
	Writing Performance	7,8,9,10,11,12	36	1.67	5.00	4.16
	Writing Anxiety	13,14,15,16,17,18	36	1.00	5.00	3.83
	Motivation for Future Use	19,20,21,22	36	1.00	5.00	3.75

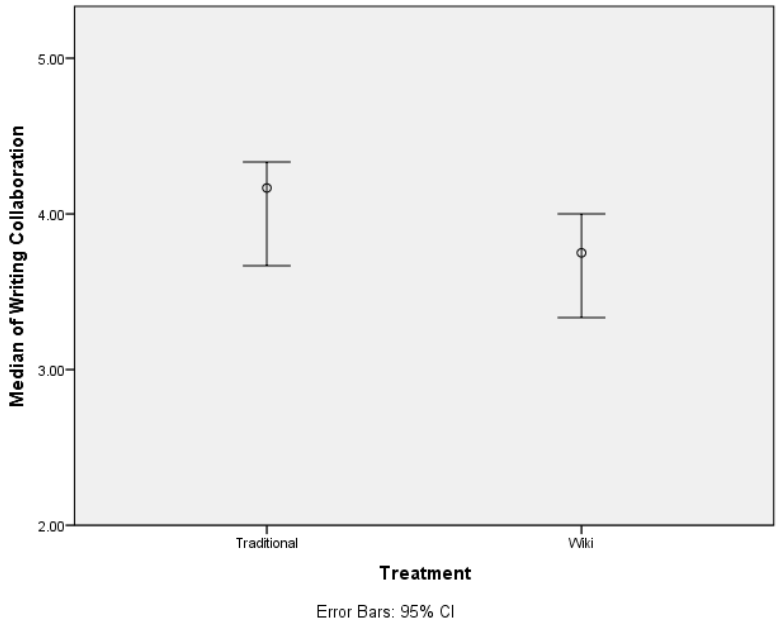

Figure 25. Representation of the median of collaborative writing for traditional and wiki treatments.

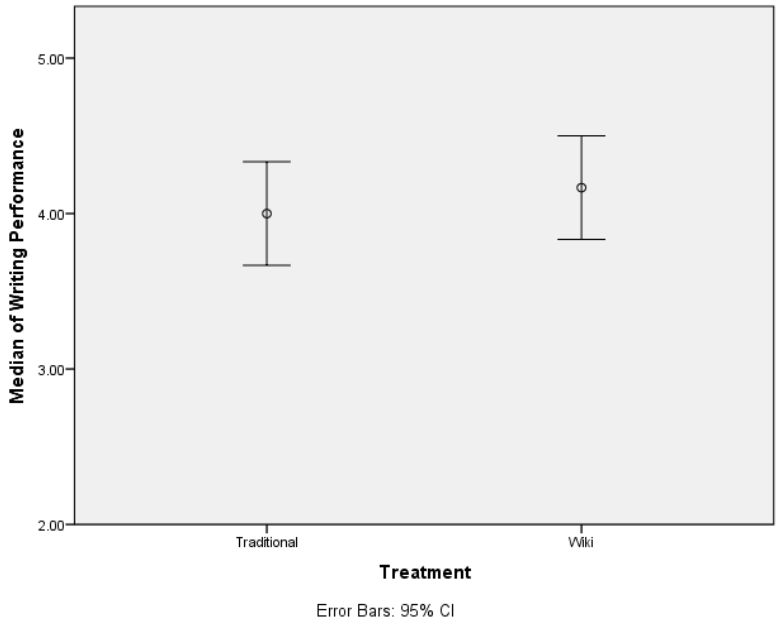

Figure 26. Representation of the median of writing performance for traditional and wiki treatments.

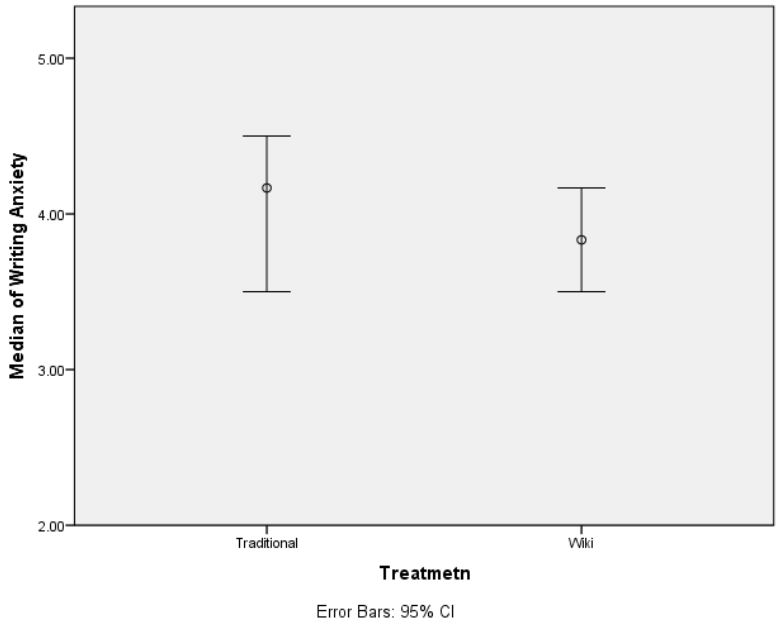

Figure 27. Representation of the median of writing anxiety for traditional and wiki treatments.

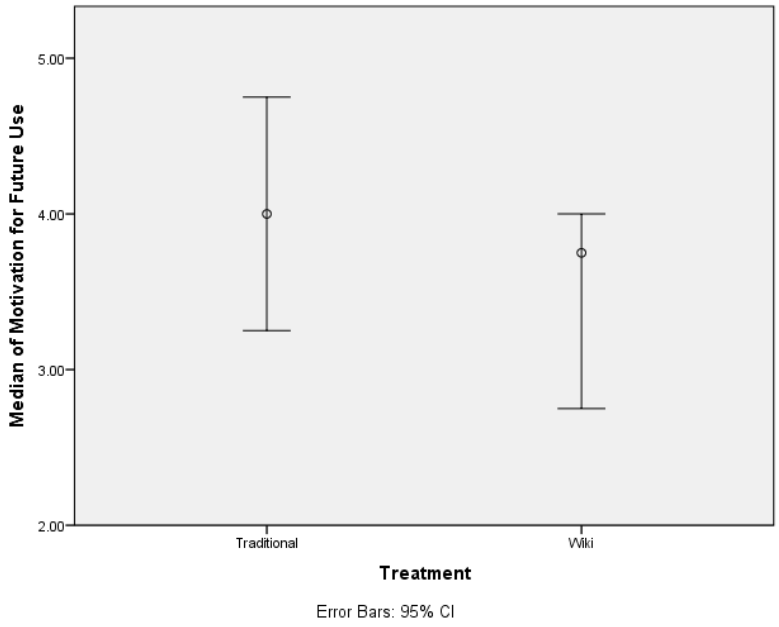

Figure 28. Representation of the median of motivation for future use for traditional and wiki treatments.

Table 48

Test of Normal Distribution of the Four Concepts of Collaborative Writing Questionnaire

Questionnaire Concept	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	*df*	Sig.	Statistic	*df*	Sig.
Collaboration	.138	72	.002	.896	72	.000
Performance	.148	72	.001	.899	72	.000
Anxiety	.136	72	.002	.920	72	.000
Motivation	.170	72	.000	.903	72	.000

Table 49

Mann Whitney Test for the Four Concepts of Collaborative Writing Questionnaire

	Writing Collaboration	Writing Performance	Writing Anxiety	Motivation of Future Use
Mann-Whitney U	441.500	580.000	561.500	480.500
Wilcoxon W	1107.500	1246.000	1227.500	1146.500
Z	-2.333	-.769	-.977	-1.894
Asymp. Sig. (2-tailed)	.020	.442	.329	.058

Table 50

Summary of Significant Changes in Individual Writing in the Following Areas: Quantity of Writing, Quality of Writing, and the Five Writing Concepts Over Time, Between Treatment Methods, and/or Via a Treatment by Time Interaction

Quantity and Quality of Writing	Time	Treatment	Time × Treatment
Number of Words	✓	×	×
Total Score	✓	✓	✓
Content	✓	✓	✓
Rhetorical Structure	✓	✓	×
Grammatical Form	✓	×	×
Diction and Tone	✓	×	✓
Mechanics	✓	×	✓

Table 51

Summary of Significant Changes in Collaborative Writing in the Following Areas: Quantity of Writing, Quality of Writing, and the Five Writing Concepts Over Time, Between Treatment Methods, and/or Via a Treatment by Time Interaction

Quantity and Quality of Writing	Time	Treatment	Time × Treatment
Number of Words	✓	×	×
Total Score	✓	×	✓
Content	✓	×	×
Rhetorical Structure	✓	×	×
Grammatical Form	×	×	✓
Diction and Tone	✓	×	×
Mechanics	✓	×	×

VITA

Bandar Aljafen is from Saudi Arabia. He attended Qassim University in Buraydah, Saudi Arabia and received a Bachelor of Arts degree in Teaching English as a Second Language (TESOL) from the English Department. He worked as a teaching assistant for 4 years at the English Department at Qassim University, Saudi Arabia. Bandar received a full scholarship from the Saudi government to pursue his graduate studies. He graduated from the Department of English Department at Indiana University of Pennsylvania in 2012 with a Mater of Art degree in TESOL. Bandar then completed his Doctor of Philosophy degree in Education majoring in Literacy Studies with specialization in ESL Education from The University of Tennessee in the spring of 2018. His main area of research interest is the integration of technology in teaching EFL writing. He is also interested in Second Language Acquisition (SLA), second language writing, and second language teaching and learning. Bandar has presented and published his research in L2 professional venues and he is a faculty member in the English Department at Qassim University, Saudi Arabia.