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The Effects of Blog-supported Collaborative Writing on Writing Performance, Writing Anxiety and Perceptions of EFL College Students in Taiwan

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by

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ABSTRACT

Compared with first language (L1) writing, writing in a second or foreign language (L2) is considered to be more challenging and difficult. The challenges and difficulties may result from both the cognitive and the affective aspects of writing. To mitigate the difficulties of L2 writing and help students master L2 writing, teachers could consider using the pedagogical strategies which can help enhance students' cognition in writing or students' writing performance, and also can help reduce students' fear of L2 writing. One of the pedagogical strategies is online collaborative writing supported by CMC. Collaborative learning helps enhance students' cognitive outcomes, such as academic achievement and cognitive development, as well as produce less anxiety in learning. CMC facilitates collaboration, and also provides more chances for interaction which could result in more thoughts. The more thoughts would facilitate to compose. Therefore, it is assumed that online collaborative writing is more effective than traditional collaborative writing in terms of writing performance and writing anxiety.

The present study is a quasi-experimental study. Participants were 101 first-year college students from two intact classes of a private university in Taiwan. One class was randomly assigned as the control class. Participants were engaged in traditional collaborative writing. The other was the experimental class. Students wrote collaboratively via blogs. Before the treatment, both classes were asked to completed a background survey, a pre-test L2 writing anxiety questionnaire, and a pre-test individual writing task. The treatment lasted for ten weeks during which each collaborative group in both classes completed five collaborative writing tasks. After the treatment, a collaborative writing questionnaire, a post-test L2 writing anxiety questionnaire,

and a post-test individual writing task were administered to all participants. Semi-structured individual interviews were conducted to the students who made the largest, medium, and lowest gains in both classes. Quantitative and qualitative analyses were conducted to analyze the data.

In terms of the quantitative results, there were no significant difference in collaborative writing performance and the quantity of individual writing between classes. The experimental class only significantly performed better than the control class in the quality of individual writing. Concerning the writing anxiety measured, the control class was significantly lower than the experimental class. Regarding students' perceptions, the results of the questionnaire showed that the control class made much more positive responses than the experimental class. As for the qualitative results, students' interviews revealed (1) the function of collaborative writing, (2) the features of the media, (3) the difficulty they encounter during collaborative writing, (4) the positive and negative factors influencing their motivation to write, and (5) their suggestions for teachers. The qualitative results support the quantitative results.

Overall, this dissertation study found that traditional collaborative writing seems to be more effective than blog-supported collaborative writing in decreasing the writing anxiety of the EFL college students with weaker English ability and little writing experience. In addition, according to students' perceptions and interview results, traditional collaborative writing also appears to be more acceptable in this context. Although the statistic results suggest that the effect of blog-supported collaborative writing on writing performance and writing anxiety seems to be limited and little probably due to the use of blogs as individual and synchronous tools, its effectiveness can not be completely denied because students' perceptions and interviews suggest its positive influence and outcome. L2 teachers are suggested to provide more training sessions, employ the collaborative writing activity as an out-of-class assignment, and carefully monitor the process of collaborative writing if they do use blogs in L2 writing instruction.

CHAPTER ONE:

INTRODUCTION

"The ability to express one's ideas in writing in a second or foreign language and to do so with reasonable coherence and accuracy is a major achievement; many native speakers of English never truly master this skill." ~ M. Celce-Murcia (2001, p.205)

Background to the Study

Writing is recognized as an enormously complex activity (Olander, 2007). It needs time, effort, practice, learning, and teachers' instruction. Compared with first language (L1) writing, writing in a second or foreign language (L2) is considered to be more challenging and difficult. The challenges and difficulties may result from both the cognitive aspect (e.g., a lack of an appropriate writing process or insufficient knowledge about grammar, vocabulary, etc.) and the affective aspect (e.g., writing anxiety) of writing (Lee, 2005). To mitigate the difficulties of L2 writing, L2 teachers could consider using pedagogical strategies which can help enhance students' cognition in writing or students' writing performance, and also can help reduce students' fear of L2 writing.

One of the pedagogical strategies is collaborative writing. Collaborative writing, generally defined as the writing performed in collaboration with one person or more people during the process of writing, may be an effective strategy in teaching writing. Many researchers have advocated the use of collaboration in learning. For instance, Johnson and Johnson (2008) suggest that collaborative learning can enhance students' cognitive outcomes, such as academic achievement and cognitive development. Myers (1991) indicates that collaboration is an

approach to instruction that focuses on the process of working together and that enables participation in social interaction, which empowers students to build on their knowledge. In addition, according to Johnson, Johnson and Smith (1991) collaborative learning can produce less anxiety. Since collaborative learning is able to enhance students' cognition and decrease students' anxiety in the area of content learning, it might be possible that similar findings can be expected in the area of L2 learning. For example, in the aspect of L2 writing, collaboration and interaction during writing might facilitate students' development in L2 writing ability and reduce students' anxious feelings about L2 writing. Research on collaborative writing is quite limited both in L1 and L2 contexts probably due to the difficulty of using small groups in writing classes. Even though the research is limited, the findings of the existing collaborative writing research seem to support the use of collaborative writing in L2 writing instruction. Some of the prominent findings are that students tend to produce better texts (e.g., Louth, McAllister & McAllister, 1993; Storch, 2005; Wigglesworth & Storch, 2009), are able to enhance their writing skills (e.g., Fung, 2010), and have positive attitudes toward writing (Louth et al, 1993) as they collaborate and interact with peers during the writing process.

With the growth of computer technology and the Internet, teaching and learning the second/foreign language through technology has been increasingly popular. In the field of writing, considerable research has been conducted in the past few decades to understand the effectiveness of integrating technology with writing. These studies have focused on computer applications (e.g., word processor programs), and a variety of computer-mediated communication (CMC) applications (e.g., email, blog, wiki & course management systems, such as WebCT). Though some of the studies did not reveal that technology had an impact on reducing students' writing anxiety and improving students' writing ability, such as the ability to write longer and better text; however, there is indeed some research reporting that students tend

to write more (e.g., Ghaleb, 1993; Gonzalez-Bueno & Perez, 2000), produce better texts (e.g., Shang, 2007), and feel less anxious (e.g., Perez, 2003) when they write with the assistance of technology.

One of the important findings is that CMC facilitates interaction and collaboration (Warschauer, 1997). This function has led to the emergence of a new trend in L2 writing instruction and research: The integration of CMC with collaborative writing or the so-called online collaborative writing. The findings of the relevant research suggest that online collaborative writing can help improve students' writing ability (e.g., Franco, 2008; Lee, 2010; Mak & Coniam, 2008; Zhang, 2009). The findings also imply that online collaborative writing can help reduce anxiety (e.g., Lin, 2009). However, after an extensive search of the body of research, it is found that there is still not much research on online collaborative writing. The present study, thus, addressed this issue to contribute to the growing body of literature on online collaborative writing.

Blogs are one of the CMC applications. Based on Warschauer (1997), they have the features of text-based interaction, many-to-many communication, time-and-place independent communication, long distance exchange and hypermedia links. In addition to the CMC features, blogs are also user-friendly; have the potential for online collaboration and interaction, and are able to facilitate reading and writing activities. Instant publishing and ownership are also the features of blogs because what is written on the blog can be read by anyone else due to the Internet, and blog posts can only be created by the person who maintains the blog. Moreover, research findings suggest that blogs are helpful in improving students writing ability (e.g., Rezaee & Oladi, 2008). For example, students' writing fluency increases. (e.g., Franklin-Matkowski, 2007). Students can use new phrases and make improvement in spelling (e.g., Thorne, Webber & Bensinger, 2005). Research findings also suggest that students have

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positive affective responses to the use of blogs as language learning tools (e.g., Armstrong & Retterer, 2008; Ducate & Lomicka, 2008; Jones, 2006; Pinkman, 2005; Ward, 2004). As a result, because of their features (e.g., the possibility of online collaboration and writing activities) and the positive research findings, blogs might be viewed as appropriate tools for online collaborative writing. The present study using blogs as online collaborative writing tools examined whether online collaborative writing (i.e., the blog-supported collaborative writing in the present study) is more effective than traditional collaborative writing.

Although blogs have the features described above, not all of them were realized in the study. This is because participants in the study conducted the synchronous discussion much more than the asynchronous discussion. In addition, participants did not upload any files on their group blogs. Therefore, though blogs have the features that can facilitate collaborative writing, only some specific features were realized in the study: text-based interaction, ease of use, facilitating reading and writing activities, and ownership. The feature of hypermedia links was not used, and the features of many-to-many communication and instant publishing were rarely used. Long distance exchange and time-and-place independent communication took place when students discussed writings asynchronously.

The present study was conducted in Taiwan where students learn English as a foreign language. English has become the world's international language within the last few decades. To meet with the future challenges of globalization and internationalization, it is necessary to have English ability. Therefore, to develop and cultivate Taiwan students' English ability, Taiwan's Ministry of Education has extended compulsory English education downward nationwide by beginning English learning from the elementary school since 2001 (Chen, 2008). To evaluate students' English ability, students take English tests or quizzes in English classes. Students may also need to take the General English Proficiency Test (GEPT) to demonstrate their English

ability. GEPT is a test of English language proficiency that was commissioned by Taiwan's Ministry of Education, and was first administered in 2000 (Shih, 2008). Some students also take the international English tests, such as the International English Language Testing System (IELTS), the Test of English as a Foreign Language (TOEFL), and Graduate Record Examination (GRE). These tests all examine students' English writing ability.

However, in the schools in Taiwan, writing instruction is not highly emphasized in English classes. English instruction is mainly focused on the practices of receptive skills, such as reading, grammar, vocabulary and listening rather than productive skills. Students will have more chances to learn writing or receive writing instruction if they attend university and study in the English department. In addition, the researcher, as an English teacher in junior high school in Taiwan, has had opportunities talking with some junior high and senior high school students and university students about how they feel about the tests discussed above, such as GEPT, GRE, IELTS, and TOEFL. Many students expressed that English writing is very difficult. Some of them even expressed that writing is the most difficult among the four language skills, and they are afraid of being asked to write English compositions.

Students' negative response to English writing is understandable because they do not have abundant chances to practice writing in English classes, and they are learning to compose in the second language instead of their first language. The lack of practice and the use of second language to compose can explain why the students are afraid of writing a composition in English. Nevertheless, English writing is important for students in terms of academic studies and future careers. In academic studies, students may need to submit English papers such as term papers for fulfilling part of the class requirements. As for future careers, students who would like to seek for employment may need to provide a curriculum vitae in English version for companies, particularly international enterprises. Therefore, it is important for L2 writing teachers to help

students overcome anxious feelings about L2 writing and help them become better writers. In order to achieve this goal, emphasizing writing instruction and employing effective instructional strategies in writing classes is an important consideration.

As discussed above, online collaborative writing may be an effective teaching strategy for improving students' writing performance and decreasing students' writing anxiety. To better understand its effectiveness, the present study, therefore, investigated the efficacy of online collaborative writing supported by blogs by comparing the writing performance, writing anxiety, and perceptions of two classes of students. Participants were two classes of first-year college students from a private university in Taiwan. One class of students engaged in traditional collaborative writing via paper-and-pencil; the other class wrote collaboratively with the assistance of blogs. Through the comparison, the effectiveness of online collaborative writing via blogs can be identified.

Statement of the Problem

In the field of L2 writing, a review of the research on online collaborative writing reveals three gaps. The first gap concerns the lack of the investigation on writing anxiety which has been found to have a negative relationship with writing performance. Online collaborative writing is the combination of collaborative learning with CMC in the aspect of writing. Since researchers, such as Johnson, Johnson and Smith (1991), have claimed that collaborative learning can produce less anxiety, it is possible that students writing collaboratively online may also have lower writing anxiety just like the students who engage in traditional collaborative writing. In addition, researchers, such as Kern (1995) and Sullivan (1993), have suggested that CMC helps decrease anxiety; therefore, it may be even possible that CMC-mediated collaborative writing could be more effective in reducing anxiety than traditional collaborative writing. Since the role

of writing anxiety is not sufficiently explored in this body of research, future research addressing this issue is suggested to further understand if online collaborative writing can really help produce less writing anxiety.

The second gap relates to the CMC technology used in these studies. Among the limited research on online collaborative writing, many researchers have investigated the effect of wiki-mediated collaborative writing (e.g., Franco, 2008; Lee, 2010; Mak & Coniam, 2008). To my knowledge, there has been little research conducted to examine online collaborative writing via blogs. However, blogs are similar to wikis in some ways. For example, wikis allow visitors to change the content. Blogs allow visitors to add comments to the original content but do not allow them to change the content. However, if blogs are maintained by a group of people, anyone from this group can not only comment on the original content but also edit it. Therefore, blogs, similar to wikis, have the edit function if blogs are used as group blogs.

In addition, blogs, similar to wikis, possess some features that facilitate writing, such as instant publishing of text on the Internet, ways for people to provide comments to each post, and the function to archive past log posts, and hyperlinks to other blogs (Huffaker, 2005). According to Huffaker, these features offer people the opportunity to present and express themselves online. Similarly, Ward (2004) also indicates that blogs can fulfill many of the needs identified for the effective teaching of writing. For example, blogs provide a genuine audience, authentic communicative context, and the chances for peer reviewed writing. To be more specific, when blogging in the classroom, students could write for a genuine audience, such as their classmate, that is multicultural and responsive, not just for their teacher. Students can also receive the opinion, advice and criticism from their classmates, which helps them to revise their writings. These unique features that blogs posses help explain why blogs can facilitate writing and benefit composition classes.

As discussed before, research has investigated online collaborative writing via wikis instead of blogs. However, blogs, like wikis, have the function of facilitating collaboration (Huffaker, 2005; Ray, 2006; Lucking et al., 2009; Boling et al., 2008), and can facilitate writing activities (Godwin-Jones, 2006; Ducate & Lomicka, 2008; Imperatre, 2009). Therefore, since blogs have the potential similar to wikis, research that investigates online collaborative writing in the blog environment may be necessary because it can not only fill the gap identified in the literature but also shed light on the use of blogs for collaborative writing.

The third gap is related to the research design used in this line of research. There is very little experimental research (e.g., Lin, 2009; Liou & Lee, 2011; Strobl, 2014). In most of the studies, researchers study a class of students as a case (e.g., Franco, 2008; Greenfield, 2003; Lee, 2010; Mak & Coniam, 2008). To fill this gap, more experimental research is needed. But why is experimental research needed and important? According to Gay et al. (2006), experimental research is the most structured of all research types. When it is well conducted, it can usually produce the soundest evidence regarding cause-effect relationship. Different from experimental research, case studies are conducted to study a specific phenomenon deeply. However, they may not be able to establish cause-effect relationship since they study and involve in only one intact class. In addition, the involvement of only one intact class makes findings of case studies to be less generalization to larger population (Perry, 2005). Though it is also not possible for a single experimental study to provide broad generalization of results since any single research is limited in context and population (Gay, et al., 2006), the findings of experimental research, however, would be more capable of being generalized to larger population as compared with the findings of case studies. In a word, more experimental research is required to gain the results of cause-effect relationship, and to obtain the findings which can be generalized to a larger population.

Purpose of the Study

The dissertation study is designed for three major purposes. First, it is designed to compare the writing performance of the students engaged in online collaborative writing in the blog environment with that of the students participating in traditional collaborative writing. The writing performance includes individual and collaborative writing performance, which are both evaluated in terms of writing quantity (i.e., the number of words) and writing quality (i.e., the holistic score). Collaborative writing (CW) is assessed to understand whether students working together in a group could produce longer and better text during collaboration. Individual writing (IW) is assessed to understand whether students themselves make improvement in their writing quantity and quality after collaboration. The second purpose is to investigate the differences of the writing anxiety perceived by the students after writing collaboratively via paper-and-pencil or via blogs. Third, this study is also designed to compare students' perceptions and discover specific students' experience of the two modes of collaborative writing.

Research Questions

There are four research questions guiding this dissertation study.

1. Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of:

   (1) The quantity of collaborative writing?

   (2) The quality of collaborative writing?

   (3) The quantity of individual writing?

   (4) The quality of individual writing?

2. Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?

3. How do the EFL college students perceive blog-supported and traditional collaborative writing?

4. In what ways do the EFL college students making the largest, medium and the lowest gains describe their experience of blog-supported and traditional collaborative writing?

Theoretical Framework

The study is framed by the theory of collaborative learning, and is also framed by the concept of computer-mediated communication that Warschauer (1997) claimed. Based on the collaborative learning theory and the features of computer-mediated communication, two theoretical hypotheses are formed for this study:

1. Collaborative learning can foster language learning and produce less anxiety in writing.

2. Computer-mediated communication can foster collaboration for writing.

Collaborative Learning

Collaborative learning has been viewed as an effective instructional approach in generating not only positive outcomes of learning in general (Brandon & Hollingshead, 1999; Johnson & Johnson, 2008; Slavin, 1980; 1983; 1995) but also in second/foreign language (L2) learning in particular (Richards & Rodgers, 2001). In addition to the positive outcomes of learning, researchers, such as Johnson, Johnson, and Smith (1991) also claimed that collaborative learning can help produce less anxiety and stress.

Previous research on group learning tends to use either cooperative learning or collaborative learning. Cooperative or collaborative learning has also been defined in various ways by eminent scholars. For example, Slavin (1980; 1983; 1995) defined cooperative learning as students working in a group and are given rewards based on the group's performance. Johnson

and Johnson (2008) defined cooperative/collaborative learning as students working together to maximize their own and each other's learning, as well as to achieve shared learning goals. Historically, collaborative learning has been much less structured than cooperative learning (Johnson & Johnson, 2008). However, many of the current proponents of collaborative learning (e.g., Dillenbourg, 1999) advocate structures and procedures to scaffold interaction and collaboration among students. Johnson and Johnson (2008) proposed that the more structured perspective on collaborative learning blurs the differences between cooperative and collaborative learning; thus, the two terms are increasingly interchangeable and synonymous.

However, even though cooperative learning and collaborative learning are increasingly interchangeable terms, some researchers, like Alessi and Trollip (2001), still suggest that it is useful to distinguish one from the other due to the slight differences between them. According to Alessi and Trollip (2001), cooperation is a more general term, meaning that learners are helping each other instead of hindering, competing or ignoring one another. They may work on individual project, but they support and help one another. Collaborative learning goes a bit further, suggesting that learners work on a shared project or goal. From Brandon and Hollingshead's perspective (1999), cooperative learning means that group members share the workload. For example, every group member writes one section of a paper independently and those sections are combined into one product. In collaborative learning, group members develop shared meanings about their work. For instance, group members produce five sections of a paper together and make them a single and unified group paper.

In the dissertation study, students did not work on their own project independently. Instead, students exchanged ideas during the learning process and worked together to create shared products. Therefore, although the terms of collaboration and cooperation are used interchangeably in group learning research, using the term of collaboration seems to be more

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appropriate for this study. In the following sections of the dissertation, collaborative learning rather than cooperative learning is used.

As opposed to collaborative learning, there are still two other types of learning: competitive learning and individualistic learning. In competitive learning, students are working against each other. When one student achieves his or her goal, all other students with whom he or she is competitively linked fail to achieve their goals. In individualistic learning, students are working by themselves. Students' goal and achievements are independent. (Johnson & Johnson, 2008; Johnson, Johnson, & Stanne, 1986). Since there are different types of learning, why should collaborative learning be emphasized and used?

There are at least three theoretical perspectives supporting the use of collaborative learning: cognitive-developmental, social constructivism and sociocultural perspectives. The cognitive-developmental perspective is based on the theory of Piaget (1950). According to Piaget, when individuals collaborate on the environment, sociocognitive conflicts come about and they create cognitive disequilibrium which stimulates cognitive development. Social constructivism has been developed from the theories of Bruner (1966) and Vygotsky (1978). According to social constructivism, knowledge is constructed through interaction with others. Learners create meaning through social negotiation, interaction, and collaboration. Similarly, Vygotsky's sociocultural theory (1978; 1986) suggests that cognitive development appears first in the interpersonal plane; it is then appropriated by the individual, and internalized in the intrapersonal plane. In other words, knowledge is social in nature and constructed through interaction. The learning that leads to development is fundamentally a social act. Vygotsky's view implies that learning results from interaction and collaboration with other people. Based on the three theoretical perspectives, instructors should strive to adopt teaching methods that provide chances

of social interaction for students to help students gain knowledge and make their learning meaningful.

In addition to theoretical support, there is also empirical evidence upholding the efficacy of collaborative learning. Johnson and Johnson (2008) indicated that the advantageous outcomes about the use of collaboration reported in group learning research include greater achievement, productivity, intrinsic motivation, long-term retention, and learners' ability to transfer what is learned within one situation to another. Slavin (1980), after a review of 28 studies in which collaborative learning was used in elementary or secondary classrooms, concludes that the use of collaborative learning helped increase students' achievement, mutual concern among students, and students' self-esteem.

In the context of general learning, Johnson, Johnson and Scott (1978) explored the effects of collaborative and individual learning on students' attitude and performance. An advanced math class of 30 students participated in the study. They were randomly divided into collaborative and individualized conditions. In the collaborative condition, students were instructed to work as a group. All students gave their ideas and sought help from each other rather than from the teacher. In the individualized condition, students were asked to work on their own and avoid interaction with other students. They sought help only from the teacher. The data were from the measures of achievement, and post-treatment questionnaire. Students were also interviewed. The results of the analysis indicated that collaborative learning promoted higher self-esteem and higher daily achievement.

In the L2 context, Bejarano (1987) assessed the effects of collaborative learning and the whole class method on the academic achievement of 665 EFL students in 33 seventh-grade classes in Israel. The data included classroom observations, as well as achievement tests, including reading comprehension test, listening comprehension test, and grammar and

vocabulary test, administered before and after the experiment. The findings revealed that collaborative learning method (i.e., discussion group & student teams and achievement divisions) registered significantly greater improvement on the total score of the test than the whole-class method. Another study by Sung (2009) examined how collaborative learning affected Taiwan EFL students' learning in writing. Participants were 28 English majors. Collaborative learning method (i.e., student teams and achievement divisions) was implemented in the writing class for 12 weeks. Students' achievement tests were administered before and after the 12-week treatment. Students also completed a questionnaire after the experiment. The results of the achievement test showed that students obtained higher scores in the posttest than those in the pretest. As for the results of the questionnaire, a majority of students felt that their English writing ability was enhanced because they were more familiar with English grammar and they learnt a large number of vocabulary. In addition, most of the students felt that English writing classes became interesting because of using collaborative learning method, and they liked learning to write through collaboration. The results suggested that collaborative learning is helpful for improving students' writing ability and writing attitudes. The above section briefly presents the collaborative learning research in the context of general learning and L2 learning. However, given the focus of the research, more research on L2 collaborative writing will be discussed in the next chapter.

The theoretical support and the positive outcomes reported in previous collaborative learning research, including cognitive (e.g., Johnson et al., 1978; Bejarano, 1987; Sung, 2009) and affective (e.g., Johnson et al., 1978; Sung, 2009) aspects, help explain the reason why collaborative learning is recommended for use. However, it is necessary to point out that the effects of collaboration on affective aspects that have been reported in these studies include higher self-esteem (Johnson, Johnson & Scott, 1978)) and more positive attitudes toward writing

(Sung, 2009). Students' anxiety, one of the affective aspects, is not clearly explored and reported in published research. Since some researchers (e.g., Johnson, Johnson, & Smith, 1991) suggest that collaborative learning help produce less anxiety, exploring and discussing the issue of anxiety in collaborative learning research can be a direction for future research.

Since collaborative learning is recommended for classroom use due to the theoretical support and positive research findings, how should it be employed? Johnson and Johnson (2008) claim that collaborative learning does not mean placing students in the same room, seating them together, telling them they are a group and expecting they will collaborate effectively. In order for learning to be collaborative and to reach the full potential of the groups, Johnson and Johnson proposed five basic elements of collaboration which must be carefully structured in collaborative groups. These essential elements are (1) positive interdependence, (2) promotive interaction, (3) personal responsibility, (4) interpersonal and social group skills, and (5) group processing.

Positive interdependence is at the heart of collaboration. There are three categories of interdependence: outcome, means and boundary interdependence. When people are in a collaborative situation, they are oriented toward an outcome or a goal (i.e., outcome interdependence). There is no collaboration if there is no outcome interdependence. The means specify the actions needed on the part of group members. Through the means, the mutual goals could be accomplished. Means interdependence include role and task interdependence. Boundary interdependence concerns who is interdependent with whom. It includes outside enemy (i.e., no/negative interdependence with other groups), identity (i.e., which ties them together as an entity), and environmental interdependence (i.e., a specific work area). Positive interdependence provides the context within which promotive interaction takes place. The greater the promotive interaction is, the stronger the effects of collaboration are. Therefore, positive interdependence

ought to be clearly structured to enhance the promotive interaction in a collaborative group (Johnson & Johnson, 2008).

Personal responsibility tends to increase achievement in collaborative learning. Personal responsibility exists when the performance of each individual member is assessed, and this would motivate each group member to contribute his/her fair share to the group success. Collaborative learning is more complex than competitive and individualistic learning because students have to simultaneously engage in task work and teamwork. Therefore, interpersonal and social group skills are important in collaborative learning. The greater the members' teamwork skills, the higher the quality and quantity of their learning will be. The fifth basic element is group processing, which occurs when members discuss how well they are achieving their goals and maintaining effective working relationships among members (Johnson & Johnson, 2008).

The collaborative writing task in the present study was designed based on the five basic elements proposed by Johnson and Johnson (2008). However, why does the collaborative writing task need to be structured? The reason for making the task be structured is based on the findings of collaborative learning-related research (i.e., collaborative learning research and computer-supported collaborative learning research in chapter one; collaborative writing and online collaborative writing research in chapter two). A review of these research found that the negative findings are only reported in the studies in which the collaborative learning/writing task is not clearly structured (e.g., Storch, 2005; Wigglesworth & Storch, 2009).

On the contrary, the positive findings are reported in the studies in which the collaborative learning/writing task is carefully structured. For example, in collaborative learning research, the collaborative learning models in Johnson, Johnson and Scott's (1978), Johnson, Johnson and Stanne's (1986), and Coutinho's (2007) were designed based on the five principles of Johnson and Johnson's collaborative learning theory (2008). In Sung (2009) and Bejarano (1987),

Student's Team Achievement Division (STAD) (Slavin, 1980), a peer-tutoring technique, was implemented in their collaborative learning activities.

As for collaborative writing research, the model of collaborative writing in Louth et al's study (1993) was designed based on the two types of collaborative writing: interactive writing and group writing, which are proposed by Louth (1989) and have been discussed in the above section. In Lee's study (2010), various types of meaning-focused tasks with the emphasis on certain linguistic structures were created for the collaborative writing task. In some research, the collaborative writing model was designed on the basis of writing process approach. For example, the pairing writing in Sutherland and Topping' study (1999) consisted of six steps: idea generation, drafting, reading, editing, best copy and evaluate. In Greenfield's study (2003), students developed their collaborative writing essays through the steps of pre-writing activity, writing, peer critique, revision and the publication of the final copy. In Lin's study (2009), participating students followed the following steps to complete the collaborative writing task: brainstorming ideas, drafting, peer feedback, revision and publishing a final draft.

In one word, to fully reach research goals and learning goals, it may be necessary to design the collaborative learning and collaborative writing task based on a certain theory or approach.

In addition to the five basic elements that Johnson and Johnson (2008) suggest to be carefully structured in collaborative learning, there are also some effective strategies for collaborative learning. For instance, regarding the strategy for forming teams, Felder and Brent (2001) suggest that making group heterogeneous in abilities is the primary criterion if instructors have no research agenda but just want to teach the course effectively. Similarly, Jacobs and Hall (1994) claim that achieving a heterogeneous mix is suggested in collaborative learning when setting up groups. Such a mix in a group helps promote peer tutoring, break down barriers among different types of students, and encourage on-task behaviors. Also, instructors are recommended

to try to avoid groups in which members who are at risk academically are isolated. Johnson, Johnson and Smith (1991) also supported the use of heterogeneous group in which high-, medium-, and low-achieving students are placed. In terms of the size of the group, groups of the four individuals are recommended. However, the range could be changed based on the amount of time available in a course. The shorter the amount of time available, the smaller the group should be and vice versa (Johnson, Johnson & Smith, 1991). Jacobs and Hall (1994) indicate that even two people are a group and six seems to be the maximum size. As for the strategy for avoiding discouragement of students, the instructor could share the results about the students who work collaboratively and have good experience in working together with the class, which could "provide the unhappy minority with a good reality check" (Felder & Brent, 2001, p. 7). Based on these researchers' claims, the present study used heterogeneous groups, and participants were divided into groups of four to five.

Since 1980, due to the advance of computer technology, there has been a growing interest in the potential of computers as facilitators for students' learning, that is the computer-assisted learning (Light & Mevarech, 1992). In addition, research has shown that collaborative learning can also have powerful effects on cognitive outcomes such as academic achievement and cognitive development (e.g., Bejarano, 1987; Johnson, Johnson & Scott, 1978; Slavin, 1980). Because computer-assisted learning and collaborative learning seem to be effective pedagogical strategies for students' learning, with the rise of the Internet, which has the potential to connect people, these two trends emerge together, and bring about another emerging field, computer-supported collaborative learning (Brandon & Hollingshead, 1999).

Computer-supported collaborative learning. Computer-supported collaborative learning (CSCL) seeks to combine classroom-based collaborative learning with computer technology (Brandon & Hollingshead, 1999). Johnson and Johnson (2008) propose a number of

ways through which computers and collaborative learning could be integrated and utilized. First, students are able to work and interact while being around the computers in a face-to-face environment. This can be accomplished with students using individual computer station or by having students work in groups collaboratively. Second, given the advances in current computer software technologies, computers can act as a member in the collaborative group (i.e., collaboration with computers). An example of this type of interaction can be seen in the use of simulations or virtual worlds where a computer generated virtual character acts as a guide or mediator in an educational goal. Third, due to the advent of the Internet, students could interact through the computers while being at a distance and some variations of being at a distance or a face-to-face classroom (i.e., collaboration through computers). In this manner, the computer/Internet not only acts as a mediator for connecting the geographically distinct entities but also provides a variety of mediating tools for collaboration such as email, chat room, bulletin boards, wikis, blogs, etc. The present study belongs to the third type of CSCL because it investigated online collaborative writing mediated by blogs.

Although collaborative learning can be effective in generating positive outcomes in traditional classroom, do the benefits of collaborative learning transfer to the online environment as well? There are some studies which have been conducted to investigate the effectiveness of CSCL.

In the context of learning in general, Johnson, Johnson and Stanne (1986) conducted a study to compare the effect of computer-assisted collaborative, competitive, and individualistic learning on students' achievement, interaction and attitudes. Participants were 74 eighth-grade students with 24 in the collaborative condition, 26 in the competitive condition and 24 in the individualistic condition. Results showed that compared with computer-assisted competitive and individualistic learning, computer-assisted collaborative learning promoted higher achievement,

more task statements in student-student interaction, and more positive attitude toward the instructional experience. Another study by Coutinho (2007) investigated collaborative learning via blogs in higher education. Participants were 23 undergraduate students from a university in Portugal and were divided into groups. Students in small groups were asked to set up a blog and maintain it as a portfolio of the team work. The portfolio included (1) the posts of seven selected topics, (2) online information for every topic and organization of these Internet sources and (3) the links to appropriate websites. Students in small groups worked together via blogs to complete the team assignment. The analysis of an online questionnaire administered upon completion of the study suggested that blogs were versatile educational tools that could promote students' learning.

In second/foreign language contexts, for example, Lehtonen and Tuomainen (2003) examined the application of CSCL to teaching and learning a foreign language, Finnish. Nineteen university students from five different universities in the North America participated in this six-week CSCL research project, which took place on a Finnish platform, PedaNet. In this platform, students worked at reading a mystery, posting their writing, giving feedback to their group members, and collaboratively creating an ending to the mystery. The results from the students' reports showed that the new medium made studying more interesting than traditional classroom teaching; students had gained confidence in their writing skills; they learned a large amount of new vocabulary; they also developed their skills of collaboration and negotiation through participating in this project. Another study by AbuSeileek (2007) investigated the effectiveness of cooperative learning and collective learning in learning oral skills, listening and speaking. Participants were Saudi EFL learners and were divided into four groups. One group learned oral skills using the technique of cooperative computer mediated communication (CopCMC). In CopCMC, students were divided into groups to perform a task via the use of the

computer as a means to communicate with group members. The second group studied oral skills using collective computer mediated communication (ColCMC). In ColCMC, the computer was used as a tool for communication between the teacher and whole class. Students were not divided into groups and did not interact with other peers. Each student worked on his/her own, and sought help from the instructor. The third group used a cooperative traditional technique; the fourth group was taught with a collective traditional technique. The instructional software used for the treatment groups (i.e., CopCMC & ColCMC) is NetSupport School, a computer program facilitating cooperative work. All participants took a test assessing their oral skills before and after the treatment. An analysis of *ANCOVA* suggested that the first group, which studied oral skills with CopCMC, achieved better results than the other three groups in terms of the score in listening and speaking on the test.

The findings of the research presented above suggest that positive outcomes of collaborative learning in traditional classrooms could be possibly transferred to online environment. Brandon and Hollingshead (1999), after a review of relevant research, also had the similar claim that the beneficial outcomes of collaborative learning in standard classrooms could occur in computer-supported environment. Since the present study focused on the aspect of L2 writing, more CSCL research on L2 writing (i.e., online collaborative writing or CMC-mediated collaborative writing research) would be further discussed in the next chapter.

Computer-Mediated Communication

Due to the rapid growth of the Internet, there has been increasing interest in using computer-mediated communication (CMC) technology. By definition, CMC refers to human communication via computers, and can take place over the Internet. It includes many different forms of synchronous or asynchronous interaction that humans have with each other using

computers as tools to exchange text, images, audio and video (Simpson, 2002)

Warschauer (1997) claimed that there are five features that distinguish CMC from other communication media. First, CMC technology has the potential of text-based interaction and the interaction is mediated by computers. The computer-mediated feature has interactive power, which facilitates not only text-based communication but also collaboration between group members located around the world. Second, CMC technology allows many-to-many communication. Any or all member of a group may initiate interaction with any or all of the others. Third, CMC technology has the feature of time- and place- independent communication. With this feature, users can write and receive messages at any time of the day from any computer with an Internet connection. Fourth, CMC technology has the feature of long distance exchanges. Due to the Internet, CMC can make long distance exchanges faster, easier and less expensive. In other words, users at a distance are able to exchange ideas through CMC. The final feature of CMC technology is that it has hypermedia links. This feature allows multimedia documents to be published on the Internet and distributed through links among computers around the world. Due to these features, Warschauer (1997) concluded that CMC has the potential for promoting collaborative learning.

The collaborative potential of CMC has led to a new strand of research emerge, the CSCL research. These research, which was discussed in the previous section on CSCL, has been conducted in the context of general learning (e.g., Johnson, Johnson & Stanne, 1986; Coutinho, 2007) and second/foreign language learning (e.g., Lehtonen & Tuomainen, 2003; AbuSeileek, 2007). In the L2 context, particularly in the area of writing, this new strand of research also appears, which aims at exploring the efficacy of combining CMC with collaborative writing (e.g., Franco, 2008; Greenfield, 2003; Lee, 2010; Lin, 2009; Mak & Coniam, 2008). Some of the prominent findings obtained from these studies suggest that integrating CMC with collaborative

writing is helpful for developing students' writing skills (e.g., Franco, 2008; Lee, 2010). Students also make improvement in the quantity of writing, the complexity of writing and the coherence of the text (e.g., Mak & Coniam, 2008). In addition to the research investigating the effect of integrating CMC with collaborative writing, there is also a body of research examining the effectiveness of CMC on students' individual writing (e.g., Ghaleb, 1993; Gonzalez-Bueno & Perez, 2000; Liaw, 1998; Perez, 2003; Shang, 2007; Zhang, 2009). Encouraging findings are also found in this line of research. For example, through the assistance of CMC, students could write faster (e.g., Liaw, 1998) and improve their writing in the aspects of syntactic complexity and grammatical accuracy (e.g., Shang, 2007). Students composing via CMC could also write more in terms of the number of entries (e.g., Ghaleb, 1993) and the number of words (e.g., Gonzalez-Bueno & Perez, 2000) as compared with those writing without using CMC.

The present study investigated the effect of integrating CMC with collaborative learning, particularly in the area of L2 writing. As a result, instead of discussing all of the research on online collaborative learning, only the research on online collaborative writing is selected for detailed discussion in the study. The findings of the research are synthesized and discussed in the next chapter on literature review. In addition, the CMC technology selected for investigation in the study is the "blog". This technology and the related research will also be discussed in the next chapter.

Significance of the Study

The present study exploring the efficacy of using blogs for collaborative writing is significant by filling the gaps identified in current online collaborative writing research. In addition, the study contributes to the field of CMC, collaborative learning, and second language writing. Theoretically, this study can add needed information to the body of literature relative to

traditional and online collaborative writing research. Practically, this study helps EFL teachers understand the application of traditional collaborative writing and online collaborative writing via blogs in L2 writing instruction. The findings of the study may also help the teacher to identify the effectiveness of these pedagogical strategies in terms of promoting students writing performance and decreasing their writing anxiety, and to determine whether to use them or adapt them. Furthermore, the findings could also inform EFL students of the strategies for practicing writing that they can employ to improve their writing performance and reduce their writing anxiety.

Definition of Terms

      Writing performance. It includes students' collaborative writing (CW) and individual writing (IW) performance. Collaborative writing performance is evaluated through collaborative writing products (i.e., group reflections). Individual writing performance is assessed through pre- and post-test individual writing tasks.

      Writing quantity. It is defined operationally as the number of words.

      Writing quality. It is defined operationally as the analytic score.

      Writing anxiety. It is used generally to mean the negative and anxious feelings that disrupt part of the writing process (McLeod, 1987). It also relates to the tendency of people to approach or to avoid writing (Daly & Miller, 1975a). In the present study, students' writing anxiety is measured through the Chinese version of Second Language Writing Anxiety Inventory (SLWAI) (Cheng, 2004).

      Gain score. It means the difference between the pretest score (or the baseline score) and the posttest score.

      EFL. EFL is the acronym of English as a Foreign Language. The term should be used for

"situations or countries where there is no history of prolonged British or U.S. political presence, where English has no special status or internal function, and where its communicative use is of low priority" (Nayar, 1997, p.29).

ESL. ESL is the acronym of English as a Second Language. English is acquired or taught in the native environment, ideally by native-speaking teachers (Nayar, 1997).

CMC. CMC is the abbreviation of computer-mediated communication. It is human communication via computers, and uses networking capabilities to make text-based discussion including many different forms of synchronous, asynchronous or real-time interaction (Simpson, 2002).

Blog. (i.e., weblog): The word, "blog", could be both noun and verb. When it is used as a noun, blog means an online journal or a website with dated entries presented in reverse chronological order, and published on the Internet. When it is a verb, blog also means to post new entries on a blog or to comment on entries already on a blog.

Cooperative learning. Cooperative learning entails students working in groups or otherwise dividing up tasks. Examples of cooperative tasks include: dividing up sections of a report to write and combining them into one product (Misanchuk & Anderson, 2002).

Collaborative learning. Collaborative learning is the most integrated form of group work, and is thus potentially the most difficult. For example, students may each work on every part of the report, consulting each other and re-reading each other's edits. They are invested in every part of the project because they will share a common grade (Misanchuk & Anderson, 2002).

Collaborative writing. It could be generally divided into three types: (1) co-publishing, (2) co-responding, peer editing or peer feedback, and (3) co-writing. The collaborative writing in the present study belongs to the third type of collaborative writing, co-writing, which means that group members write together and exchange ideas during the writing process, and they create

one written product.

Online collaborative writing. It is a form of collaborative writing assisted through CMC applications, such as email, wiki, discussion board, and blogs.

Traditional collaborative writing. It is a form of collaborative writing via the assistance of paper-and-pencil.

Quasi-experimental research design. Different from the experimental design which has a control and an experimental group and with random assignment of participants, it is a research design which has a control group and an experimental group, but participants are not randomly assigned to both groups.

Organization of the Dissertation Study

The dissertation study is divided into five chapters. Chapter One introduces the background to the research, the statement of the problems, the purpose of the study, the four research questions guiding this dissertation, theoretical framework of the study, significance of the study, as well as the definition of key terms. Chapter Two reviews, synthesizes and critically evaluates the research related to the topic of the dissertation including writing anxiety, traditional collaborative writing, technology-assisted writing, online collaborative writing, and the use of blogs in L2 learning. Chapter Three discusses the context of the study (e.g., setting, participants and material), the role of the teacher and researcher, the research design, procedures of data collection, the treatment of the study, the data analysis, as well as the pilot study. Chapter Four presents the quantitative and qualitative results of the four research questions. Chapter Five discusses the results of the research, the implications for teachers, internal validity and limitations to the dissertation study, as well as recommendations for future research.

CHAPTER TWO:

LITERATURE REVIEW

The purpose of this chapter is to review the literature pertinent to this study. It contains six sections. The first section briefly reviews the literature on writing. The second section explains the nature of writing, including the cognitive and affective aspects. In the affective aspect, writing anxiety and its related research are particularly discussed. The third section on collaborative writing presents different definitions of collaborative writing, and examines the collaborative writing research conducted in the L1 and L2 contexts. The fourth section examines the research on computer-assisted writing, including computer-based writing research and computer-mediated communication (CMC) writing research. In the fifth section, L1 and L2 online collaborative writing research is explored. The sixth section introduces the CMC technology, blogs, in terms of its definitions, types, features, and the issues which should be considered when using blogs for instructional purposes. Also, the relevant research on blogs in L2 learning is synthesized and presented.

The Nature of Writing

Among the four language skills (i.e., listening, speaking, reading and writing), writing can be considered as especially important because writing is one of the most important tools for communication especially in regards to business, professional, and academic communication. By writing, people communicate an array of messages to various readers. Similarly, in language education, writing is regarded as not only a thinking process but also a tool for language learners

to express their thoughts and feelings (Chiu, 2006). In other words, by writing, learners can communicate a diversity of messages to various readers. In the modern world, such communication is extremely important whether the interaction takes the form of paper-and-pencil writing or online writing because it is through writing that people can communicate a variety of messages to a close or distant, known or unknown reader or readers. Thus, viewing that writing is an act of communication, the ability to express ideas fluently, accurately and coherently in writing in native language (L1) or second or foreign language (L2) should be emphasized and cultivated (Olshtain, 2001).

Indeed, to prepare students for the ability to compose, during the last 50 years, some pedagogical approaches to the teaching of L1/L2 writing emerged, each representing a different view of the nature of writing. In addition, the emergence of these approaches also reflect the major writing development in the L1/L2 contexts. Several of these teaching approaches will be briefly addressed below regarding its theory and pedagogy.

Writing Approaches

First, from the early 20th century into the 1960s, the instruction of writing focused mostly on the features of written text. An early composition pedagogy, the product-based approach, is defined by its emphasis on the end result of the writing process, such as an essay, a paper, a letter, etc. In addition, the pedagogical focus of this approach is on form, the text itself. At the beginning, this approach emphasizes the view of writing as sentence level structure. Therefore, the production of well-formed sentences is stressed. A writing task that reflects this view and is mostly used at this time is the controlled composition. The teacher employs the controlled composition to teach writing will focus on formal accuracy and strive to avoid errors. Then, as the awareness that there is a need for writers to produce extended written texts appears, the

awareness extends the focus on linguistic structures/grammatical sentences to the level of paragraph. The result of the realization led to the emergence of the paragraph pattern approach, which emphasizes the importance of organization at the above-sentence level, that is the discourse level. Both the controlled composition and the paragraph pattern approach typify the paradigm of the product-based approach. The product approach reflects traditional teacher-centered approach to teach writing. In this traditional writing classroom, the teacher assigns a writing task, whether a controlled composition or the task on arranging sentences into paragraph, and evaluates the end results (Ferris & Hedgcock, 2005; Kitao & Saeki, 1992; Matsuda, 2003; Silva & Matsuda, 2002).

In the late 1970s and the 1980s, the interest had begun to shift from texture features to the process of writing itself, paved the way for the process approach. The process approach emphasizes the act of writing itself and the product, the written text, is the secondary concern. This approach also views writing as a recursive and generative process during which ideas are discovered and meaning are made. In other words, during the process of writing, writers need to plan, draft, read, revise and edit their texts. Hence, this approach emphasizes the revising process and audience awareness. Moreover, different from the product-based approach which focuses on form and the end result, the process-based approach focuses on the person, that is the writer, as well as the process, that is the strategies used. In the process-based approach classroom, it is suggested that instructors need to provide and maintain an environment which is like a positive, encouraging and collaborative workshop. Therefore, in this environment, the skill for communicating with others purposefully and meaningfully is important and necessary for writers. Furthermore, the instructor also needs to provide sufficient time and minimal interference which would allow students to work through their composing process so as to assist students to develop strategies for getting started, drafting, revising and editing. Consequently, from the process

perspective, writing is not only a recursive, complex and creative process, but also a social activity, aiming at interaction and communication with others (Ferris & Hedgcock, 2005; Kitao & Saeki, 1992; Matsuda, 2003; Silva & Matsuda, 2002).

Dissatisfaction with the process approach, due to the belief that writers need to compose texts for academic or professional readers with particular expertise, the emphasis in composition instruction are shifted from the writer-centered approaches to the reader-based approaches and content-based models, in particular English for academic purpose (EAP) and English for specific purpose (ESP) courses. In the writing classroom focusing on reader and content, instructors still can use the writer-driven and process-oriented procedures such as prewriting, revision, collaboration and peer review. Yet, the more different principle is the emphasis of discipline-specific rhetorical forms. Accordingly, based on this view, writing instruction will center more on identifying, practicing, and reproducing the features of written texts aiming for particular audiences (Ferris & Hedgcock, 2005; Matsuda, 2003; Silva & Matsuda, 2002).

These pedagogical approaches are based on different views of the nature of writing, though they stress different aspects of writing, the relationship between them are not necessarily mutually exclusive. For example, they can be used in the same course. The instructor assigns some types of assignment emphasizing audience, fluency in writing, and planning and revising, as well as some other assignments focusing more on noticing the linguistic aspect of the language and controlling over the mechanics of the language (Ferris & Hedgcock, 2005; Kitao & Saeki, 1992; Matsuda, 2003; Silva & Matsuda, 2002).

These writing approaches emerging from different time not merely reflect the writing development in the first and second language contexts but also disclose that writing, however, must be tought (Kitao & Saeki, 1992). In other words, both L1 and L2 writers need to learn to write in order to master this language skill.

As stated above, writing is an extremely complex activity, and is, thus, considered the most difficult of the four basic language skills to master (Kitao & Saeki, 1992). In the following section, the complexity of the language skill will be accounted for again through the discussion of its cognitive, affective and social aspects. Then an instructional method to help writers, particularly L2 writers, to master writing skills will be proposed based on the discussion of the three aspects.

Cognitive, Affective and Social Aspects of Writing

The cognitive aspect is related to thinking because we think as we write. For example, Gebhard (1996) suggests that writing is associated with the choice of word, use of grammar, syntax, mechanics and organization of ideas into a coherent and cohesive form. In addition, writing also includes an emphasis on audience and purpose. For instance, in order to present at a conference, graduate students need to think about how to write a conference proposal for the conference participants instead of professors. Apart from the focus of audience and purpose, writing itself is also a recursive process of creating meaning, including prewriting, drafting, revising and editing (Flower & Hayes, 1981; Gebhard, 1996; Zamel, 1976; 1982). Each stage of the process all needs thinking.

In addition to the cognitive aspect, according to McLeod (1987), writing is also an emotional activity because we feel as we write. She presented her experience of observing the behaviors of college freshmen when they were taking a writing test. The behaviors demonstrated by the students during writing evidently showed that writing is not merely cognitively but emotionally demanding. McLeod (1987) described her observation in this way:

I am watching a roomful of college freshmen take an essay exam; I can nearly see

the tension in the air. Several young men and women stare into space, pencils

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poised, brows furrowed, and sweating slightly. A number of others gnaw their lower

lips. Others chew their pens, their pencils, their fingernails. One examinee tears a

page out of his bluebook, crumples it tightly, and fires it at a nearby wastebasket.

When I announce there are five minutes left there is a rustle of sighs and low

groans, a burst of final activity. Students leave, their faces smiling or frowning; few

faces are totally impassive. (p. 426)

The above quotation from the pivotal article of McLeod (1987) gave us more

understanding of the emotional and cognitive aspects of writing.

In terms of writing in L2, it is considered to be a more challenging cognitive activity than

writing in L1. Silva (1993) claimed that L2 writers have to not merely consider global aspects of

the L2 such as strategic, rhetorical, and cultural levels but also local aspects dealing with

syntactic and lexical options using L2. Therefore, when composing, L2 writers planned less, as

well as were less fluent and accurate as compared with L1 writers. To think in this way, writing

in L2 is more difficult than writing in L1. Apart from the difficulty in the cognitive aspect, Lee

(2005) suggests that, similar to L1 writing, the difficulty of L2 writing also originates from the

affective aspect such as writing anxiety. However, because L2 writers think and write in the

second language with which they are less familiar, L2 writing seems to produce writing anxiety

more easily than L1 writing. A further discussion on this affective aspect of writing, writing

anxiety and its related L2 research will be briefly presented below.

Writing anxiety and related L2 research. Writing anxiety or writing apprehension, one

of the affective aspects of writing, has been discussed since 1970 (Cheng, Horwitz & Schallert,

1999). The construct, writing anxiety or writing apprehension, named by Daly and Miller

(1975a), is defined in a variety of ways. It is used generally to mean the negative and anxious

feelings that disrupt part of the writing process (McLeod, 1987). It also relates to the tendency of

people to approach or to avoid writing (Daly & Miller, 1975a). Thus, low apprehensive writers

tend to enjoy writing frequently, and are more confident in their abilities to write (Daly, Faigley,

& Witte, 1981). As for the people with high writing anxiety, they view writing as an unrewarding

and even punishing event, and, therefore, they avoid the situations in which they need to write.

Their writing anxiety is reflected in the behaviors they demonstrate as they write, in the attitudes

they express about their writing, and, above all, in their written products (Daly & Miller, 1975a).

There are some research conducted to explore the role of L2 writing anxiety. For example,

Lee (2005) examined the relationship of EFL writing performance to a variety of inhibiting

factors. Among the inhibiting factors, writing anxiety was explored. A total of 270 university

students from Taiwan participated in the study. They were asked to complete the Daly and Miller

Writing Apprehension Test (WAT) within 30-40 minutes and were given another 40 minutes to

write a short essay. Two raters were involved in evaluating the essays. The grading was based on

the level of writing proficiency, vocabulary, grammar and mechanics. In the study Lee (2005)

hypothesized that writing anxiety had a negative impact on writing performance. However, based

on the data analysis, the study indicated that participants' writing anxiety was not significantly

related to their writing performance.

Cheng, Horwitz and Schallert's study (1999) also explored how writing anxiety relates to

writing achievement. Four hundred and thirty-three university students completed the Chinese

version of the WAT. Their final course grades for their English writing classes were used as

achievement measurement. The results revealed that writing anxiety was negatively associated

with writing achievement. Students with high levels of writing anxiety tended to have lower

English writing course grades. In Cheng's study (2002), the relationship between writing anxiety

and learner variables was investigated. Participants were 165 EFL college students. The data of

the study were from the modified versions of the WAT and background information

questionnaires completed by participants, as well as the participants' English writing course grades at the end of the semester. The results of the data analysis showed that English writing achievement was able to predict writing anxiety.

The above research focuses on the discussion of how L2 writing anxiety relates to people's writing performance (e.g., Cheng, 2002; Cheng, Horwitz & Schallert, 1999; Lee, 2005). Among these studies, with the exception of Lee (2005), most found that writing anxiety is negatively related to writing performance (Cheng et al, 1999) and writing performance is a significant predictor of writing anxiety (Cheng, 2002).

The above sections address the cognitive and affective aspects of writing. In one word, the cognitive and affective aspects of writing emphasize that writing is a cognitively and emotionally demanding activity because we think and feel as we write. In addition to the two aspects, writing is also concerned with the social aspect. The social aspect of writing is discussed below.

According to Bruffee (1984), writing itself is a displaced form of conversation. If thought is internalized social talk (i.e., internalized conversation), writing of all kinds is internalized social talk made social and public again. In other words, writing is internalized conversation re-externalized, as Bruffee discussed "We converse; we internalized conversation as thought; and then by writing, we re-immerse conversation in its external, social medium" (p. 641). The point that Bruffee attempts to make is that writing teachers must involve students in conversation among themselves in the writing process. To organize students for these purposes is to organize collaborative learning for students. The reason for collaborative learning is that it provides a social context where students can experience and practice conversation. Through collaborative classroom group work, students could engage in more conversation. Since thought is internalized conversation, it is assumed that the more conversation could result in more thought; the more thought would facilitate students to compose. Based on this viewpoint, writing is not simply an

individual act. It needs more complex activity, such as the interaction and conversation with others. Collaborative learning helps create an interactive environment where learners could interact with each other, and engage in more conversation which are internaized as thoughts facilitating learners to write. Therefore, collaborative learning can be viewed as a pedagogical tool that works in teaching composition (Bruffee, 1984).

To conclude, it is via writing that people can communicate a variety of messages to a reader or readers. Based on the viewpoint that writing is an act of communication, writing can be considered an essential language skill. Therefore, it should be emphasized and nurtured in language education. Indeed, during the last 50 years, different pedagogical approaches to teach writing have emerged, such as product-based approaches, process-based approaches, and content-based approaches, each of which reflecting different views of the nature of writing. The emergence of the many different approaches to teach writing not merely reflects the writing development but also implies that writing is complicated in nature as researchers also suggest that writing is regarded as the most difficult of the four language skills to master, and therefore, it must be taught.

In addition, the complexity of writing can also be realized as it is analyzed through cognitive, affective and social aspects. Researchers claim that writing is a cognitive and emotional activity. It also needs more complex activity, such as interaction with others. Accordingly, writing is not just an individual act. For L2 learners, writing may be more challenging and difficult because they need to think in L2 as they are writing. Hence, writing in L2 may arouse more anxiety during the writing process. Previous research indeed suggests that learners with higher writing anxiety tend to have lower writing performance. Because writing in L2 seems to be more cognitively and emotionally demanding than writing in L1, to help L2 learners compose and master the skill, it is important for language instructors to consider using

more effective instructional methods to teach writing.

Previous research suggests that collaborative learning is considered as a useful pedagogical strategy for promoting students' learning outcomes (e.g., Bejarano, 1987; Johnson & Johnson, 2008; Johnson, Johnson & Scott, 1978; Slavin, 1980; Sung, 2009). Researchers (e.g., Johnson, Johnson & Smith, 1991) also proposes that collaborative learning helps produce less anxiety. Therefore, based on the viewpoint of the social aspect of writing and the findings of previous research, it is possible that integrating collaborative learning with writing (i.e., the collaborative writing in the dissertation study) can be an effective instructional method to help L2 learners to cultivate the writing ability and master the skill, especially for enhancing their writing performance and reducing their writing anxiety.

In the following section, a more detailed discussion on the pedagogical tool (i.e., collaborative writing) is presented in terms of its definition and relevant research.

Collaborative Writing

A body of research has been carried out in the L1 and L2 contexts to examine the effectiveness of collaborative writing. Before discussing these studies, it is necessary to define collaborative writing.

Defining Collaborative Writing

The construct, collaborative writing, has been defined in different ways. In accordance with Dale (1994), collaborative writing means meaningful interaction, shared decision making and responsibility among group members in the writing of a shared document. Ede and Lunsford (1990) suggest that collaborative writing is any writing done in collaboration with one or more persons. It may involve written and spoken language brainstorming, outlining, note-taking,

planning, drafting, revising, editing, and publishing. According to Louth, McAllister and McAllister (1993), there are two kinds of collaborative writing: Interactive writing and group writing. In interactive writing, group members interact with each other during the different stages of the writing process. However, individual authors are ultimately responsible for their own work. Peer editing is an example of interactive writing. In group writing, group members also interact during the various stages of the writing process, but they are responsible for the final product. Coauthoring a report is an example of group writing.

In a more expansive manner, Farkas (1991) classified four types of collaborative writing. First, two or more people jointly complete the whole text of a document. An example of this type of collaborative writing is coauthoring a report. Second, two or more people contribute components to a document. Writing separate parts of a text is an example of the second type of collaborative writing. Third, one person or more people edit or review the written work of one or more people. Peer feedback or peer editing is the typical example of this type of collaborative writing. Fourth, one person works with one or more people and drafts documents according to the ideas of the person or people. Group brainstorming is an example of this type of collaborative writing. Saunders (1989) also proposed four types of collaborative writing: co-writing, co-publishing, co-responding, and helping. In co-writing, peers collaborate on every task throughout the collaborative writing process. Co-publishing means peers co-publish a collaborative text based on individual texts. As for co-responding, writing peers interact only during the revision process. The "helping" category means that writers voluntarily help one another during the writing process in a particular manner.

Based on the definitions of collaborative writing discussed above, it is proposed that collaborative writing could be generally divided into three types:

1. Group members write separate sections of a text. They work independently and have little

discussion during the process of writing (i.e., co-publishing).

2. Group members exchange ideas during the writing process, but create individual written products (i.e., co-responding, peer editing or peer feedback).

3. Group members write together and exchange ideas during the writing process, and they create one written product (i.e., co-writing).

In the present study, participants worked interactively with one person or more people throughout the writing process and jointly create one written product. Therefore, the collaborative writing in this study means co-writing (i.e., the third type of collaborative writing that is proposed above). In the following section, research on collaborative writing, particularly on co-writing is discussed.

Research on Collaborative Writing

Research on collaborative writing has been conducted in the L1 context (e.g., Louth, McAllister, & McAllister, 1993; Sutherland & Topping, 1999) and the L2 context (e.g., Fung, 2010; Gousseva-Goodwin, 2000; Jafari & Ansari, 2012; Shehadel, 2011; Storch, 2001;2005; Wigglesworth & Storch, 2009). The issues investigated in these studies include the influence of collaborative writing on students' writing ability/performance (e.g., Louth, et al, 1993; Gousseva-Goodwin, 2000; Jafari & Ansari, 2012; Shehadel, 2011) and on students' attitude toward writing (e.g., Louth, et al, 1993; Sutherland & Topping, 1999), students' experience of writing collaboratively (e.g., Storch, 2005), the features of collaborative writing (Fung, 2010), as well as the comparison of the performance of different collaborative writing pairs.

Among the research examining the effect of collaborative writing on students' writing ability, some researchers compare the individual writing products completed by two groups of students after being involved in different treatment (e.g., Jafari & Ansari, 2012; Louth, et al,

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1993; Shehadel, 2011; Sutherland & Topping, 1999). In other words, one group writes collaboratively and creates one joint product; the other group writes individually. Both groups complete pretest and posttest individual writing tasks. The posttest writing products completed by both groups were analyzed and compared to identify if collaborative writing had any influence on students' writing performance. However, in some studies, there were no pretest and posttest. The researchers only compare the collaborative and individual writing products (e.g., Gousseva-Goodwin, 2000; Storch, 2005; Wigglesworth & Storch, 2009)). In terms of exploring the influence of collaborative writing on students' attitudes, most researchers have students complete surveys or questionnaires, or interview students after the completion of collaborative writing tasks (e.g., Louth, et al, 1993; Shehadel, 2011; Sutherland & Topping, 1999).

In addition to the research exploring the influence of collaborative writing on students' writing performance and attitudes toward writing, some research (e.g., Fung, 2010) examined the features of collaborative writing. The collaborative writing features were identified through analyzing the excerpts from collaborative writing groups or transcripts of pair talks. There is also some research (e.g., Storch, 2001) which compared the performance of different pairs on a writing task. The performance in these studies meant not merely writing performance but the performance of pairs as they were involved in collaborative writing as well. In this type of research, not only were the collaborative products analyzed but also the transcripts of pair talks and the observation notes. The qualitative research design is employed in Fung's (2010) and Storch's (2001) studies, which are different from the research investigating the influence of collaborative writing on students' writing and attitudes because the latter uses quantitative (e.g., Gousseva-Goodwin, 2000; Jafari & Ansari, 2012; Louth et al, 1993; Sutherland & Topping, 1999) or mixed-method research design (e.g., Shehadel, 2011; Storch, 2005; Wigglesworth & Storch, 2009). The following section presents a more detailed explication of this body of research in L2

context.

ESL contexts. Fung (2010) discussed the features of collaborative writing. The data were the excerpts from an essay jointly produced by one collaborative writing group in an ESL academic writing class. Fung (2010) found that the features that emerged during collaborative writing included the defining features, meaning the features that help define collaborative writing, such as mutual interaction, negotiation, conflicts, and shared expertise, as well as the facilitating features, which means the features that can facilitate collaborative writing, such as affective factors, use of L1, backtracking, and humor. Fung suggested that these features revealed that students are able to construct knowledge and develop writing and social skills through interaction and collaboration with peers.

Gousseva-Goodwin (2000) examined if writing performance varied between collaborative and independent writing tasks. Participants of the study were 20 advanced ESL students. They were asked to write two take-home essays: an independent one and a collaborative one. In the case of the independent essay, each student was required to write individually. As for the collaborative essay, it was written in a group with two other group members. Students' essays were evaluated by two experienced ESL teachers using a rubric. The grading rubric included the holistic and analytic parts. In terms of the holistic part, the ESL raters rated their overall impression of the essay on a scale from 1 to 5. The analytic part asked the raters to assess the essay with respect to effectiveness in addressing the writing task, organization, the development of ideas, sentence structure, the use of vocabulary, grammar, and mechanics. The results of the analysis showed that there were differences in writing performance between collaborative and independent essays, with the former group obtaining higher scores than the latter.

Storch (2001) explored the performance of three pairs of adult ESL students on a writing task. The sources of data were transcripts of the pair talk and the researcher's observation notes,

and the composition produced by the pairs. The analysis of the data indicated that students working in pairs may not necessarily work in a collaborative manner. Storch indicated that the factors causing this phenomenon may be learners' attitude to pair work and their motives/goal, which need further investigation. Furthermore, the data analysis also suggests that collaboration may have an effect on the writing task performance if students do collaborate.

Storch (2005) investigated collaborative writing in terms of product, process, and students' reflections on their experience of writing collaboratively. Participants were 23 adult ESL students. Eighteen students worked in pairs and five students worked individually. They were given a graphic prompt and asked to write a short text. All pair work was audiotaped, and all texts produced by pairs and by individual learners were collected. Students working in pairs were also interviewed after completing the writing task. The students' completed texts were analyzed using both quantitative and qualitative measures. The quantitative evaluation included measures of fluency (i.e., the total number of words), accuracy and complexity (the count of T-units and clause analysis). The qualitative evaluation of the written texts took into account the content and structure of the text, and task fulfillment. It was conducted using a 5-scale global evaluation scheme. The results of the comparison of individually and jointly written texts showed that pairs tended to compose much shorter texts than students who composed individually. However, texts produced by pairs seemed better than those produced by students individually in terms of accuracy and complexity. The qualitative analysis of students' texts showed that the texts produced by pairs scored higher than the texts produced by individual students. As for the process of collaborative writing, the analysis of pair dialogues revealed that collaboration provided the students with the opportunity to interact on different aspects of writing (e.g., planning, writing, revision). It encouraged students to collaborate when generating ideas. Finally, the results of the students' interviews showed that most students were positive about the

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experience of writing collaboratively though some expressed some reservations about collaborative writing.

Wigglesworth and Storch (2009) investigated the effects of pair and individual writing on fluency, complexity and accuracy. A total of 144 ESL students participated in the study. Ninety-six of the students who had self-selected into pairs completed the writing task (i.e., 48 pairs). The other 48 students completed the same task individually. The pairs and the individuals were given 60 minutes and 40 minutes to complete the essay respectively. The essays were analyzed for fluency (i.e., length of production), complexity and accuracy. The comparison of individual writing and pair writing showed that collaborative writing did not result in longer texts, and had no impact on grammatical complexity. However, there were significant differences in the performance of the individuals and pairs in terms of accuracy. Pairs produced more accurate texts than those writing individually. In terms of the process of writing, the analysis of pair dialogue suggested that collaboration offered the learners with the chances to interact at different phases of writing. It encouraged students to collaborate when generating ideas about the content of their essays. A more detailed analysis of students' interaction demonstrated that the pair work activities provided students with substantial opportunities to share ideas and to pool their language knowledge.

EFL contexts. Shehadel's study (2011) investigated whether collaborative writing has any effect on the quality of students' writing in L2 and students' perceptions of collaborative writing in L2. Participants were 38 first-year female EFL learners in two parallel intact classes at a large public university in the United Arabic Emitates. One class was randomly assigned as the control group, consisting of 20 students; the other class consisted of 18 students (9 pairs) and was considered the experimental group. Students completed 12 writing tasks in each condition. The writing tasks were carried out individually in the control group and in pairs in the experimental

group. Both groups of students completed pre and post-test writing tasks and a survey with open-ended questions. students' writings were evaluated in terms of content, organization, grammar, vocabulary and mechanics of writing. The results showed that collaborative writing had a significant effect in the areas of content, organization and vocabulary, but not mechanics or grammar. One possible reason that may explain that the effect of collaborative writing varies with the specific language areas explored might be the participants' low proficiency in English which made them be unable to assist each other. The result also showed that almost all students in the experimental class were positive about the collaborative writing activity and enjoyed the experience.

Another study by Jafari and Ansari (2012) examined the effect of collaboration on Iranian EFL learners' writing accuracy, and the effect of gender on text production. Participants were 60 university students and were divided into the control and experimental groups. Students in the experimental group were asked to write in pairs while those in the control group wrote individually. Both groups participated in four essay writing sessions. The first and last sessions are pre-test and posttest respectively, and all members in both groups wrote individually. As for the second and third sessions, students in the control group engaged in individual writing while those in the experimental group wrote in pairs. The results revealed that learners in the experimental group produced more accurate texts than those in the control group. The improved accuracy in collaborative writing groups may be due to the increased motivation to focus on grammatical accuracy and the engagement in revision process which led to more accurate texts. In addition, results also showed that female participants in both groups produced more accurate texts than male participants.

The above L2 collaborative writing research suggests that collaboration and interaction with peers during the writing process help develop ESL writing skills (e.g., Fung, 2010). It also

has a positive effect on writing performance in both ESL and EFL contests, including the performance of individual (e.g., Louth et al, 1993; Sutherland & Topping, 1999) and collaborative (e.g., Gousseva-Goodwin, 2000; Jafari & Ansari, 2012; Shehadel, 2011; Storch, 2005; Wigglesworth & Storch, 2009) written products. For instance, students were found to be able to produce better texts in terms of holistic score (e.g., Louth, McAllister, & McAllister, 1993; Storch, 2005), grammatical accuracy (e.g., Jafari & Ansari, 2012; Storch, 2005; Wigglesworth & Storch, 2009), complexity (e.g., Storch, 2005), as well as content, organization and vocabulary (Shehadel, 2011). In addition, particularly in the EFL context, there seems to be the effect of gender on text production, with female being able to produce more accurate texts than male (Jafari & Ansari, 2012).

Apart from the positive findings, still there is some ESL research reporting that collaborative writing has no influence on writing performance. For example, in Storch's study, (2005) pairs tended to compose much shorter texts than students who composed individually. Storch suggests that the reason causing the result is that individual writers tended to produce overly detailed texts. They restated the information given in the chart in words instead of making generalization on the basis of the information given. On the contrary, pairs tended to include less detail and contain clear statements in their texts. Similar to Storch's study (2005), Wigglesworth and Storch's study (2009) also found that collaborative writing did not result in longer texts. In addition, the findings of the study also suggest that collaborative writing had no impact on grammatical complexity. Wigglesworth and Storch did not clearly explain the reason causing the negative findings. However, regarding the grammatical complexity, Wigglesworth and Storch indicated that it was measured through (1) proportion of clauses to T-units and (2) percentages of dependent clauses of total clauses, but these two measures reflect the same construct. They proposed that it is possible that other measures of complexity, such as token ration, or other

measures of grammatical verb form, such as modality, tense or voice, may elicit different results.

In addition to the writing performance, collaboration in both ESL and EFL contexts also has positive effects on students' affective responses. In Louth et al.'s study (1993), students writing collaboratively had more positive attitudes toward writing than the students writing individually. In the studies by Storch (2005), and Sutherland and Topping (1999), students also had positive responses to their experience of writing collaboratively. Moreover, in Shehadel's study (2011), students enjoyed the experience of collaborative writing. Finally, based on the research findings particularly in the ESL context, collaboration during the writing process can provide chances to interact on different aspects of writing, including planning, writing, and revision (e.g., Storch, 2005; Wigglesworth & Storch, 2009).

In addition to the findings yielded from collaborative writing research, a review of this body of research also reveals a gap. That is, the issue of writing anxiety has not been explored in this line of research. However, why is it necessary to examine the issue? As discussed in the previous section on "the nature of writing", writing is an affective activity and can be emotionally demanding (McLeod, 1987). It may produce anxious feelings (i.e., writing anxiety) that can interfere with part of the writing process. Relevant research indeed found that students with higher writing anxiety tend to have weaker writing performance in L2 context (e.g., Cheng, 2012; Cheng, et al, 1999). In collaborative writing, students are involved in not only writing activity but also collaboration. Since collaborative learning could help produce less anxiety (Johnson, Johnson & Smith, 1991), if students write collaboratively rather than individually, it might be possible that students can have lower writing anxiety. The present investigation could help indicate whether collaborative writing helps decrease students' writing anxiety through the pre- and post-test comparison.

Computer-Assisted Writing

In addition to the increasing use of collaborative writing technique in writing instruction, since 1980, due to the advance of computer technology, there has been a growing interest in the potential of computers as facilitators for students' learning (Light & Mevarech, 1992). In the field of writing, teachers are engaged in applying computer technology into writing classes. Researchers are also devoted to the study of its efficacy in the teaching and learning of writing. In the earlier studies among this group of research, the potential of computer-based writing (e.g., the use of word processing programs) was examined. Later on, with the rise of the Internet, a focus found in the later studies shifted to the use of computer-mediated communication (CMC) technologies in writing (e.g., email, chat room, online discussion board, blogs, wikis, course management systems like WebCT and Blackboard, and other programs such as InterChange, Netmeeting, NICENET, etc.). Course management systems usually have CMC applications in their system so they are also considered as CMC technologies in this review. In the following section, some of the studies among this group of research are discussed.

Research on Computer-based Writing

Research on computer-based writing has been conducted in various contexts. In terms of school settings, it has been carried out in elementary schools (e.g., Dybdahl, Shaw & Blahous, 1997; Jones, 1994) and colleges (e.g., Bernhardt, Edwards & Wojahn, 1989; Reed, 1990; Teichman & Poris, 1989; Sullivan & Pratt, 1996). Studies also have been conducted in the L1 (e.g., Bernhardt et al, 1989; Dybdahl et al, 1997; Jones, 1994; Reed, 1990; Teichman & Poris, 1989) and L2 contexts (e.g., Sullivan & Pratt, 1996). Three issues are mainly investigated in these studies: The effect of word processing programs on students' writing quality (e.g., Dybdahl et al, 1997; Jones, 1994; Reed, 1990; Sullivan & Pratt, 1996; Teichman & Poris, 1989), writing

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quantity (e.g., Dybdahl et al, 1997; Jones, 1994), and writing anxiety (e.g., Bernhardt et al, 1989; Reed, 1990; Sullivan & Pratt, 1996; Teichman & Poris, 1989). Most of these studies employ experimental and quantitative research design to explore these issues (e.g., Bernhardt et al, 1989; Dybdahl et al, 1997; Jones, 1994; Sullivan & Pratt, 1996).

In these studies, there is one group of students writing via word processors and one group of students composing using paper-and-pencil. Both groups of students complete a writing task and writing apprehension test (WAT) before and after the treatment. Both groups of students' writing samples and responses to the WAT are analyzed and compared to identify the efficacy of computer-based writing. The findings of the research suggest that word processing programs have a positive effect on the writing quality measured holistically (e.g., Bernhardt, et al., 1989; Jones, 1994; Reed, 1990; Sullivan & Pratt, 1996; Teichman & Poris, 1989). It also has a positive impact on writing quantity in terms of the total number of words (e.g., Jones, 1994) and the total number of sentences (e.g., Dybdahl et al., 1997). As for writing anxiety, however, most studies reveal that there is no significant difference between the students who use word processors and those who do not (e.g., Bernhardt, et al., 1989; Reed, 1990; Teichman & Poris, 1989), suggesting that word processors may not have a strong effect on students' writing anxiety.

Research on Computer-mediated Communication (CMC) Writing

L2 research on CMC writing has been carried out in ESL (e.g., Ghaleb, 1993), EFL (e.g., Liaw, 1998; Shang, 2007), and other FL contexts (e.g., Gonzalez-Bueno & Perez, 2000; Perez, 2003; Zhang, 2009). The issue that is mostly investigated in this line of research is the effect of CMC on students' writing (e.g., Ghaleb, 1993; Shang, 2007; Zhang, 2009) or language production (e.g., Gonzalez-Bueno & Perez, 2000). Other issues discussed include students' attitudes toward CMC writing (e.g., Liaw, 1998) and the efficacy of different modes of CMC

writing (e.g., Perez, 2003). As for the research design of these studies, only a few of them are experimental studies (e.g., Ghaleb, 1993; Gonzalez-Bueno & Perez, 2000), in which one group of students participates in CMC writing and the other group composes using paper-and-pencil. In most studies (e.g., Liaw, 1998; Shang, 2007; Zhang, 2009), only one group of students receiving the treatment of CMC writing is explored. The performance of these students is not compared with that of the students in a control group. In the following section, a more detailed discussion of these studies is presented.

ESL contexts. Ghaleb (1993) explored the writing of 34 ESL students in two university freshman writing classes. One was a traditional class consisting of 15 students. These students met five times a week in a teacher-centered classroom. The other class consisted of 19 students. Students in this class made use of the CMC program, InterChange, which allowed for synchronous written conversations. Data were the writings from six class sessions as well as the first and the final versions of the term paper. The data were analyzed in terms of the quantity of in-class writing, errors made by the students, and the quality of writing measured holistically. Results of the data analysis revealed that the quantity of writing in the networked class far exceeded that of the traditional class. As for the holistic scores, however, the traditional class outperformed the networked class. Ghaleb (1993) attributed this difference to the larger amount of time that the instructor spent teaching grammar in the traditional class than in the networked class. These results suggest that students using a computer-mediated communication network in a university ESL writing class, in some instances, at least in certain measures, surpass those learning writing via traditional grammar-based approach.

Ghaleb (1993) employs an experimental research design. The claims made in the research are more acceptable and convincing as compared with those in the non-experimental research. However, Ghaleb's study seems to be influenced by an intervening variable, the differential

instruction in the control and experimental groups, which is considered a threat to the internal validity. Therefore, the findings of the study become less persuasive due to the intervening variable.

EFL contexts.   Liaw (1998) examined the efficacy of integrating e-mail writing into two EFL classrooms. Participants were 52 first-year college students from two classes. Students in one class were paired up with the students in the other class for one semester to exchange e-mail messages. At the end of the semester, a written survey was administered to the participants. Group interviews were also conducted to collect students' comments on and assessment of the approach. The results of the survey indicated that the students agreed that they learned how to write faster and revise their writing better because of the use of email. The results suggest that email writing had a positive influence on students' writing skills.

Shang (2007) examined the effect of using email on the improvement of writing performance with respect to syntactic complexity, grammatical accuracy, and lexical density. Participants were 40 first-year college students at a university in Taiwan. They were required to read the assigned articles and write two paragraphs as summaries of the reading materials. After completing the writing task outside the class (original text), each participant sent it to his/her peers via email so they could read each other's writing and exchange ideas. All peer interactions, including discussing the assigned article, writing the last draft, and communication between these two, were carried out electronically. To understand participants' affective responses to the email approach, a survey was administered. The analysis of the original text and the revised text revealed that participants made improvement in their writing in terms of syntactic complexity and grammatical accuracy after doing the email activity. Nevertheless, an increase in lexical density was not found in the study. The survey results revealed that participants believed that the email activity was a positive strategy that helped improve their writing and attitudes towards

learning English.

In Liaw's (1998) and Shang's (2007) studies, there is no control group. Therefore, it can not be sure that whether CMC is linked to students' improvement. The findings of these studies should be interpreted with caution, and should not be treated equally to those of studies with a more rigorous design (e.g., experimental or quasi-experimental research design).

FL contexts.   Gonzalez-Bueno and Perez (2000) investigated the effects of dialogue journaling through email on the language produced by 30 learners who were selected from two Spanish classes at a community college. One class was the control group. Students in this group wrote traditional paper-and-pencil dialogue journals during class time (10 minutes) at the end of each session. The other class was the experimental group in which students wrote dialogue journals via e-mail. They could send their messages from anywhere outside the classroom and had unlimited time to write. Data were collected for one semester. Each participant completed nine messages, which resulted in a total of 135 messages from each group. In addition to the messages from the participants, a written survey was administered to both groups of students at the end of the semester to elicit their opinions on the programs' effectiveness. Participants' messages were analyzed in terms of the quantity of language produced (i.e., the number of words), appropriateness of vocabulary, and grammatical accuracy. The results of students' messages showed that the experimental group produced significantly higher number of words than the control group did. However, the differences between groups were not statistically significant for grammatical and vocabulary errors. The survey results indicated that students in the experimental group had more positive views on the benefit of dialogue journaling than those in the control group in terms of the improvement of their foreign language learning and their attitudes towards Spanish. These results suggest that the electronic version of dialogue journaling had a positive influence on the amount of language produced by the students, and it improved the

attitudes towards learning the target language. However, it seems that the use of e-mail did not facilitate the improvement of vocabulary and grammatical accuracy.

Perez (2003) investigated foreign language productivity in two modes of computer-mediated communication (CMC): e-mail and chatroom. Participants in the study were 24 college students studying Spanish as a foreign language. They emailed a dialogue journal of a minimum of 80 words to the instructor every Tuesday and participated in a chat room session for one hour with the instructor every Tuesday. The treatment lasted one semester. To gauge students' preferences for email or chatroom, a questionnaire was administered to all participants. The data in the study included the messages from email and chatroom, and the responses to the questionnaire. The analysis of the data revealed that both CMC activities facilitated vocabulary enrichment and had positive influence on language productivity in the language acquisition process. Moreover, students enjoyed both techniques, which created a nonthreatening atmosphere and lowered the affective filter.

Zhang (2009) investigated the use of a Mandarin Chinese WebCT discussion board to support essay writing. Participants were from a second-year Chinese language class from a Midwestern US university. They completed essay writing tasks and carried out all interactions on the WebCT discussion board. The analysis of students' essay writing indicated that overall students' final essays were longer than their first essays. The results of the study also revealed that essay writing in the Chinese WebCT discussion board was instrumental in students' Chinese language acquisition.

In Gonzalez-Bueno and Perez's study (2000), a more rigorous research design, an experimental research design, was employed. The arguments made by Gonzalez-Bueno and Perez are, therefore, more acceptable and convincing. However, in Perez's (2003) and Zhang's (2009) studies, there is no control group. When there is not a control group, it can not be sure

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that it is the medium (as opposed to practice itself or instruction) that leads to students' improvement. The arguments made by Perez and Zhang should be interpreted cautiously, and should not be treated equally to those by Gonzalez-Bueno and Perez, whose study is more rigorous in the methodology.

In sum, the research on CMC writing in ESL, EFL and FL contexts all yields encouraging findings regarding students' writing performance. In two EFL studies investigating only a group of students using CMC technology, the results suggest that students could write faster (e.g., Liaw, 1998) and make improvement in their writing in terms of syntactic complexity and grammatical accuracy (e.g., Shang, 2007). Similarly, in the studies examining both control and experimental groups, the results also suggest that there are significant differences in the quantity of writing regarding the number of entries in the ESL context (e.g., Ghaleb, 1993) and the number of words in the FL context (e.g., Gonzalez-Bueno & Perez, 2000), with the group using CMC technology outperforming the group not using CMC technology.

However, negative findings regarding students' writing performance are also found in the research conducted in the ESL, EFL and FL contexts. For example, Ghaleb (1993) found that ESL students making use of CMC program to write did not outperform those in the traditional class in terms of the holistic scores. Ghaleb attributed this difference to the larger amount of time that the instructor spent teaching grammar in the traditional class than in the networked class. As for Shang's study (2007), a negative result showed that the use of email did not result in EFL students' improvement in their writing in terms of the lexical density. Shang suggests that a reduction in lexical density in the study occurred because students ventured to use more corrective feedback on complex sentence structures and grammatical accuracy, and at the same time, they decreased monitoring while using a richer vocabulary. In Gonzalez-Bueno and Perez's study (2000), they found that the dialogue journaling through email did not facilitate the

improvement of vocabulary and grammatical accuracy in the FL context. Gonzalez-Bueno and Perez claim that the nature of dialogue journal technique may promote written fluency, but not necessarily accuracy. In order to improve grammatical and lexical accuracy, they suggest that it is necessary to use consciousness raising and processing techniques, which call for more form-focused activities than what is offered by the dialogue journal context.

As for the findings of students' affective responses, the study conducted in the FL context suggests that students enjoy using CMC technology, such as email, to assist the completion of writing tasks, which helps lower their affective filter (e.g., Perez, 2003). Students also felt that the use of technology is a good strategy that helps enhance their FL learning (e.g., Gonzalez-Bueno & Perez, 2000), and improve their attitudes toward the target language and toward learning it in the EFL context (e.g., Shang, 2007).

Similar to the gap found in the collaborative writing research, writing anxiety is also not clearly investigated in CMC writing research. This issue needs to be further examined in this line of research because researchers have claimed that CMC can reduce anxiety (Greenfield, 2003). For example, Sullivan (1993) suggests that the CMC environment is freer of risk than a traditional teacher-centered classroom because it allows students to have more time to form responses. Therefore, for the students who are often afraid of talking or hesitant to speak out in class due to shyness or insecurity about being understood, it is less threatening to work with a computer screen and keyboard than to have to speak out loud in front of peers and teachers. In addition, according to Kern (1995), the CMC environment provides an informal atmosphere, which helps reduce students' anxiety. The informal atmosphere often motivates students to participate more actively in discussion. Based on these viewpoints, it could be assumed that the combination of CMC and writing (i.e., CMC writing) will provide an environment where students can work on their own and write at their own pace in a less threatening and more

relaxed environment. Therefore, CMC writing is different from writing in a traditional classroom, and may be helpful for reducing students' writing anxiety.

To sum up, the findings of the above research suggest that the use of word processors and CMC technologies in writing instruction can have positive effects on students' writing performance. The influence on students' writing anxiety has been investigated in computer-based writing research. The findings of most research suggest that using word processing programs does not have a strong effect on students' writing anxiety. However, in CMC writing research, this issue has not been frequently discussed. Since CMC is considered to be able to reduce anxiety (Kern, 1995; Sullivan, 1993), exploring writing anxiety in this body of research may be necessary to further understand if writing in a CMC environment can result in lower writing anxiety.

In CMC writing research, a number of these studies make the following arguments: (1) students write in CMC; (2) students' writing improves; (3) therefore, the use of CMC is linked to improvement (e.g., Ghaleb, 1993; Gonzalez-Bueno & Perez, 2000; Liaw, 1998; Shang, 2007; Zhang, 2009). However, not all of studies that have been conducted have been equally rigorous in their methodologies. One of the major flaws is the lack of using a control group (e.g., Liaw, 1998; Shang, 2007; Zhang, 2009). However, when there is no control group, how can the investigators of these studies assure that it is the medium that is responsible for students' improvement in writing? It is probably the practice itself or teacher's instruction that leads to the improvement. Therefore, the findings of these studies should be interpreted with caution.

On the contrary, in the studies employing an experimental or a quasi-experimental research design, such as Ghaleb (1993) and Gonzalez-Bueno and Perez (2000), the claims regarding students' improvement made by the investigators become more acceptable and convincing. They should not be treated equally to those made in the studies without a more rigorous design.

Nevertheless, if the study has serious threats to internal validity, the research findings still need to be interpreted cautiously. For instance, Ghaleb (1993) found that the quantity of writing in the networked class far exceeded that of the traditional class. As for the holistic scores, however, the traditional class outperformed the networked class. Ghaleb attributed this difference to the larger amount of time that the instructor spent teaching grammar in the traditional class than in the networked class. In an experimental study, the differential instruction in control and experimental classes seems to be a potentially intervening variable to research findings. This serious threat to the internal validity to Ghaleb's study decreases the persuasiveness of the arguments made by Ghaleb even though the experimental design is used in the study.

Online Collaborative Writing

Warschauer (1997) claimed that CMC facilitates online collaborative language learning. Due to the rise of the Internet and its collaborative feature, a new strand of writing research has emerged that has investigated the effect of integrating CMC with collaborative writing (i.e., online collaborative writing). As discussed in previous sections, the positive research findings imply that collaborative writing and CMC may be effective instructional methods for teaching and learning writing. However, can online collaborative writing be an efficacious strategy as well? In the following sections, some research on online collaborative writing is discussed, which may help realize whether or not online collaborative writing can also be an effective strategy for teaching and learning writing.

Research on Online Collaborative Writing

Online collaborative writing can be employed in different language contexts and at various levels. Studies have been carried out in the L1 context among professionals (e.g., Barile & Durso,

2002). In the L2 context, studies have been conducted with secondary school students (e.g., Franco, 2008; Greenfield, 2003; Mak & Coniam, 2008), college students (e.g., Lee, 2010; Liou & Lee, 2011; Strobl, 2014), and graduates (e.g., Lin, 2009). In the following section, a more detailed discussion of these studies conducted in the L2 context is presented, and collaborative writing in these studies refers to co-writing.

ESL contexts. Lin (2009) employed an experimental research design, and investigated the impact of CMC technology on ESL students' writing processes and writing performance through interacting and collaborating with peers from different cultural and linguistic backgrounds. The participants were 26 graduate students enrolled in an ESL composition class. They were randomly assigned to either the experimental group or the control group. Both groups were taught the same content. The experimental group integrated a CMC technology (i.e., NICENET) into face-to-face teaching. Students in this group participated in online collaborative writing. However, the control group received only face-to-face teaching. The data from this study included questionnaires, pre-test and post-test quality of writing samples, reflection journals and interviews. In terms of students' writing performance (i.e., holistic scores), the results showed that students in the online collaborative writing group outperformed the control group in percent gains between pretest and posttest, which means that the online writing group made larger gains than the control group between pretest and posttest of writing performance. As for the writing process, there were both advantages and disadvantages in using CMC technology. Some advantages were spelling and grammar checks, reinforcing the writing process, facilitating thinking skills, and reducing anxiety. Considerable amount of time on building an online learning community and more difficult revisions were some of the disadvantages of using CMC during the writing process.

In a case study, Mak and Coniam (2008) explored whether students would produce a

greater quantity of text and produce text that would be coherent and accurate through writing collaboratively in wikis for six weeks. Participants were only one class of 24 ESL students in a secondary school in Hong Kong. These students were divided into six groups of four. Each group needed to produce a school brochure. Each student was also required to produce at least 150 words per month. The students could choose to describe a particular facility in the school or a particular aspect about the school. Instead of discussing all school brochures, this study only analyzed and discussed the work produced by Group 6. This group was selected for discussion because they were nominated by both teachers and students as they produced the best piece in the wiki in terms of language and content. However, they were not in fact the students with the best command of English according to Mak and Coniam. The result of the study showed that the students could produce substantially more text than 150 words per month, which confirms the quantity issue. In addition, as the project progressed, t-unit length also increased, which suggests greater complexity in their writing. At the end of the project, students made more revisions to their own and each other's text. For example, there was a considerable amount of expanding and reorganizing ideas, and correcting errors taking place, which supports the notion that coherence improved.

Another study by Greenfield (2003) is also a case study examining ESL students' perceptions on a 12-week collaborative email exchange. Greenfield explored students' perceptions instead of students' writing performance after the collaborative email exchange. Therefore, it is acceptable that Greenfield did not employ an experimental research design. Participants were 10th grade students from an intermediate-level class in a college in Hong Kong and native English speakers from an 11th grade elective world literature class. Their perceptions were measured through surveys and interviews. The results revealed that students felt that they made progress in their writing. They also showed strong support for the collaborative exchange.

They used many positive adjectives to describe their experience, such as "helpful", "enjoyable", and "a good learning experience".

EFL context. Franco (2008) conducted a case study to examine whether students' writing skills would be improved if collaborative learning is applied in a wiki. The participants were 18 students from a private language school in Brazil. The data of the study came from the writings and comments that the students posted on the wiki, and were analyzed using both quantitative and qualitative models. The results suggest that the combination of collaborative learning and a wiki provides learners with many benefits in developing their writing skills.

Another study by Liou and Lee (2011) is a quasi- experimental study. It compared online collaborative and online individual texts, and explored students' perceptions. Participants were 18 English –major junior students from an intact class in a national university in Taiwan. They were paired up to complete two writing cycles. In the first writing cycle, five of the nine pairs were in collaborative group. Each pair planned, brainstormed, made revision together, and co-constructed their draft on wiki. Four of the nine pairs were in the individual group, and each student worked by themselves. In the second writing cycle, the two groups reversed their writing mode. Both writing tasks were after-class assignments. Moreover, an evaluation questionnaire was administered to students to understand their perceptions. Students' writing products were analyzed in terms of fluency, accuracy and complexity. The questionnaire consisting of ten five-point Likert-Scale questions and two open-ended questions were analyzed quantitatively and qualitatively. Results revealed that essays written by pairs tended to be longer and more accurate than those produced individually. In addition, students also reported favorably to the wiki-based collaborative task which they believe to offer them good opportunity to learn from each other and improve their writing.

FL context. Lee (2010) conducted a case study to explore the efficacy of wiki-mediated

collaborative writing. Thirty-five university students studying Spanish as a foreign language at the beginning level participated in the study. They worked in groups of four or five and contributed to wiki pages over a period of 14 weeks. At the end of the semester, a survey was administered to all students to elicit their views of the wiki. Interviews were also conducted. The results of students' group wiki pages, surveys, and final interviews showed that collaboratively creating wikis had a positive influence on the development of students' writing skills. It fostered students' attention on form, which helped the improvement of language accuracy. In addition, students expressed that they had a very fruitful experience with wiki assignments. They also responded that writing in the wiki environment was enjoyable.

Strobl (2014) conducted a quasi-experimental study with a short-term intervention, and adopted a mix-method approach. Strobl's study investigated the impact of online collaboration on the final text by comparing collaborative and individual online writing products. Participants were from an intact class consisting of 48 university students who were Dutch native speakers and had an advanced proficiency level of German writing. The class was divided into two groups, Group 1 and Group 2. During the first session, students in Group 1 wrote a synthesis online individually based on written sources while those in Group 2 were divided into collaborative groups of three and wrote collaboratively online. During the second session, students in Group 1 were divided into groups of three, and each group wrote a summary online based on aural source while students in Group 2 wrote individually online. In this study, Strobl only reported the results of the synthesis based on written sources. In addition to writing two syntheses in crossed condition, participants also completed a survey which helped provide insight into their experience with and attitude to the two writing conditions. The results showed that no statistical difference was found between the online individual and collaborative synthesis in terms of complexity, accuracy and fluency. Nevertheless, collaborative texts score significantly higher

regarding appropriate content selection and organization. Although an overall superior quality of the collaborative products could not be verified as compared with the individual ones, the analysis of the survey suggests that students understood the benefits of collaboration and were convinced that their final text had improved due to the collaborative reviewing activities.

In sum, previous research on online collaborative writing yields some important findings. First, online collaborative writing has positive influence on students' writing in the ESL, EFL and FL contexts. For example, it can help develop EFL students' writing skills (e.g., Franco, 2008; Lee, 2010). Students are able to make improvement in their writing concerning the accuracy of the writing in the EFL context (Liou & Lee, 2011), the quantity of writing in the ESL and EFL contexts (e.g., Liou & Lee, 2011; Mak & Coniam, 2008), the complexity of writing and the coherence of the text in the ESL context (e.g., Mak & Coniam, 2008), as well as content selection and organization in the FL context (Strobl, 2014). In an experimental study by Lin (2009), ESL students involved in online collaborative writing outperformed those who did not because the former made larger gains (i.e., the difference between the pretest and posttest writing scores) than the latter.

Second, studies in ESL, EFL and FL contexts all report that students have positive affective responses to online collaborative writing. For example, students express that they have enjoyable experience of online collaborative writing (e.g., Greenfield, 2003; Liou & Lee, 2011). They feel that online collaborative writing helps them make progress in their writing (e.g., Greenfield, 2003; Liou & Lee, 2011; Strobl, 2014), and reduce anxiety (e.g., Lin, 2009). The findings discussed in the first and the second points might support the use of online collaborative writing as a pedagogical strategy for teaching and learning writing.

In addition to knowing the findings of online collaborative writing research, some gaps are also identified after a review of this line of research. To begin with, similar to the research on

collaborative writing and CMC writing, the issue of writing anxiety is also not explored in online collaborative writing research. Online collaborative writing is the integration of collaborative learning with the use of CMC in the aspect of writing. Since collaborative learning and CMC could help decrease anxiety (Johnson, Johnson & Smith, 1991; Kern, 1995; Sullivan, 1993), it is assumed that if students write collaboratively with the assistance of CMC, they would probably have lower writing anxiety. More research addressing this issue is needed to further understand if it is possible that online collaborative writing can help produce less writing anxiety.

Furthermore, the CMC tools used and investigated in the above online collaborative writing research include email, wiki, and other programs like NICENET and Netmeeting. Among these tools, wikis seems to be mostly investigated, and it seems that blogs are rarely used and explored in online collaborative writing research. However, blogs, like wikis, are CMC applications. Researchers have also claimed that blogs facilitate online collaboration (Godwin-Jones, 2003; Huffaker, 2005; Ray, 2006) and writing activities (Ducate & Lomicka, 2005; 2008; Godwin-Jones, 2006; Huffaker, 2005; Imperatore, 2009; Johnson, 2004). Therefore, it is assumed that blogs, similar to wikis, can also be the platforms for online collaborative writing. Research addressing this issue is needed to examine if the use of blogs in online collaborative writing would yield the positive or negative findings or would generate the results similar to or different from those of the existing research.

Last but not least, among these studies, most are case studies (e.g., Franco, 2008; Greenfield, 2003; Lee, 2010; Mak & Coniam, 2008). Only little research employs the experimental research design (e.g., Lin, 2009; Liou & Lee, 2011; Strobl, 2014). Though case studies study a specific phenomenon deeply; however, they may not be able to establish cause-effect relationship since they study and involve in only one intact class. Moreover, the involvement of only one intact class makes their findings to be less generalized to larger

population (Perry, 2005). On the contrary, experimental research is able to establish cause-effect relationship, and its findings could be more generalized to larger population. In addition, researchers (e.g., Gay et al., 2006) suggest that experimental research is the most structured of all research types. Therefore, it seems that more experimental research is recommended.

In light of the negative influence of methodological flaws on the persuasiveness of the arguments made in case studies, and the sparse experimental studies conducted in this body of research, the dissertation study employed a quasi-experimental research design and investigated the efficacy of online collaborative writing through blogs in order to not merely fill the gap but also obtain more convincing research findings. In this quasi-experimental research, blogs and paper-and-pencil are used as media for collaborative writing in experimental and control classes respectively. The comparison of the two media is to find whether blogs as collaborative writing tools can make a significant difference in students' writing performance and writing anxiety. Therefore, a closer look at the relevant media-comparison studies might be helpful.

In the field of instructional technology, media comparison studies have been conducted in the past decades. One of the issues that has been drawn attraction in media comparison studies is whether or not technology makes a difference in learning effectiveness. As with most controversial issues, there are proponents and opponents on both sides. Proponents claim that technology makes a significant difference (i.e., technology influences learning) while opponents suggest that technology does not influence learning. In the following section, the issue that whether technology makes a significant difference is further discussed.

Significant Differences or No Significant Differences

The lead of those who believe that media will never impact learning has been Richard E. Clark. Clark (1983), based on the review of meta-analyses and other studies on media's influence

on learning, has argued that media do not influence learning under any condition. That is, media are only vehicles that deliver instruction but do not influence student achievement. In line with Clark's claim, Russell (1999) in his book, *No Significant Difference Phenomenon,* highlights the fact that the great majority of media comparison studies have found no significant difference in student outcome. *No Significant Difference Phenomenon* contains a compilation of research findings related to the effective use of technology compared to alternative methods of teaching. There are 355 studies cited, beginning in 1928 and ending in 1998, in which no significant difference is reported between the variables compared (i.e., technology vs. conventional methods).

Joy and Garcia (2000), a closer look at the issue of research design, indicate that the no-significant-difference findings in most media comparison studies might be due to the failure to control a large number of variables, such as prior knowledge, ability, learning style, teacher effects, time on task, method of instruction and learner familiarity with technology. If researchers do not carefully control for most likely factors explaining variance in student achievement, it is less likely that one will find significant difference between experimental and control groups. Similarly, if a significant difference is found in poorly designed research, it may be the result of one or more uncontrolled variable. There is no way to prove that the differences in pre- and post-tests are the result of the media used in the experimental group.

However, Conger (2005) responds to the criticism of media comparison studies (i.e., failure to control variables) in a different perspective. Conger suggests that the criticism can be extended to most research studies in education. Researchers are supposed to be careful to watch for these variables in all education research. The lack of controlling the variables is not a specific flaw in media comparison studies. Similar to most research, researchers still can draw some conclusions in spite of unavoidable flaws in study design. Researchers simply need to be careful

to account for the flaws in their interpretation of results.

Opposing Clark is Robert Kozma. Kozma (1991) claims that Clark's argument that media do not influence learning must be modified. Based on his review of the research on learning with books, television, computers and multimedia environment, Kozma (1991) suggests that some students will learn a particular task no matter what delivery device is used. Others will be able to make use of a particular medium's characteristics to help construct knowledge. Kozma further suggests that medium and method have a more integral relationship; both of them are part of the design. With a particular design, the medium enables and constrains the method; the method draws on the capability of the medium. Kozma's argument that media and method are inextricably interconnected is contradictory to Clark's claim that media are merely the conveyors of instructional methods, and even if differences in learning outcomes are reported, they are due to the method used, not the medium.

The debate about "significant differences or no significant differences" discussed above has some implications for the dissertation study. To begin with, if significant-difference results are found in this study, it might be a little forced and too general to interpret the results that the media, blog, is superior to the media, paper-and-pencil. On the contrary, Clark (1983) argues that the differences are due to the method used instead of the medium. Therefore, the results would be taken for granted to be interpreted that blogs do not influence learning at all because they are only a vehicle delivering instruction, and it is the collaborative writing that influences learning. However, it might be an arbitrary conclusion to completely deny the blog's influence on learning. According to Kozma (1991), media and method are inextricably interconnected. Nevertheless, both the viewpoints of completely approving and denying the influence of medium on learning ignore a more integral relationship that might exist between the medium and method used. Accordingly, in light of Kozma's opinion, the significant results of the study might be due to the

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blog used as a collaborative writing tool. If blogs are used as individual writing tool or combined with other instructional methods, there might be other results.

On the contrary, if the study found no-significant-difference results, it might be improper to explain that the medium, blog, is not superior to the medium, paper-and-pencil. Based on Kozma's claim, it could be the inappropriate combination between the media and method that causes the results. In addition, based on Joy and Garcia's claim that the no-significant-difference results might be due to the failure to control a large number of variables. Therefore, the researcher tried to control every possible variables, such as teacher effects, time on task, familiarity with technology and so on, to decrease the possibility of obtaining no-significant-difference results. However, there are still some variables that are unavoidable and hard to control. Conger (2005) indicates that, in spite of unavoidable flaws in study design, researchers still can draw some conclusions. They just need to be careful to account for the flaws as interpreting the results. Accordingly, the results of the study, whether significant-difference or no-significant-difference, will be explained cautiously due to the inescapable variables. Both the controlled variables and unavoidable variables of the study were discussed in Chapter 5.

Since the research studied the use of blogs for online collaborative writing, to provide a more complete picture of the CMC technology and its application, a more detailed discussion about "blogs" is presented in the following sections, including their definition, types, features, and the issues concerned when using blogs. In addition, paper-and-pencil is also a medium for collaborative writing. Therefore, particularly in the section on the feature of blogs, a comparison between the two media is presented. Finally, the research on the use of blogs in L2 learning is briefly synthesized and discussed.

Blogs

Within the last decade, a new form of technology, blogs (i.e., weblogs), has emerged and become hugely popular. Blogs abound on the Internet, and, according to Qian and Scott (2007) blogs also serve a variety of purposes. For instance, some have been effectively employed within the political arena (Lawson-Borders & Kirk, 2005; Trammell, Williams, Postelnicu, & Landreville, 2006). Some have been adopted for different educational purposes (Deitering & Huston, 2004; Ellison & Wu, 2008; Trammell & Ferdig, 2004). Others have been used for promoting marketing and developing business (Keller & Miller, 2006; Dearstyne, 2005). In recent years, however, there has been increasing interest in using blogs in educational settings (Godwin-Jones, 2003), including the area of L2 learning (Ducate & Lomicka, 2008).

Definitions of Blogs

Blogs, the abbreviated name for weblogs, are easily editable web pages (Zawilinski, 2009) that allow people to create texts, as well as to upload pictures, videos and other multimedia items (Boling, Zawilinski, Barton, & Nierlich, 2008). Originated in the mid-1990s, blogs are also known as online diaries (Erben, Ban, & Castaneda, 2009), or online journals that individuals can update with their own words, ideas and thoughts (Campbell, 2003). In addition, blogs can also be defined as a web application. They display serial entries with date and time stamps. Entries are typically presented in reverse chronological order with the most recent one first (Thorne & Payne, 2005).

There are several key terms related to blogs such as bloggers, blogging, and blogosphere. In terms of bloggers, they are the people who have blogs. Most bloggers frequently post entries on their blogs. Bloggers usually have relationships with other bloggers and read other blogs in their community (Huang, 2007). As for blogging, it is a process in which bloggers become

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involved in commenting and reflecting on each others' ideas and opinions. That is, bloggers express their feelings and receive comments through blogging. Therefore, blogging, to some extent, resembles journal writing (Rezaee & Oladi, 2008). Through the process of commenting (blogging) and exploring other online resources in the posting, as well as through links to favorite blogs in the sidebar (the "blog roll"), blogs form a clustered and interconnected network: the blogosphere (Schmidt, 2007). Simply stated, blogosphere comprises all blogs, encompassing blogs, bloggers, links, and blog sites (Huang, 2007).

Types of Blogs

There are three different types of blogs that can be used in the language classes: (1) the tutor blog, (2) the learner blog, and (3) the class blog (Campbell, 2003).

The tutor blog. The tutor blog is managed by the class teacher. It performs as a space where learners and parents can find course information about syllabus, homework assignments, assessment, due dates, etc. (Stanley, 2005). It can also serve as a portal to help learners explore the resources available from the Internet. In this sense, the tutor blog resembles a personal library in which one can find many resources such as reference books and extra-curricular activities catering for the group's needs and interests. This use of the tutor blog may promote learner autonomy and encourage learners to go further on their studies (de Alneida Soares, 2008). Nevertheless, the tutor blog limits learners to write comments only on the subject or topic that the teacher has posted. So if the purpose for having a blog is to foster the creation of spaces that learners can manage the way they like, a better option is the learner blog (de Alneida Soares, 2008).

The learner blog. The learner blog is managed by each learner individually. Each learner can continuously update with his/her own words and thoughts on the learner blog. Thus, it can be

described as an online journal. In addition, because the learner blog provides the opportunity to archive the posts, it can also be used as an online electronic portfolio through which learners are able to return to previous work, and assess the progress made in language classes. The learner blog might be the most rewarding type. However, it requires more teacher time and effort to set up, to moderate and to review. Teachers may find it difficult to deal with the extra workload. Accordingly, a class blog may be a better decision for teachers instead (de Alneida Soares, 2008).

The class blog. The class blog is managed by both the teacher and students collaboratively. It may be viewed as a way to foster a sense of community between all members of a class (Campbell, 2003; Stanley, 2005). One of the advantages of the class blog is that it can be applied as a site for class interaction where learning assignment and instructional prompts are posted and where learners can write messages, upload files, and post links related to classroom discussion topics (Campbell, 2003). Probably, the greatest advantage of using class blogs in language classes is that the Internet makes it possible to let groups of learners interact all over the world. Thus, the four walls of the classroom topple down and the "classroom" becomes a virtual environment, where the students in Taiwan, for instance, can interact with the students in America in real time. Through such interaction, they can practice their language skills but also share cultural knowledge, feelings, ideas and thoughts (de Alneida Soares, 2008).

Blogs of the three kinds serve different pedagogical purposes. It is important for instructors to think about teaching objectives and learners' needs in order to decide on appropriate blogs used for L2 teaching and learning. In the dissertation study, the class blog was not used. Only the tutor blog and the learner blog were used. As for the learner blog, though most learner blogs are created and managed individually, group blogs are also possible (Godwin-Jones, 2003). Group blogs are used for the purpose of collaboration in a group. In the present study, learner blogs were used as group blogs, not individual blogs. The use of learner blogs as group

blogs might help save teachers some time on blog reviewing.

Features of Blogs

CMC technologies have five features that distinguish them from other media (Warschauer, 1997). Blogs belong to CMC applications and, therefore, also have the five features of CMC: (1) text-based interaction, (2) many-to-many communication, (3) time- and place- independent communication, (4) long distance exchanges, and (5) hypermedia links.

Text-based interaction. People can write and edit materials on blogs.

Many-to-many communication. Any or all member of a group may initiate interaction with any or all of the others.

Time- and place- independent communication. Users can write and receive messages at any time of the day from any computer with an Internet connection.

Long distance exchanges. Due to the Internet, bogs can make long distance exchanges faster, easier and less expensive.

Hypermedia links. Blogs have hypermedia links. This feature allows multimedia documents to be published on the Internet and distributed through links among computers around the world.

Due to the five features, Warschaur claims that CMC has the potential for promoting collaborative language learning. Because blogs have the five features of CMC proposed by Warschaur, it is assumed that blogs have the potential for collaborative learning.

Possibility of interaction and collaboration. Many other researchers also claim that blogs facilitate interaction and collaboration. For example, Huffaker, (2005) and Ray (2006) suggest that, in addition to being used for individual purpose, blogs can also be used as collaborative learning tools. With the ease of commenting immediately, blogs are able to enhance

interaction between the author and multiple audiences. Researchers think highly of the function, with which collaborative learning could be attained. For example, students can read their classmates' writing on blogs and use the comment function to provide feedback for each other. Lucking et al. (2009) and Boling et al. (2008) indicate that what distinguishes blogs from traditional web pages is the possibility of interaction and collaboration. Traditional webpage communication is usually one sided. Visitors can only read the information on the webpage, but are unable to interact with the person/people creating the webpage through the webpage. However, blogs invite two and more sided communication. Visitors can read the posts on blogs and, at the same time, are able to interact with blog owners by commenting on blog owners' posts.

In addition to the five features of CMC and the feature of facilitating interaction and collaboration, blogs also possess some other features.

Ease of use. Blogs are "easy to use" (Ray, 2006; Imperatore, 2009). For example, after a new post is edited or a comment is written in a blog platform, the post and comment can be instantly published in cyberspace with a click of the "submit" button. In addition, blogs can automatically archive the posts in reverse chronological order with the dates stamped; therefore, it is easy to find past works (Peng, 2008). As blog technology is easy to use for both instructors and learners, the application of blogs in the educational field is becoming increasingly popular (Huang, 2007).

Instant publishing. When learners write an entry and post it on the blog, it becomes globally accessible due to the Internet. In other words, what is written on the blog can be read by anyone else (Campbell, 2003). de Alneida Soares (2008) suggests that having the learners' work made public gives them a real audience, and writing for a real audience involves learners in writing and provides them a stronger purpose to write.

Ownership.   When the discussion takes place on a discussion board, anyone can start a thread of conversation and has the same editorial authority. Similar to discussion boards, on a wiki page, anyone can make contributions and edit what has been written. Nevertheless, blog posts can only be created by the person who maintains that blog. The only way for a reader to be involved in the conversation is to post a comment or post about the original message on that person's blog. Surely, there can be a group of people contributing to a collaborative/group blog, but each one of them must be given that administrative access to write entries and post them on their blog (Trammell & Ferdig, 2004).

Facilitating reading and writing activities. Blogs by their nature and pages represent both reading and writing activities (Godwin-Jones, 2006) because authors must read and write as they would on paper (Huffaker, 2005). Due to this nature, researchers, such as Ducate and Lomicka (2005; 2008) and Imperatore (2009), also indicate that blogs have much to offer literacy, and can be used in developing and strengthening both reading and writing skills. In other words, it is a perfect medium for literacy advancement (Huffaker, 2005). Some researchers (e.g., Johnson, 2004) view blogs as extremely valuable tools for teaching L2 writing.

The above describes the features of blogs. These features make blogs be able to be applied in writing contexts and help L2 learners' writing. In the following section, a further discussion is presented regarding why blogs with these features could facilitate writing development in L2 writing context.

First of all, when thinking about integrating any technology into a course, it is important for the instructor to consider whether the technology is used for the right purpose. Blogs are able to facilitate written communication because learners can read articles on blogs, and can write and edit posts on blogs. With the feature of "text-based interaction" and "facilitating reading and writing activity", blogs are appropriate tools for using in L2 writing class.

Second, instructors should also consider whether the technology is user-friendly. Learners learning could be influenced and interrupted if their learning is assisted by the tool which they feel difficult to use. Luckily blogs are not difficult to use as researchers claim that blogs are "easy to operate". Third, with a click of the submit button, what learners write and comments are "instantly published" and can be seen by everyone on the Internet. Therefore, writing on the blog provides learners with a chance to have their work made public. They are writing for real audience, such as their classmates, not just for their instructor. This may involves L2 learners in writing more, which thus results in more writing practices. The higher motivation to write and more practice in writing may help facilitate L2 writing development.

Fourth, as long as there is an Internet connection, learners can write and upload documents, and read the posts on the blog, as well as make comments each other at any time and in any place. These features of "many-to-many communication", "time-and-place independent communication", "long distance exchanges" and "hypermedia links" increase the chances of interaction among learners. Learners' interaction would not be limited in the classroom at school. Instead, they can also interact after class, such as at home. Therefore, these features would result in more interaction among learners. According to Bruffee (1984), thought is internalized conversation, and writing internalized conversation made public again. In other words, to compose, learners need to have thoughts. To produce thoughts, learners need to converse, and the conversation would take place as learners interact with each other. The more interaction may generate more conversation and thoughts. Accordingly, the more interaction may facilitate L2 writing development.

Fifth, although blog posts can be seen by everyone, but can only be created by the person who maintain that blog. Readers can only post comments on blogs. Therefore, blogs give learners who create the blog a unique space to express themselves, and make them have a sense

of ownership. Blogs can be used as group blogs. A group blog, therefore, is maintained by more than one person. With the sense of ownership, a group of learners could tie together. The sense of ownership may help make group member coherent, which may result in more interaction among them. As stated above, the more interaction would facilitate L2 writing development.

In this study, blogs are not the only media used for collaborative writing. Another medium that was also used as a collaborative writing tool is paper-and-pencil. Table 2.1 presented below articulates the differences and similarities between the two media. Similar to blogs, paper-and-pencil has the features of text-based interaction, ease of use, facilitating reading and writing activities, and ownership. One feature that helps distinguish blogs from paper-and-pencil is instant publishing. When people write an entry and post it on blogs, it becomes globally accessible because of the Internet. Therefore, in the present study, what the participants wrote on blogs were instantly accessible to their classmates and teacher. However, what was written on paper could not be instantly read by their classmates and teachers, particularly when they wrote out of class. In addition, due to the lack of assistance of the Internet, paper-and-pencil does not have some features of CMC, such as many-to-many communication, time- and place-independent communication, long distance exchanges, and hypermedia links. Therefore, it is assumed that paper-and-pencil, without these feature, may not be able to facilitate collaborative writing as blogs do.

In the present study, participants could write via blogs synchronously in class and asynchronously out of class. However, the synchronous interaction was much more than the asynchronous interaction. In addition, students did not upload any files on their group blogs. Therefore, though blogs have these features that can facilitate collaborative writing, only some specific features were realized in the study: text-based interaction, ease of use, facilitating reading and writing activities, and ownership. It seems that the feature of hypermedia links was

not used, and the features of many-to-many communication and instant publishing were rarely used. Long distance exchange and time-and-place independent communication took place when students discussed writing asynchronously.

Table 2.1

The Comparison between Blogs and Paper-and-pencil

	Paper-and-pencil	Blogs
Text-based Interaction	◯	◯
Many-to-many Communication	✕	◯
Long Distance Exchange	✕	◯
Time-and-place Independent Communication	✕	◯
Hypermedia Links	✕	◯
Interaction and Collaboration	✕	◯
Instant Publishing	✕	◯
Ease of Use	◯	◯
Facilitating Reading and Writing Activities	◯	◯
Ownership	◯	◯

Issues Concerned

There are some issues that instructors should consider when using blogs for educational purposes.

Accessibility. Using blogs requires not only computer systems but also the access to the Internet. This might not be a big issue if students use blogs at school where there are computer labs. However, if teachers plan to have students use blogs after class meetings, it is important that teachers determine whether each student has a computer and the Internet access before conducting the blogging task outside of the school environment (Ray, 2006).

Safety. When expanding the classroom online, it is very important to protect student identity and security (Trammell & Ferdig, 2004). Therefore, personal information like students'

names, addresses, and telephone numbers should not be posted on the Internet (Ray, 2006).

Research on Blogs in L2 Learning

To understand whether blogs are appropriate and beneficial for L2 learning, it is important to know the findings of the previous studies that investigate the effectiveness of integrating blogs into L2 learning.

Affective responses. Among these studies, a few of them attempted to discover students' affective responses (e.g., perceptions, beliefs, attitudes, feelings, reaction, etc.) to the use of blogs for L2 learning. For instance, in ESL contexts, the study by Jones (2006) sought to examine ESL students' perceptions regarding the implementation of blogs in the writing classes. The participants were five students who used blogs for four aspects of the writing process: peer responding, editing, revising, and publishing their writing assignments. The data from interviews, open-ended questions, surveys, and students' reflective journals showed that the students all enjoyed the blogging aspect of the class for writing tasks, and therefore responded positively to the use of blogs. In Ward's study (2004), forty participants were asked to read each others' blogs and give comments. A survey concerning the effectiveness of using blogs as learning tools was distributed. The majority of the students preferred writing on blogs to writing the traditional journals, and believed that writing on blogs can improve English.

In an EFL context, Pinkman (2005) carried out a study incorporating a blog project into an EFL class. This blog project was conducted as an out-of-class project. Students needed to write one entry of 150 words per week, and comment on two or three of their classmates' blogs. At the end of the semester, questionnaires were distributed and interviews were also conducted to the students to gauge their attitudes towards the project. The findings suggest that the students perceived that there were benefits when using blogs, such as increased interest and motivation to

use English. The findings also suggest that students participating in the blog project were willing to continue to blog even after the semester finished.

Still some studies were conducted in other FL contexts. Armstrong and Retterer (2008) investigated the use of blogs in an intermediate level Spanish class. Sixteen students in the class were writing online by means of the blogs. By the end of the semester, most students expressed that they liked writing the blogs. They found blogging an appealing way to communicate in a foreign language. The overall experience of blogging proved to be a positive one for the students. Another study by Ducate and Lomicka (2008) reported on students' reactions to blogging based on a year-long project in which students learning French or German as a foreign language were involved in reading blogs in the first semester and writing blogs in the second semester. Data from student blogs, reports, surveys, and focus group interviews suggested that students enjoyed the process of blogging, and would like to continue to use the blog as a learning tool in their future TL classes.

Despite these studies pointing to a positive result regarding students' affective responses to the use of blogs for L2 learning, still some studies reported on a more negative result. For example, Wu (2005) used blogs in two of his freshman English classes, one of which consisted of English majors and another of non-English majors. A blog survey was distributed to both classes at the end of the semester, and analysis of the result showed that blogs were still not well-known at the time so students rarely posted photos or submitted entries to their blogs. Few of them invited their friends to read their blogs because they felt that they did not update frequently enough or they did not have the confidence or willingness to share ideas with friends.

Another study by Chiao (2006) reported on similar findings. Students' attitudes and opinions toward learning in using a blog-based system were investigated. Data analysis of the transcripts of teacher-student interviews as well as the feedback from the questionnaires showed

that, due to a lack of assurance and their defense of privacy, most students posted fewer than five articles in the whole semester.

Language learning outcomes. In addition to the studies on students' affective responses, there has also been research conducted that examines the performance outcomes of students who learn the target language (TL) through blogs. For example, in the ESL contexts, Rezaee and Oladi (2008) explored the effect of blogging on language learners' improvement in writing proficiency. Participants were 160 university students. Fifty of them received traditional instruction; fifty of them were involved in journal writing; sixty of them took part in blogging. Students in the blogging group were asked to comment on the postings on various topics which were from personal topics to more technical ones. The data were collected through observation, questionnaires, interviews, and writing proficiency tests. The results showed that there were significant differences in the writing proficiency scores among the three groups of students, with the blogging group obtaining the highest score and the journal writing group and traditional writing group being the second and third place respectively. The results revealed that the students involved in blogging were able to enhance their writing ability, and were more successful by using this tool as a means to learn English.

Another study by Franklin-Matkowski (2007) investigated how blogging as a reader-response tool influenced students' writing. Thirty students in a ninth-grade English class used blogs to post responses to literature uploaded by the course instructor. Students' writings on the blog were analyzed for writing fluency. The data suggested that students' writing fluency increased, and they moved toward higher level of reading comprehension.

In an FL context, Thorne, Weber, and Bensinger (2005) followed and studied the students who learned Spanish as a foreign language and kept weekly blog entries for one academic year. The data from blog entries, surveys, and interviews suggested that all students but one

significantly made progress in their writing over time. Changes in language production included using new phrases, improvement in spelling and an expanded repertoire of verbal conjugations.

Although some studies found encouraging outcomes regarding students' language learning performance, a different result was found in Kelly's study (2008) which investigated the impact of blogging on the academic writing of L2 undergraduates. Participants were 18 international second language students. At the beginning of the semester, twelve of them took part in the blogging section and six of them participated in the non-blogging section. At the end of the semester, based on the instructor's assessment of overall student performance (i.e., the final course grade which was based on the scores from homework, tests, quizzes, graded paragraphs, summaries, graded essays, and time writings), the students in the blogging group did not perform any better than those in the non-blogging group.

In sum, most research on blogs in L2 learning found that students have positive affective responses to the use of blogs and to learn the target language after using blogs (e.g., Armstrong & Retterer, 2008; Ducate & Lomicka, 2008; Jones, 2006; Pinkman, 2005; Ward, 2004). However, prominent findings are not found in Wu's (2005) and Chiao's (2006) studies. Wu suggests that the negative affective response is due to the relative newness of the technology at that time, as well as the lack of confidence and willingness from the students. Chiao indicates that students' negative attitudes are due to lack of assurance and their defense of privacy. To help the students with these types of problems, some suggestions are provided, such as (1) familiarizing students with blogs before asking student to write via blogs (e.g., a training session); (2) protecting students' identity and security (e.g., using a pseudonym) .

In addition, regarding the findings on students' language learning outcomes, the majority of the research (e.g., Franklin-Matkowski, 2007; Rezaee & Oladi, 2008; Thorne et al., 2005) suggests that students make improvement in their writing ability, writing fluency, and reading

comprehension performance after using blogs as tools for language learning. Even though Kelly's study (2008) showed that students involved in blogging did not significantly outperform those who did not use blogs, the insignificance might be due to the use of final course grade to compare the performance of blogging and non-blogging groups. Because final course grades contain many variables, it is possible that different results might have been obtained if a post-test wring task was administered to both groups, instead of using final course grades to assess students' writing performance.

Because the findings of most of the research discussed above suggest that learners' writing is improved through blogging; therefore, it is assumed that blogs could be appropriate tools for language learning, particularly for learning writing. Furthermore, as discussed in the section that introduced the features of blogs, blogs can facilitate writing activity, collaboration, and interaction. It is, therefore, assumed that using blogs for collaborative writing is feasible. In addition, according to Lindblom-Ylanne and Pihlajamaki (2003), students' writing performance is related to the technology they use. If they had fewer technical problems when using the technology, they might be able to achieve higher writing performance. Since blogs also possess the feature of ease of use, students in the proposed study should not encounter many technical problems nor have much media-related anxiety (e.g., computer anxiety) (Liu, 2008) when using blogs. Due to the positive findings of the blog research and the features possessed by blogs, blogs may be considered to be proper tools for online collaborative writing.

Concluding Remarks

The present study investigated the effectiveness of online collaborative writing via blogs. It is guided by four research questions that examined the writing performance, writing anxiety, and perceptions of the participants who write collaboratively online and who are involved in

traditional collaborative writing. There are two reasons that motivate the conduction of this study and the examination of the four research questions. In the first place, this study aims to fill the gaps identified in online collaborative writing research: (1) Little experimental research, (2) the lack of discussion on the issue of writing anxiety, and (3) the absence of research investigating the use of blogs for online collaborative writing.

The second reason for conducting the study is to explore whether CMC mediated collaborative writing is more effective than traditional collaborative writing. Collaborative learning theory suggests that collaborative learning can enhance learning outcomes and produce less anxiety. Based on this viewpoint, integrating collaborative learning with writing (e.g., traditional collaborative writing or online collaborative writing) may be an effective pedagogical strategy in writing instruction because the integration may help enhance writing performance and reduce writing anxiety. However, CMC is thought to be able to facilitate collaboration and interaction, as well as reduce anxiety. Due to the feature of CMC, writing collaboratively in this environment can be considered to be an effective method, and may be more effective than traditional collaborative writing.

To know the effectiveness of online collaborative writing, the writing performance demonstrated and the writing anxiety perceived by the students writing via blogs were compared with those of the students writing via paper-and-pencil. The issue of writing performance, including individual and collaborative writing performance, was examined in the first research question. The second research question investigated the issue of writing anxiety. The third research question explored students' perceptions. These research questions examined the issue quantitatively. The fourth research question explored the phenomenon qualitatively. Through both quantitative and qualitative investigation, the efficacy of both online collaborative writing and traditional collaborative writing can be more clearly identified.

CHAPTER THREE:

METHODOLOGY

The previous chapter reviews related literature on writing, writing anxiety, collaborative writing, computer-assisted writing, online collaborative writing, and the use of blogs for L2 learning. This chapter describes the context of the study, role of the teacher and the researcher, research design, data sources/collection, data analysis, and a brief introduction to the pilot study of the dissertation study.

The present study attempted to examine the effectiveness of blog-mediated collaborative writing and traditional collaborative writing by comparing the writing performance, writing anxiety, and perceptions of Taiwan EFL college students. To further understand the issue investigated, the students who made the largest, medium, and lowest gains were interviewed. The present study seeks the answer to the following four research questions:

1. Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of:

   (1) The quantity of collaborative writing?

   (2) The quality of collaborative writing?

   (3) The quantity of individual writing?

   (4) The quality of individual writing?

2. Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?

3. How do the EFL college students perceive blog-supported and traditional collaborative

writing?

4. In what ways do the EFL college students making the largest, medium and the lowest gains describe their experience of blog-supported and traditional collaborative writing?

Setting

The school participating in the study is a private technical university in Southern Taiwan. It offers four-year programs to senior high school and vocational school graduates. There are three colleges included in this university: College of Engineering, College of Commerce and Management, and College of Humanities and Social Science. Each college also has its own departments.

This study was conducted in an English course, called English (I). It is a three-credit and an 18-week course, which is part of a requirement of the curriculum for first-year undergraduate. Students from each college of the university can take this English course. There were two classes of students taking this course. Students had face-to-face meetings with the same instructor and met for three hours once a week. The face-to-face meetings for the control class were conducted in a traditional classroom. Appendix A presents a photo showing the structure inside a traditional classroom in the university. Students in the experimental class will meet with the teacher in a traditional classroom and a computer lab. Appendix A also presents a picture displaying the computer hardware equipment in the lab.

The objectives of the English course include helping students become familiar with (1) English reading and English writing process, as well as (2) develop students' ability to read in English and (3) improve students' English writing ability. To achieve the objectives, students were provided with both reading and writing instruction. In the reading instruction, students were asked to read English articles in class. The course instructor also taught the English articles in

class. While teaching the article, the teacher explained the grammar, vocabulary and sentence patterns that students are not familiar with to help students comprehend the article. In the writing instruction, in addition to completing the collaborative writing tasks needed for the present study, students were asked to write two to three essays in class. They also read their classmates' essays and provided feedback. Students revised and edited their essays based on the feedback their classmates provided. The instructor also read students' essays to understand what mistakes students usually make and what grammar and sentence patterns students are not familiar with. These mistakes and unfamiliar grammar and sentence patterns were discussed in class.

Students' performance in the English course were evaluated in terms of a mid-term exam (20%), five collaborative writing tasks (30%), a final exam (20%), as well as participation in class activities (e.g., 2-3 essays students wrote in class), preparation for the class, and attendance (30%). Students who are not willing to participate in collaborative writing activities can choose to complete five individual writing tasks (30%). For more detailed information about the English course, please refer to the syllabus of the course presented in Appendix B.

Participants

Participants are 101 first-year college students from two classes of the university. Among them, ninety are males and 11 are females. One class was randomly assigned as the control class. In the control class, there were 51 students, with 48 males and 3 females. Students were engaged in traditional collaborative writing using paper-and-pencil. The other class was the experimental class. The experimental class consisted of 50 students, with 42 males and 8 females. Students in this class wrote collaboratively with the assistance of blogs. These students were selected as participants of the study because they are all L2 learners learning English as a foreign language. In addition, the researcher knows the teacher who taught English to them. Therefore, the

sampling strategy used is convenience sampling.

As for the participants' language proficiency level, in Taiwan, almost every high school graduate can attend college or university. Higher-achievement students mostly study in the public university. The students studying in the private university are usually lower-achievement students. The participants discussed in this study were from a private and technical university. According to the course instructor, most of them can not pass the GEPT elementary level, which is seen to be appropriate for the students who have studied English through junior high school. Therefore, their English proficiency level is similar to junior high school students'. They may know how to read in English. However, writing an English composition is still difficult for them. Therefore, the English proficiency level of the participants is weak, particularly their writing ability.

Before the treatment begins, a background survey was distributed to the participants. The survey helped identify participants' knowledge of and attitudes toward collaborative writing. Table 3.1 presents these results. The results show that most of the participants in both classes feel anxious when they write a composition in English. They also do not like to write a composition in English. Therefore, they do not consider themselves to be a good writer in English. When it comes to collaborative writing, most students in the experimental class (62.5%) know what collaborative writing is. However, most in the control class (57.8%) do not know. In addition, most of them in both classes do not have the experience of collaborative writing, and they prefer collaborative writing than individual writing.

Particularly, for the experimental class, participants' knowledge of and attitudes toward online collaborative writing were surveyed. The results show that more than half of the students do not have the experience of composing using technology (54.3%) and do not know what online collaborative writing is (56.5%). Most of the students do not have the experience of online collaborative writing (89.1%). Most of them expressed that they are not interested in online

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collaborative writing (63%). However, when compared to traditional collaborative writing, they prefer to compose using technology (69.6%).

Students were also queried about their ability to access computers and the Internet at home, as well as their knowledge about blogs. In this study, participants in the experimental class used blogs for collaborative writing in and after class meetings. Therefore, it is important that participants have a computer. Through the computer, they can access the teacher blog and their group blogs after class meetings. According to Table 3.1, the results revealed that all of the participants own a computer, have Internet access at home, and know what a blog is. Most of them have a blog (69.6%), visit blogs often (73.9%), and know how to use blogs (84.8%).

Participants had time to practice writing collaboratively before the treatment begins. A specific training session about how to set up and use blogs was also provided for them prior to the treatment (see Appendix C).

Table 3.1

The Background of the Participants

		Both control and experimental classes			
		Responses			
	Items	Experimental class		Control class	
		Yes (1)	No (2)	Yes (1)	No (2)
1	I feel anxious when I write a composition in English.	31(67.4%)	15(32.6%)	28(62.2%)	17(37.8%)
2	I like to write a composition in English.	8(17.4%)	38(82.6%)	10(22.2%)	35(77.8%)
3	I consider myself to be a good writer in English.	4(8.7%)	42(91.3%)	8(17.8%)	37(82.2%)
4	I know what collaborative writing is.	30(65.2%)	16(34.8%)	19(42.2%)	26(57.8%)
5	I have the experience of writing collaboratively.	12(26.1%)	34(73.9%)	8(17.8%)	37(82.2%)

Table 3.1 (Continued)

6	I prefer (1) individual writing or (2) collaborative writing.	9 (19.6%)	37(80.4%)	7(15.6%)	37(82.2%)

Experimental class only

	Items	Responses			
		Yes (1)		No (2)	
7	I have the experience of composing using technology.	21	45.7%	25	54.3%
8	I prefer to compose (1) using paper-and-pencil or (2) using technology.	14	30.4%	32	69.6%
9	I know what online collaborative writing is.	20	43.5%	26	56.5%
10	I have the experience of online collaborative writing. 。	5	10.9%	41	89.1%

Experimental class only

	Items	Responses			
		Yes (1)		No (2)	
11	I am interested in online collaborative writing.	16	34.8%	29	63%
12	I own a computer.	46	100%	0	0%
13	I have Internet access at home.	46	100%	0	0%
14	I know what a blog is.	46	100%	0	0%
15	I visit blogs often.	34	73.9%	12	26.1%
16	I have a blog.	32	69.6%	14	30.4%
17	I know how to use blogs.	39	84.8%	7	15.2%

N = 46 (the experimental class)*; N* = 45 (the control class)

Role of the Teacher

The instructor of the English course is a native speaker of Chinese, who has taught English at the university level in Taiwan for more than ten years. The subjects that she is currently teaching at the university include: Freshman English, English reading, English writing, and Travel English. She specializes in teaching English as a foreign language, particularly in the aspects of grammar, writing, reading, and conversation. She received her Master's degree in TESOL from the University of Texas at Austin in the USA. Before the study, she also helped with the data collection for another study conducted by the researcher. Therefore, she has had the

experience of having students use blogs in her English class prior to the present study.

The course instructor in the study, in addition to providing reading and writing instruction for the students in the English course, also played the role of a student trainer and an intervention provider. As a student trainer, prior to the treatment, she guided the students in the experimental class to set up group blogs in the computer lab. She explained the process of collaborative writing to both classes of students. As an intervention provider, during the face-to-face meetings with the student, she asked students to participate in collaborative writing via blogs or paper-and-pencil in and after class meetings. She also provided necessary assistance to the students when they encountered difficulty during the process of writing collaboratively. After class, she took time to read the students' writings on group blogs and group notebooks.

Role of the Researcher

The researcher of the study is a native speaker of Chinese, who has lived in Taiwan for most of her life, and has taught English to junior high school students for two years. She received a Bachelor's degree in English Education from National Kaohsiung Normal University in Taiwan, and earned a Master's degree in Curriculum and Instruction from Salem University in West Virginia in the USA. Her research interests in English as a foreign language teaching and learning, and computer-assisted language teaching and learning have motivated her to pursue a doctoral degree in Second Language Acquisition/ Instructional Technology (SLA/IT) at the University of South Florida (USF). During the first three years of her doctoral study, she conducted relevant research and presented the findings at professional conferences.

In the study, the researcher played the role of a teacher trainer and a data collector. As a teacher trainer, prior to the study, the researcher met with the teacher. During the meeting, she introduced the research to the teacher, including the purpose of the research, the research design,

data collection procedures, and the treatment for both classes of students. She also explained to the teacher how to help the students create blogs and understand the process of collaborative writing. The researcher designed handouts and provided the teacher with the handouts that could be used during the training session (see Appendices D & E).

As a data collector, during the first class meeting, the researcher met with the two classes of students. She introduced her research and distributed informed consent forms to the students. After the students signed their names on the consent form, the researcher administered pre-tests to the students (i.e., the writing task, writing anxiety measure, and pre-treatment survey). At the end of the treatment, the researcher conducted face-to-face individual interviews to the students from both classes and kept notes while interviewing them. The researcher also met with the students to administer the post-tests (i.e., the writing task, writing anxiety measure, and post-treatment questionnaire).

In addition to playing these roles, the researcher met with the teacher frequently to understand how the treatment had been administered to both classes. When needed, the researcher offered assistance to the instructor by providing suggestions to and answering questions from the instructor in order to ensure that there was consistency between the research procedures and the teaching process throughout the study.

Research Design

The research design of the study is two-group pretest-posttest design. Two classes of students from the university participated in the study. One class was randomly selected to be the control class; the other was the experimental class. Both classes were pre-tested before the treatment and post-tested after the treatment. Since convenience sampling was used in the study, and two intact classes were used as control and experimental classes, this study is a

quasi-experimental rather than an experimental study.

Gay, Mill and Airasian (2006) point out that in experimental or quasi-experimental study, the change or difference in control and experimental classes occurs as a result of the independent variable(s). The dependent variable is the outcome of the study. Accordingly, the independent variable in this study is blog-supported writing. The dependent variables include (1) students' writing performance (researcher question #1), (2) students' writing anxiety (researcher question #2), and (3) students' perceptions of collaborative writing (researcher question #3).

The present study is guided by four research questions. The first three research questions were investigated quantitatively through (1) collaborative writing samples on blogs and notebooks, (2) pre-test and post-test individual writings, (3) pre-test and post-test writing anxiety measures, and (4) pre-treatment survey and post-treatment questionnaire. The fourth research question was explored qualitatively via interviews.

Materials

Textbook

CSU English (2010) is the textbook used in the English course. It consists of thirteen units. Each unit contains three short texts. One is a dialogue; the other two are the essays which might be narrative, explorative or argumentative. There are nine topics discussed in these units, including communication, daily life, computers, modern life, travel, the environment, technology, work, and relationships. The teacher and the researcher selected the units containing the article that might stimulate students' thought and, therefore, facilitated students to write reflections.

Data Collection

This research was sent to the Institutional Review Board (IRB) at the University of South

Florida for initial review. After receiving approval from the IRB (see Appendix T), students from the two classes were given informed consent forms before the study began. Those who signed their names on the consent form started to participate in this study. The researcher began to collect the data during October in 2011 and completed the data collection at the end of December in 2011. The total period of data collection was 12 weeks.

During the 1st Week

Each student in both classes had 50 minutes to complete a pre-test L2 writing anxiety questionnaire (10 minutes), a pre-test individual writing task (30 minutes), and the background survey (10 minutes). After the pretest, each student in the control class was given a handout including the guideline for collaborative writing, such as the process for the collaborative writing task, the kinds of feedback students should provide, and the role students should fulfill during the writing process (see Appendix D). The teacher explained the guideline and demonstrated the procedures of collaborative writing for the students. Then, students had chances to work in a group to practice writing collaboratively. As for the students in the experimental class, after the pretest, they received specific training in a computer lab about how to create a blog and how to use it (see Appendix C). After practicing using blogs individually, students were asked to work in a group to set up a blog. The blog created by each group is called the group blog. In addition to the students, the teacher also created her own blog (i.e., teacher blog) in which the links of all group blogs can be included. Each group can visit other group blogs easily through accessing the teacher blog. Then, the teacher distributed handouts to the students, containing instructions about writing collaboratively via blogs (see Appendix D). To make sure all students understood the content of the handout, the teacher explained the content and demonstrated the procedures of collaborative writing for the students. After the demonstration, the teacher had the students work

in their own groups to practice writing collaboratively via blogs.

From the 2nd Week to the 11th Week

The treatment began from the second week and ended at the eleventh week (i.e., totally 10 weeks). Students in the control class wrote collaboratively via paper-and-pencil while students in the experimental class participated in collaborative writing in the blog environment. The collaborative writing activities in both classes took place both in class and out of class. All students in the control and the experimental classes were taught by the same teacher, used the same textbook, and completed five collaborative writing tasks. The more detailed description about the treatment for both classes is presented in the following section on treatment. After the treatment, a collaborative writing questionnaire was distributed to each student in both classes.

During the 12th Week

Each student in both classes was asked to complete an individual writing task (30 minutes) and a writing anxiety questionnaire (10 minutes) in a traditional classroom. Semi-structured interviews were also conducted for both classes.

The above presents the procedures of data collection from the first week to the twelfth week. During the 12-week data collection, the teacher designed the lesson and established the environment for collaborative writing. For both control and experimental classes, five to six participants were assigned to a collaborative writing group. The heterogeneous groups instead of homogeneous ones were used because making group heterogeneous in abilities is suggested in collaborative learning research (e.g., Felder & Brent, 2001). Based on the pretest writing score, the teacher selected two top students, two students that had the lowest grades, and one or two students having middle grade to form a group.

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Treatment

The treatment of the study is blog-mediated writing. During the treatment, both classes of students had to complete five collaborative writing tasks. However, students in the experimental class completed the tasks via blogs while those in the control class completed the tasks via paper-and pencil. In the following sections, the collaborative writing task will be discussed in detail. Then, a brief comparison between blogs and paper-and-pencil is presented. Finally, a few pages on the blogs and pages from the notebooks are displayed to further understand the collaborative writing processes in both classes.

Collaborative Writing Task

The collaborative writing task designed for the experimental and control classes is based on the five basic elements of collaborative learning proposed by Johnson and Johnson (2008): (1) positive interdependence, (2) promotive interaction, (3) personal responsibility, (4) interpersonal and social group skills, and (5) group processing. The following section describes how the treatment for the control and experimental classes is designed on the basis of the five elements of collaborative learning.

Positive interdependence. There are three categories of positive interdependence: outcome interdependence (i.e., Members in a group are oriented toward a goal), means interdependence (i.e., the actions needed on the part of group members, including task and role interdependence), and boundary interdependence (i.e., no interdependence with other groups. It ties members as an entity. Members have a specific work area.).

In terms of outcome interdependence, participants were divided into groups. Members in each group needed to collaboratively write group reflections on the texts taught by the teacher in English classes. Therefore, the completion of group reflections is the common goal for group

members. Before writing each group reflection, each group was given a writing prompt, describing how to write a group reflection (see Appendix E for sample writing prompt). The reason for selecting the writing task is that, from the perspective of reading-writing relationship, reading and writing should not be taught as separate skills; instead, they should be learnt together to effectively enhance literacy skills (Fitzgerald, 1993). By writing group reflections, students needs to read and understand the text first, think about how they feel about the text, and then write about their thoughts and ideas. The activity of writing reflections, therefore, provides students with the opportunity of learning reading and writing together.

As for boundary interdependence, in the experimental class, each group has a group blog. Members in each group communicate, discuss and write collaboratively through their own group blog rather than other group blogs. In the control class, each group was given a notebook, called the group notebook in the study. Members in a group use their group notebook for collaborative writing. They circulated the notebook during writing.

Regarding role interdependence in means interdependence, in both classes, each member in a group was assigned a specific role, and asked to fulfill the role by the course instructor according to their scores obtained from the pre-test writing task. The role assignment stays the same throughout the treatment. Below are the names of these roles and the responsibilities for each role.

1. Checkers: They are the students obtaining the higher score in the pretest writing task. They are responsible for checking the grammar errors that have not been edited by group members or that have been wrongly identified.

2. Cheerleaders: They are the students having the lower score in the pretest writing task. They encourage group members to make contributions, and ask silent members to participate in group discussion. They praise the group member who makes improvement, and the member

who has positive influence on the collaboration and the collaborative product.

3. Monitor: They are the students with middle score in the pretest writing task. They are responsible for ensuring that group members follow the right procedures of collaborative writing.

Concerning task interdependence in means interdependence, in the experimental class, to complete the collaborative writing (i.e., the group reflection), students needed to involve themselves in the activities of pre-writing, drafting, revising and editing. During the prewriting stage, members in a group needed to brainstorm what they would like to write in their group reflection. They needed to post their ideas on their group blogs. Members were also asked to read each other's ideas, and provided feedback using the function of comment on blogs. During the drafting stage, members are involved in writing their group reflection based on the ideas they bring up. Then, all members participated in revising and editing the draft by carefully reading through the draft; taking time to discuss what to delete from or incorporate in their final product, and discussing where to make improvement including grammar, vocabulary use, organization, spelling, punctuation, etc. After all members in a group reach a consensus about the final product, they initiated a post to publish the final product of the group reflection on the group blog.

As for the control class, the steps of collaborative writing are similar to those for the experimental class. For example, students also need to take part in the activities of pre-writing, drafting, revising and editing while writing the group reflection. In addition, as members all agree about the final product, they need to write down the final product of the group reflection in the group notebook.

Promotive interaction. Promotive interaction takes place within the context provided by positive interdependence. Positive interdependence needs to be clearly structured to enhance the promotive interaction in a collaborative group. The positive interdependence, including outcome,

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means (i.e., role & task) and boundary interdependence, in both experimental and control classes was clearly structured as discussed above, the promotive interaction in collaborative writing groups in both classes could be possibly promoted.

Personal responsibility. Personal responsibility exists when the performance of each individual member is assessed. Beard, Rymer and Williams (1989) also proposed that, in collaborative writing, assessing each student both for the group's performance and for individual contribution helps encourage all members' full participation and foster all members' involvement in the collaborative writing process. Therefore, in both classes, members within a group received the same score for their collaborative writing product. The collaborative writing product was evaluated by the teacher using an analytic rubric (see Appendix P). However, to avoid the members who do not participate in collaborative writing (i.e., freeloader) and to motivate each member to contribute his/her fair share to the group success, each member was asked to fill out a group evaluation form (see Appendix F) at the end of each task. The evaluation form assessed group members' performance throughout the process of collaborative writing. However, the result of the evaluation was not used in the present study. It was provided for the course instructor to let her understand each student' individual contributions. The instructor graded students' course performance (e.g., class participation) by referring to this evaluation result.

Interpersonal and social group skills. Interdependence and social group skills are important in collaborative learning because students have to engage in both task work and team work. If members have greater teamwork skills, their learning may be higher in quality and quantity. In both classes, before the starts of the collaborative writing task, students were instructed to respect other members' ideas and be polite during interacting with and providing feedback for group members. The instruction is part of the training session, and is presented in the handout used in the training session (see Appendices D & E).

Group processing. Group processing occurs when members discuss how well they are achieving their goals and maintaining effective working relationships among members. In both classes, after each group completed a collaborative writing task, the teacher had students orally report on what difficulty they had encountered during the writing process. Students also discussed if they achieved their goals and had effective working relationship among members.

Blogs vs. Paper-and-pencil

In addition to being designed according to Johnson and Johnson's collaborative learning theory, the treatment for the experimental class is also framed by Warschauer's concept of CMC (1997), which is that CMC is considered to be able to promote collaborative language learning due to its five features: (1) text-based interaction, (2) many-to-many communication, (3) time- and place- independent communication, (4) long distance exchanges, and (5) hypermedia links.

Blogs have the potential of text-based interaction because members can write and edit material on their group blog. In addition, blogs allow for many-to-many interaction because any or all members of a group can initiate interaction with any or all of the others. Group members can also write and receive messages at any time from any computer with an Internet access. The Internet connection also makes the long distance exchange faster, easier and less expensive. Hence, the communication among members is time- and place- independent and could be long distance exchange. Finally, blogs have hypermedia links because members can post multimedia documents, such as video, on their group blogs if they want, which can be distributed through links among computers around the world. In addition to the five features, blogs also allow for instant publishing due to the Internet. What students write on blogs can be instantly read by their group members and other groups. With these features, blogs may be more capable of facilitating collaborative writing than paper-and-pencil especially when they are used out of class.

Different from the experimental class, participants in the control class wrote via paper-and-pencil. Paper-and-pencil, similar to blogs, also has the possibility of text-based interaction. However, due to the lack of assistance of the Internet, paper-and-pencil does not allow for many-to-many communication, time- and place- independent communication, and long distance exchanges. Paper-and pencil also does not have hypermedia links. Without those features that blogs possess, it is assumed that paper-and-pencil may not as effectively and easily facilitate collaborative writing as blogs do, particularly when they are used after class.

The above sections describe the procedures of data collection and the treatment. Table 3.2 below presents a summary of the information.

Table 3.2
Data Collection Timeline

	Control Class	Experimental Class
Week 1	＊Pre-test of individual writing and writing anxiety ＊Background surveys ＊Training session: (1) Grouping and assigning roles (2) Distributing the notebook to each group. (3) The practice of traditional collaborative writing.	＊Pre-test of individual writing and writing anxiety ＊Background surveys ＊Training session: (1) Grouping and assigning roles (2) Setting up group blogs (3) The practice of blog-supported collaborative writing.
Week 2-Week 3	Collaborative writing task 1	
Week 4-Week 5	Collaborative writing task 2	
Week 6-Week 7	Collaborative writing task 3	
Week 8-Week 9	Collaborative writing task 4	
Week 10-Week 11	Collaborative writing task 5 Collaborative writing questionnaires	
Week 12	＊Post-tests of individual writing and writing anxiety ＊Interviews	

To provide a more concrete picture about how the process went on for each mode of collaborative writing, a few more details about the collaborative writing process in both classes are presented below by displaying some pages on the blogs and pages from the notebook.

Blog-supported Collaborative Writing Processes

Two examples from two different collaborative writing groups are demonstrated below. Figures 3.1 to 3.6 are the blogs from one collaborative writing group. Figures 3.1 to 3.4 show that group members commented on each other's posts, and how they revised their writings based on the comments from their peers. Figure 3.5 presents the draft of the group reflection, and it shows how group members made comments and revised/edited the reflection. Figure 3.6 shows the final product of the fourth group reflection.

Figures 3.7 to 3.13 are the blogs from the other collaborative writing group. Figure 3.7 shows the role assignments of this group. Figures 3.8 to 3.9 display group members' reflections and how they revised/edited their reflection according to their peers' comments. Figures 3.11 to 3.12 show the draft of the group reflection, and how group members made comment and revised/edited their reflection. Figure 3.13 shows the final product of the group reflection. These blogs have been selected for discussion because they are considered to be the better pieces in terms of the completeness of each of the collaborative writing process.

Figure 3.1 The group member's reflection and comment
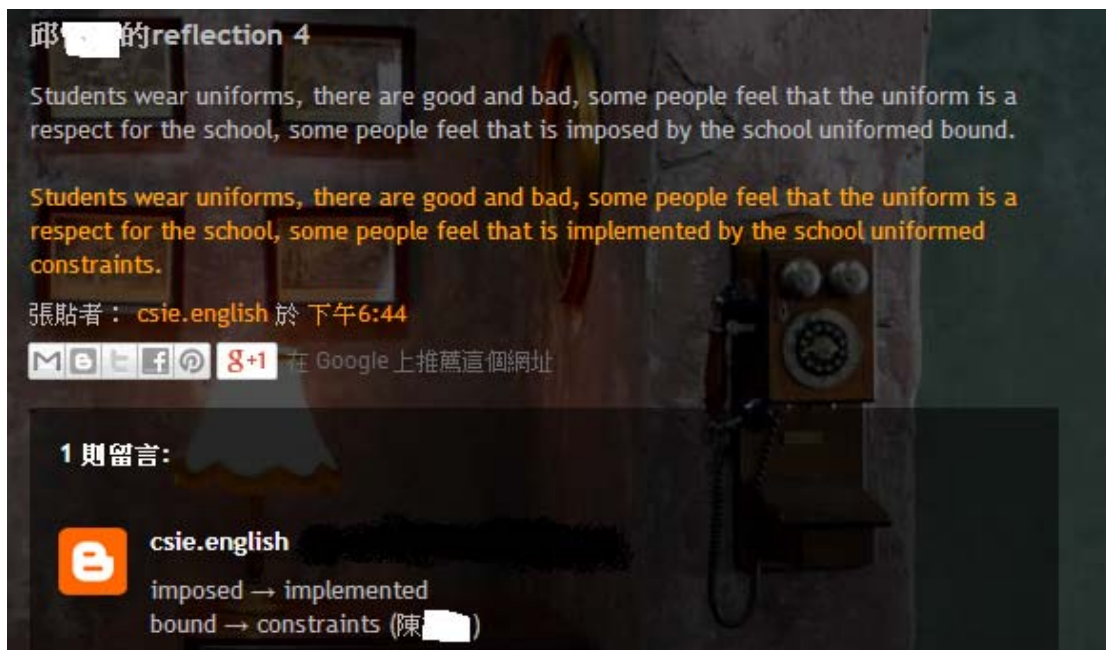
Figure 3.2 The group member's reflection and comment

Figure 3.3 The group member's reflection and comment

Figure 3.4 The group member's reflection and comment

Group reflection 4 (draft)

The dress code is important for the school,dress code not only present the school but also can make students be more energetic and active.

Students wear uniforms, there are good and bad, some people feel that the uniform is a respect for the school, some people feel that is implemented by the school uniformed constraints.

School uniform is a symbol of the spirit, but students like to wear the fashionable clothes(許 ,邱), but the schools are places of learning have provisions of clothes.

Students don't like(朱) uniforms because it does not meet the current fashion(陳).On the uniform issue for long time ago was discovered, but difficult to reach consensus on the two sides.

張貼者： csie.english 於 下午7:44

M B t F P 8+1 在 Google 上推薦這個網址

4 則留言：

csie.english
popular costumes → fashion (陳)
回覆

csie.english
students like fashionable clothes → students like to wear the fashionable clothes(許)
回覆

csie.english
students like fashionable clothes →
but students like fashionable clothes (邱)
回覆

csie.english
hate → don't like(朱)

Figure 3.5 The draft of the group reflection and group members' comments

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Figure 3.6 The final product of the group reflection
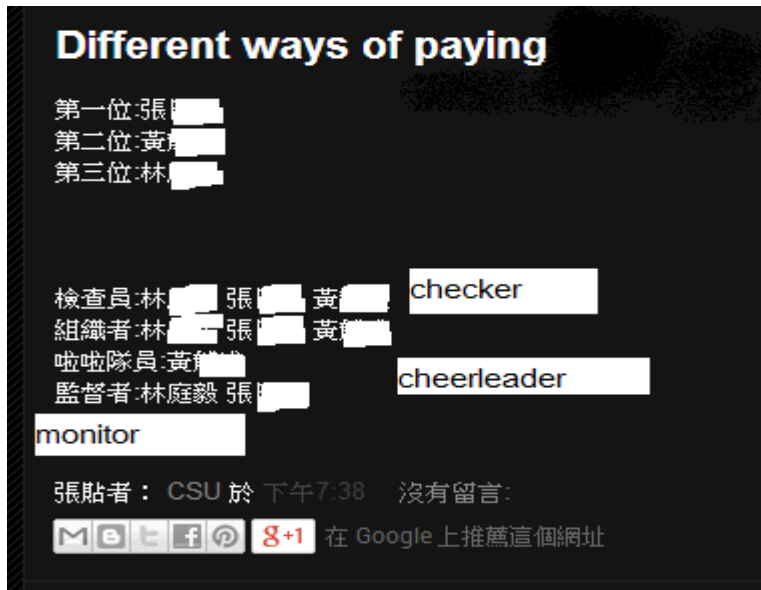
Figure 3.7 Role assignment

Figure 3.8 The group member's reflection and comment

Figure 3.9 The group member's reflection and comment

Figure 3.10 The group member's reflection and comment

Different ways of paying 初稿

When we go shopping ,we have many ways of paying things.
In the past,we always paid in crash because there were few ways to pay.
But now we can pay for things by cash,checks,debit card or credit card.
When we go shopping and eat dinner,we have many ways to pay things.
In the past,people were paying in cash because there were few ways to pay.
Many places have more and more ways to pay.
In Taiwan, the student usually buy somethings in cash.
Not like other country usually buy somethings by check.
Credit card is common way to pay a bill.
But,many of the economic pressures from the credit card bills.

張貼者： CSU 於 下午6:56

在 Google 上推薦這個網址

4 則留言:

CSU
In the past,people were paid in crash because there were few ways to pay.
Many places have more and more ways to pay. 因為前面已經有提到所以這兩句我認為需要修改會刪除!
回覆

CSU
作者已經移除這則留言。
回覆

CSU
When we go shopping and eat dinner,we have many ways to pay things.
前面已經提過 所以可以使用日常生活中常見的例子來做為句子 或是刪除
回覆

CSU
In Taiwan, the student usually buy somethings in cash.建議此句 刪除 因為前面已有提過
回覆

comments

Figure 3.11 The draft of the group reflection and group members' comments

Figure 3.12 The draft of the group reflection and group members' comments

Figure 3.13 The final product of the group reflection

Traditional Collaborative Writing Process

Figures 3.14 to 3.20 are the pages from the notebook of one collaborative writing group. Figure 3.14 shows the role assignments of this group. Figures 3.15 to 3.18 display group members' reflections and how they revised/edited their reflection on the basis of their peers' comments. Figure 3.17 shows the draft of the group reflection. The parts underlined are the revised/edited parts by the group members. Figure 3.18 shows the final product of the group reflection. These pages have been selected for discussion because they are considered to be the better example in terms of the neatness of the writing and the completeness of each of the collaborative writing process.

Figure 3.14 Role assignment

工幣 - 甲 企 - ①

CONTENTS :   DATE :

Online shopping is convenient for our life. We can use computer search ~~we want~~ thing and buy it.
search what we want

Although online shopping have many benefit for us, many dispute are happen in online shopping like seller cheat buyer, account had been embezzle.

Online shopping is great, but when we buy thing on it, we should think twice and buy it.

I think your " ~~use~~ search ~~we~~ want thing " can use " search ~~we~~ what we want " instead of it. (薛   )

comments

Figure 3.15 The group member's reflection and comment

CONTENTS :   DATE :

Today, everyone become more and more rich than before, when we buy ~~somthing~~ something (something) pay for cash is post way, although cash is safe to pay, but you bring too much money in your pocket is dangerous, because you might be rob, Credit card is a convenient method to you for pay, check also a good way to use, but Asia doesn't catch on it, When you use credit card you should to careful, don't buying more than you can afford! (薛 -)   it

Hi dude. Nice to meet you again, Your idea was always good, I really glad to see your reflection. But there are some mistake in your sentence. You spell the wrong word. It's some thing not somthing. Hope see you become better next time. (盧   )

comments

Figure 3.16 The group member's reflection and comment

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③

CONTENTS : 		＿＿＿＿ . s reflection 		DATE :

Shopping is a simple thing in our life, We have
many ways to pay the money. It's really convenient
when using the credit card or check, But you must
be careful the fraud. 		They usually treat for
the old man or ^they pretend the public official. That's
dangerous when you 		remit money to his account.
So next time you should ^be caution,

Yeah, we should be careful for the fraud,
they usually lie the people for the money. (害＿＿＿)

comments

Figure 3.17 The group member's reflection and comment

CONTENTS : 		第I-2 害＿＿＿ 		DATE :

The world is more progress than
before, even pay money is getting convenient,
you ~~didn't~~ ^don't need to bring money when you get
outside, you can use credit card to pay, but
you should pay ~~the~~, in the end of the month,
in Taiwan there are many debt, because
they can't afford credit card bill, although
the card is very convenient, but we should use it
carefully.

I think your "didn't" can change "don't" and
"pay the" and delete. (害＿＿)

comments

Figure 3.18 The group member's reflection and comment

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Group reflection (draft) 小組感想初稿

Online shopping is convenient for our life. We can use computer search what we want and buy it. Although online shopping have many benefit for us but we should think twice and buy it.

Today, everyone become more and more rich than before, when we buy something ( ) pay for cash is past way. although cash is safe to pay. but you bring too much money in your pocket is dangerous. because you might be rob. Credit card is a convenient method to you for pay, check also a good way to use. but Asia doesn't catch on it. When you use credit card you should to careful it, don't buying more than you can afford!

Shopping is a simple thing in our life. We have many ways to play the money. It's really convenient when using the credit card or check. But you must be careful the fraud. They usually treat for the old man or they pretend the public official. That's dangerous when you remit money to his account. So next time you should be caution.

5

Selfishness

next page

The revised and edited parts

The world is more progress than before, even pay money is getting convenient, you don't ( ) need to bring money when you get outside, you can use credit card to pay, but you should pay in the end of the month. In Taiwan, there are many debt, because they can't afford credit card bill, although the card is very convenient. but we should use it carefully.

Figure 3.19 The draft of group reflection

Group reflection (final) 小組感想 終稿

Online shopping is convenient for our life. We can use computer search what we want and buy it. Although online shopping have many benefit for us but we should think twice and buy it.

Today, everyone become more and more rich than before, when we buy something pay for cash is poor way, although cash is safe to pay, but you bring too much money in your pocket is dangerous, because you might be rob. Credit card is a convenient method to you for pay, check also a good way to use, but Asia doesn't catch on it. When you use credit card you should to careful it, don't buying more than you can afford!

Shopping is a simple thing in our life, we have many ways to play the money. It's really convenient when using the credit card or check. But you must be careful the fraud. They usually treat the old man or they pretend the public offical. That's dangerous when you remit money to his account. So next time you should be caution.

Bellishness
next page

The world is more progress than before, even pay money is getting convenient. you don't need to bring money when you get outside. you can use credit card to pay. but you should pay in the end of the month. In Taiwan. there are many debt, because they can't afford credit card bill. although the card is very convenient. but we should use it carefully.

Figure 3.20 The final product of group reflection

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Data Collected

The research instruments/techniques used for collecting data include pre-test and post-test writing tasks, pre-test and post-test writing anxiety questionnaires, background survey, collaborative writing questionnaire, interview, and students' group blogs and group notebooks. Each data collection instrument/technique is described in more detailed below.

Pre- and Post-test Individual Writing Tasks

Participants completed two individual writing tasks with one prior to the treatment and the other after the treatment. For each writing task, participants were asked to write a short English composition of at least three paragraphs, including introduction, body and conclusion, on a writing sheet. They had 30 minutes to complete each writing task. The pre-test writing task asked participants to write about their favorite memory in the past. As for the post-test writing task, participants wrote about their dream of what they would like to become in the future. These topics are chosen because they are closely related to participants' life experience. The writing tasks were completed in a traditional classroom. Appendix G presents the two writing tasks.

Pre- and Post-test Writing Anxiety Measure (SLWAI)

Many published studies, such as Daly and Miller (1975b), Cheng, Horwitz and Schallert, (1999), Cheng (2002), and Lee (2005), used Daly and Miller's Writing Apprehension Test (WAT) to assess students' L1 and L2 writing anxiety. They all reported good internal consistency reliability of .94, .94, .95 and .90 respectively. However, the WAT is originally and specifically developed to measure the writing anxiety of first language learners, particularly the native speakers of English. It might not be able to accurately and appropriately measure the writing anxiety perceived by the second language learners. Therefore, this study conducted in the EFL

context adopted the Second Language Writing Anxiety Inventory (SLWAI) designed by Cheng (2004) to measure the writing anxiety perceived by both classes of students (see Appendix H). Appendix I presents the permission letter from Cheng.

The SLWAI has not been used as often as the WAT. In addition to being used in Cheng's study, it has been used in the studies of Atay and Kurt (2006) and Donahoe (2010). Cheng (2004), and Atay and Kurt (2006) reported that the SLWAI had good reliability of .91 and .84 respectively. Donahoe did not report its reliability in the study. The SLWAI consists of 22 items. The items that require reverse scoring are 1, 4, 7, 17, 18, 21, and 22. The theoretical ranges of the scale are from 22 to 110. Lower scores indicate lower writing anxiety and higher scores indicate higher writing anxiety. To ensure that the participants can completely understand the meaning of each item on the SLWAI, the Chinese version of the instrument was used (see Appendix I). The Chinese version was translated and provided by Cheng (see Appendix J). The Chinese version of the SLWAI was administered before and after the treatment. Participants had ten minutes to complete it. They responded to a 5-point Likert scale for each item with 1, 2, 3, 4, and 5 signifying strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree respectively.

Background Survey

The background survey was administered before the treatment. It consists of fixed-response questions. Participants just responded to the question with two choices, either "yes" or "no" or either "(1)" or "(2)". Six questions in the surveys for both control and experimental classes are similar, which query participants' (1) attitudes toward English writing and their English writing ability, as well as (2) their knowledge of and attitudes to collaborative writing. In the survey for the experimental class, there are 11 more questions which ask (1)

participants' knowledge of and attitudes toward technology-assisted writing and online

collaborative writing, (2) their ability to access computers and the Internet at home, as well as (3)

their knowledge of blogs. The Chinese version of the survey was used. Participants had ten

minutes to complete the survey in the classroom. Appendix K presents the background survey.

Collaborative Writing Questionnaire

The collaborative writing questionnaire was administered after the treatment. The

questionnaire for the experimental class consists of 22 questions, and it elicits participants'

perceptions of blog-mediated collaborative writing regarding (1) their writing performance, (2)

their writing anxiety, (3) the collaborative feature of blogs, and (4) their motivation for future use.

Similarly, the questionnaire for the control class also contains 22 questions, and it gauges

participants' perceptions of traditional collaborative writing concerning (1) their writing

performance, (2) their writing anxiety, (3) the collaborative function of paper-and-pencil, and (4)

the motivation for future use. A 5-point Likert scale is used in the collaborative writing

questionnaire. Participants had 10 minutes to complete it in the classroom. Appendix L presents

the post-treatment questionnaire.

Interview

Upon completion of the post-test, semi-structured and individual interviews were

conducted for both control and experimental classes. The purpose for the interview is to elicit

more in-depth data about students' perceptions of collaborative writing that may not be identified

through their responses to the collaborative writing questionnaire. Instead of using random

sampling which may select the students who are not representative of the students in the study,

the research used purposeful sampling. From each class, the researcher selected three or four

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students who made the largest gains (i.e., the difference between the post-test writing score and the pre-test writing score), three or four students making the medium gains, and three or four students who made the lowest gains or no gain or even went backward. Each interview took about 10 to 15 minutes. The interviews were conducted face-to-face and in Chinese by the researcher in a traditional classroom at the private university. Participants in the study are EFL learners and have weaker English ability. They may not be able to express themselves in English fluently. For these reasons, the interviews were not conducted in English. All interviews were recorded to prevent the loss of any information, and were also transcribed. The researcher obtained the participants' permission about recording before the interview began (see Appendix M). The interview questions for both classes are presented in Appendix N.

Students' Group Blogs & Notebooks

For the experimental class, participants used their group blog to write collaboratively with group members. The group blogs (also the teacher blog) were created through https://www.blogger.com/start. This blogging website is developed by Google. It is selected because it is a free and easy-to-use blog provider. For the control class, each group was provided with a notebook through which the students could participate in traditional collaborative writing with group members. Each group in both classes wrote collaboratively with group members for ten weeks, and completed one group reflection every two weeks during the timeframe. Therefore, there were five group reflections on every group blog and every group notebook. For the present study, these collaborative writing products are the main forms of data on every group blog and group notebook, and were collected for data analysis.

Data Analysis

The main sources of data include (1) students' writing samples from the pre-test and post-test writing tasks and (2) the collaborative writing samples on the group blogs and group notebooks, as well as students' responses to (3) the writing anxiety measure (SLWAI), (4) the background survey, (5) the collaborative writing questionnaire, and (6) the interview. These data were analyzed both quantitatively and qualitatively to answer the four research questions.

Quantitative Analysis

Research question #1. Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of: (1) The quantity of collaborative writing? (2) The quality of collaborative writing? (3) The quantity of individual writing? (4) The quality of individual writing?

The statistical hypothesis (i.e., the null hypothesis) is "there are no significant differences in the gain scores of writing performance in terms of the quantity and quality of collaborative and individual writing". As for the scientific hypothesis which is formed based on theoretical considerations and/or previous research (Glass & Hopkins, 1996; Perry, 2005), it was hypothesized that students in the experimental group would outperform those in the control group in terms of the quantity and quality of writing.

As for the analysis of collaborative writing, students' five group reflections on the group blogs and group notebooks were collected. These collaborative writing products were analyzed in terms of the quantity and quality of writing. Writing quantity is defined operationally as the number of words. Therefore, the words on each group writing were counted. While writing quality is operationalized as the analytical score, the group writing was evaluated on the basis of the rubric adopted from Ferris and Hedgcook (2005: 310) (see Appendix O). This rubric aiming

at evaluating paragraph writing is a holistic rubric. Knoch (2011) suggests that a holistic scale only results in a single score, which is not helpful in a diagnostic context. To be able to identify strengths and weakness of a learners' writing and to provide useful feedback to students, an analytic rating scale is needed. Therefore, the researcher adapted Ferris and Hedgcook's rubric to be an analytic scale (see Appendix P). This rubric evaluates writing in terms of paragraph's main ideas (content), the paragraph's explanations connected to the main idea (coherence), the organization of the paragraph (cohesion), choice of vocabulary (vocabulary), grammatical errors (grammar), spelling and punctuation (mechanics). These criteria are in accord with the categorization of taxonomy feature proposed by Knoch (2011). Knoch proposes a taxonomy, and suggests that the scale developer can use the taxonomy as a basis to decide which aspects are testable for diagnostic writing assessment. On this analytic rubric, the lowest score is 1 and the highest score is 5 in each criterion. For both individual and collaborative writings, *ANCOVAs* were conducted to examine whether there were significant differences in the six areas between classes.

Two raters, the researcher and the English teacher, were involved in the grading task. Prior to formally rating each writing sample, the two raters met and discussed the rating scale. They also graded a few samples together to establish reliability. Since there were two raters evaluating the writing, the average of the two raters' scores was used as the actual score of each collaborative writing sample. The correlation coefficients were computed after grading to understand the degree of agreement between the two raters.

To obtain the gain scores of collaborative writing performance in terms of the writing quality, the first group reflection in each class is the baseline. Its differences between the second, third, fourth, and fifth group reflections are the first, second, third and fourth gain scores respectively. Independent t-tests were carried out to analyze the gain scores between the two

classes. Four independent t-tests were conducted since there are four gain scores in each class.

As for the analysis of individual writing, students' pre-test and post-test compositions were analyzed to understand students' individual writing performance. These writing samples were also analyzed in terms of writing quantity and writing quality.

Regarding the writing quantity, the words on students' two essays were counted. As for writing quality, each writing sample was evaluated on the basis of the analytic rubric which was also used for evaluating group writings (see Appendix P). These individual writing samples were graded by the same two raters rating the collaborative writing samples. The process of grading the individual writing samples is similar to that of rating the collaborative writing samples.

Then, the gain scores of writing quantity and writing quality for both classes were computed. As describe above, the gain score is the difference between pre-test and post-test. Finally, two independent t-tests were conducted to test whether or not, between the control class and experimental class, there was a significant difference in (1) the gain score of writing quantity and (2) the gain score of writing quality.

Research question #2. Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?

The statistical hypothesis of the research question is " there are not any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups". It was hypothesized that students who write collaboratively in the blog environment would have lower gain score on the anxiety measure than those who participate in traditional collaborative writing.

To answer the second research question, each student' responses to the items on the SLWAI were first calculated to obtain a score of the SLWAI. The student obtaining a lower score means that she/he has lower writing anxiety and vice versa. Then, the gain score of writing

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anxiety for the control class and that for the experimental class were computed. An independent t-test was applied to examine if there is a significant difference between the two gain scores.

Research question #3. What are the differences between the EFL college students' perceptions of blog-supported and traditional collaborative writing?

To answer this research question, students' responses to the collaborative writing questionnaire were analyzed using descriptive statistics, which helps identify the number of students responding to each item (i.e., frequencies) and the percent of students responding to each item (i.e., percentages). The use of the statistical method to analyze the information from the collaborative writing questionnaire allows for comparing students' perceptions of collaborative writing between the control and experimental classes. In addition to descriptive statistics, independent t-tests were also conducted to further understand if the responses between the two classes are significantly different.

Qualitative Analysis

Research question #4. In what ways do the EFL college students making the largest, medium and the lowest gains describe their experience of blog-supported and traditional collaborative writing?

To answer the research question, all interviews from both classes were transcribed and analyzed through the technique of content analysis as Patton (2002) suggests that content analysis is a good technique to analyze interview scripts. The researcher read and reread the transcript line by line carefully, coded the relevant information and categorized the code to find the themes emerging from the transcripts. After the researcher analyzed the interview transcripts, a person who is at the same level of the researcher was invited to evaluate all of the patterns and themes that the researcher identified from the transcripts in order to prevent influences from

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analytical biases. The results of the evaluation showed that there was a consistency between the two evaluators, which suggested the theme and patterns analyses were reliable. Perry (2005) suggests that this technique is used to evaluate the quality of verbal data and is useful to check whether the perceived patterns are credible.

Table 3.3 displays the research questions, the corresponding data collection instruments or techniques, and the data analysis procedures that were used to answer the research questions.

Table 3.3

Research Questions, Data Collection, and Data Analysis

Research Questions	Data Collection	Data Analysis
1. Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of: (1) The quantity of collaborative writing? (2) The quality of collaborative writing? (3) The quantity of individual writing? (4) The quality of individual writing?	1. Five collaborative writing samples on the group blogs and five collaborative writing samples on the group notebooks 2. Individual writing samples from the pre-test and post-test writing tasks	Independent t-tests *ANCOVAs*
2. Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?	Pre-test and post-test writing anxiety measures	Independent t-tests

Table 3.3 (Continued)

Research Questions	Data Collection	Data Analysis
3. How do the EFL college students perceive blog-supported and traditional collaborative writing?	Collaborative writing questionnaires	Descriptive statistics Independent t-test
4. In what ways do the EFL college students making the largest, medium and the lowest gains describe their experience of blog-supported and traditional collaborative writing?	Interviews	Content analysis

Pilot Study

To ensure the quality of the background survey, the collaborative writing questionnaire, the Chinese version of the SLWAI, and interview questions, a pilot study was conducted to assess their reliability and validity. After the IRB approved the pilot study (see Appendix Q), informed consent forms (see Appendix R) were distributed to the EFL undergraduates from the private university. Thirty-two students agreed to participate in the pilot study. The period of the pilot study was three weeks. During the first week, after participants all completed the background survey and the Chinese version of the SLWAI, sixteen participants participated in traditional collaborative writing; the others participated in blog-supported collaborative writing. The steps of collaborative writing in the pilot study were similar to those for the control and experimental classes in the dissertation study.

In addition to completing these instruments and reading the interview questions, participants were also asked to complete a critique sheet to evaluate the questions on the instruments and the interview questions. The critique sheet designed by Chin (2001) and adapted

by the researcher (see Appendix S) assisted participants to point out the questions that were unclear and to provide suggestions to make the questions clear. Then, the background survey, the collaborative writing questionnaire and interview questions were revised based on the feedback provided by the students.

Based on the data from the pilot study, the reliability of the collaborative writing questionnaire and the Chinese version of the SLWAI were examined. Two types of reliability were examined: (1) test-retest reliability (r) and (2) internal consistency reliability (α). In addition, the pilot study also aimed at establishing the validity of the background survey, the collaborative writing questionnaire, and interview questions. The validity that was examined is content validity. The detailed discussion and results of the reliability and validity of these instruments were reported in the following sections.

Test-retest Reliability (*r*)

Test-retest reliability measures the stability of the same instrument (Perry, 2005). In other words, it measures the degree to which scores on the same instrument are consistent over time. The instrument should be given at least twice. The time that should elapse between the two administrations is generally a period of two to six weeks (Gay, Mills & Airasian, 2006).

Test-retest coefficient can range from 0 indicating no reliability to 1 indicating perfect reliability. Researchers, such as Constantine and Ponterotto (2006), as well as Burns and Grove (2005), claim that for newly developed psychosocial instrument, a reliability of .70 is considered to be acceptable. According to Mitchell and Jolley (2010), though test-retest coefficients can range from 0 to 1, most are between .60 and .98; high test-retest coefficient means that most of participants' scores on the first measurement correspond to their scores on the second measurement.

The collaborative writing questionnaire is a self-designed instrument. To know the stability of the questionnaire over time, the researcher administered it during the first week and the third week of the pilot study, and the correlation between separate administrations of the questionnaire was computed. The results showed that the two-week test-retest reliability was .75 ($n = 16$; $p = .001$) for the questionnaire completed by the students writing collaboratively via paper-and-pencil (see Table 3.4), and was .64 ($n = 16$; $p = .008$) for the questionnaire completed by the students writing collaboratively via blogs (see Table 3.5).

Table 3.4

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

		Correlation	
		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 3.5

Test-retest Reliability (r) of the Blog-supported Collaborative Writing Questionnaire

		First administration	Second administration
		Correlation	
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*

Internal Consistency Reliability (α)

Internal consistency reliability measures if all items in a single instrument measure the same attribute and are consistent among themselves. Internal consistency reliability ranges from 0 to 1. Higher reliability means that all items among themselves are more consistent. Researchers' common presumption (e.g., George & Mallery, 2003; Nunnally, 1978; Schmitt, 1996) is that an internal consistency reliability of .70 is adequate and acceptable.

The collaborative writing questionnaire was administered twice in the pilot study. The internal consistency reliability was computed for both. For the questionnaire completed by the students writing collaboratively via paper-and-pencil, the reliability of the first administration was .93 ($n = 16$) and that of the second administration was .95 ($n = 16$). Table 3.6 presents the internal consistency reliability of each dimension in the questionnaire. A high internal consistency was found within each dimension. As for the questionnaire completed by the students writing collaboratively via blogs, the reliability of the first administration was .95 ($n = 16$) and that of the second administration) was .93 ($n = 16$). Table 3.7 displays the internal

consistency reliability of each dimension. A high internal consistency was also found within each dimension.

The SLWAI has been used in previous studies by Chen (2004), Atay and Kurt (2006), and Donahoe (2010). They all reported the SLWAI had good reliability of .91, .91, and .84 respectively. To determine if the Chinese version of the SLWAI can also have acceptable reliability as it was used in the dissertation study, the researcher computed the internal consistency reliability of the Chinese version of the SLWAI in the pilot study. The instrument was administered only one time for all participants in the pilot study. Its internal consistency reliability was .91 ($n = 32$). Table 3.8 shows the reliability of each dimension in the Chinese version of the SLWAI.

To sum up, all of the above results suggest that the collaborative writing questionnaire and the Chinese version of the SLWAI are reliable instruments based on their test-retest reliability (r) and internal consistency reliability (α).

Table 3.6

Reliability of Each Dimension of the Traditional Collaborative Writing Questionnaire

	Dimension	Item	Reliability (α) (first administration)	Reliability(α) (second administration)
1	Possibility of collaboration	1,2,3,4,5,6	.76	.88
2	Writing performance	7,8,9,10,11,12	.78	.85
3	Writing anxiety	13,14,15,16,17,18	.86	.88
4	Motivation for future use	19,20,21,22	.92	.90

N = 16

Table 3.7

Reliability of Each Dimension of the Blog-supported Collaborative Writing Questionnaire

	Dimension	Item	Reliability (α) (first administration)	Reliability(α) (second administration)
1	Possibility of collaboration	1,2,3,4,5,6	.97	.94
2	Writing performance	7,8,9,10,11,12	.92	.90
3	Writing anxiety	13,14,15,16,17,18	.88	.92
4	Motivation for future use	19,20,21,22	.85	.76

N = 16

Table 3.8

Reliability (α) of Each Dimension of the Chinese Version of the SLWAI

	Dimension	Item	Reliability (α)
1	somatic anxiety	2, 6, 8, 11, 13, 15, 19	.86
2	avoidance behavior	4, 5, 10, 12, 16, 18, 22	.85
3	cognitive anxiety	1, 3, 7, 9, 14, 17, 20, 21	.83

N = 32

Validity of the Instruments

The validity that was examined is content validity. Content validity is related to the degree to which an instrument measures an intended content area. It was determined by expert judgment instead of statistics (Gay, Mills & Airasian, 2006). Before the expert review, to ensure that EFL students could comprehend the meaning of the interview questions and the items on the background survey and the collaborative writing questionnaire, translation and back translation were carried out for these instruments by two bilingual experts, the researcher and the English teacher in the present study. In addition, since SLWAI has been validated by Cheng, it was not submitted to the experts for review.

The background survey, collaborative writing questionnaire, and interview questions were reviewed by the doctoral committee at USF and two experts. Both of the two experts are Taiwanese professors. One received his Bachelor's degree in English education, master's degree in Education, and doctoral degree in Education from National Kaohsiung Normal University in Taiwan. He has taught English and educational subjects in the target private university for 20 years. The other received her doctoral degree in English Education from the University of South Dakota in the USA. She has taught English in the English department of the private university for 10 years. All questions have been revised based on the feedback from the professionals.

Summary of the Chapter

At the beginning of the chapter, the context of the study, such as the setting, the participants, and the material, is discussed, which is followed by the explanation of roles of the teacher and the researcher in the study. Then, the researcher discusses the research design, data collection, the treatment for both control and experimental classes, the instruments/techniques used for data collection, as well as data analysis. The pilot study of the dissertation study concludes this chapter.

CHAPTER FOUR:

RESULTS

This chapter covers two parts. The first part presents quantitative data analysis related to the first three research questions. The third part shows the results of qualitative data analysis related to the fourth research question. The qualitative data are from students' interviews.

Part One: Quantitative Results

In this part, I reported the results from the statistical analyses of participants' writing performance and writing anxiety, as well as the descriptive analyses of participants' perceptions of collaborative writing via blogs and paper-and-pencil.

Writing performance

Research Question 1: Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of:

(1) The quantity of collaborative writing?

(2) The quality of collaborative writing?

(3) The quantity of individual writing?

(4) The quality of individual writing?

Collaborative writing performance. In the experimental class, there were 12 collaborative writing groups. There were also 12 groups in the control class. Each group in each condition needed to complete five collaborative writing tasks. For each task, each group

produced one writing product. Therefore, the total number of writing products was 120, with 60 being the blog- supported writings and 60 being the paper-and-pencil writings.

The quantity of writing. Table 4.1 shows the descriptive statistics on the collaborative writing quantity. The minimum and maximum writing quantity of each collaborative writing task for both classes was presented. Among the five collaborative writings completed by each group, the first writing was the baseline. Its difference between the other four writings was the four gain scores. The gain score here referred to the "collaborative quantity change". Since there were 12 CW groups in each class, and each group produced four collaborative quantity changes, there were totally 48 collaborative quantity changes obtained from each class. Table 4.2 shows the minimum and maximum of these collaborative quantity changes in both classes. Then, to examine if there was a statistically significant difference between control and experimental classes in collaborative writing quantity, four collaborative quantity changes of each class were compared by conducting four independent t-tests. The results showed that the two classes were not significantly different in the collaborative quantity changes ($t = -0.87$, $p = 0.39$, $d = 0.02$; $t = -0.42$, $p = 0.67$, $d = 0.07$; $t = 0.12$, $p = 0.90$, $d = 0.29$; $t = 0.14$, $p = 0.88$, $d = 0.33$) (see Table 4.3). The experimental class ($M = 97.92, 108.67, 107.42, 108.08$) did not outperform the control class ($M = 98.67, 105.67, 94.50, 94.83$) regarding the quantity of collaborative writing.

Table 4.1
Descriptive Statistics on the Writing Quantity of the CW Tasks

Class	CW quantity	*N*	Minimum	Maximum	*Mean*	*SD*
Experimental	The 1st CW	12	**48**	150	97.08	35.54
	The 2nd CW	12	63	138	97.92	27.43
	The 3rd CW	12	54	150	108.67	30.02
	The 4th CW	12	55	**171**	107.42	33.73
	The 5th CW	12	77	153	108.08	23.10

Table 4.1 (Continued)

Class	CW quantity	*N*	Minimum	Maximum	*Mean*	*SD*
Control	The 1st CW	12	60	150	86.42	26.60
	The 2nd CW	12	44	187	98.67	40.80
	The 3rd CW	*12*	67	251	*105.67*	*51.28*
	The 4th CW	*12*	47	248	*94.50*	*54.43*
	The 5th CW	*12*	26	223	*94.83*	*51.80*

Table 4.2

The Summary of the Gain score on the Writing Quantity of the CW Tasks

Class	Collaborative quantity changes	*N*	Minimum	Maximum	*Mean*	*SD*
Experimental	Differences between 1CW and 2CW	12	-30	**32**	0.83	22.04
	Differences between 1CW and 3CW	12	**-93**	57	11.58	38.86
	Differences between 1CW and 4CW	12	-92	50	10.33	36.35
	Differences between 1CW and 5CW	12	-36	90	11.00	38.02
Control	Differences between 1CW and 2CW	12	-61	**88**	12.25	39.45
	Differences between 1CW and 3CW	12	-60	143	19.25	48.50
	Differences between 1CW and 4CW	12	-62	140	8.08	51.34
	Differences between 1CW and 5CW	12	**-84**	115	8.42	51.00

Table 4.3

The Difference of Gain Scores on the CW Quantity between Classes

CW	Class	*N*	*Mean*	*SD*	Gain scores (collaborative quantity changes)	*t-test*	*p value*	*d*
1	Experimental	12	97.08	35.54				
	Control	12	86.42	26.60				
2	Experimental	12	97.92	27.43	0.83	-0.87	0.39	0.02
	Control	12	98.67	40.80	12.25			
3	Experimental	12	108.67	30.02	11.58	-0.42	0.67	0.07
	Control	12	105.67	51.28	19.25			

Table 4.3 (Continued)

CW	Class	N	*Mean*	*SD*	Gain scores (collaborative quantity changes)	*t-test*	*p value*	*d*
4	Experimental	12	107.42	33.73	10.33	0.12	0.90	0.29
	Control	12	94.50	54.43	8.08			
5	Experimental	12	108.08	23.09	11.00	0.14	0.88	0.33
	Control	12	94.83	51.80	8.42			

The quality of writing. Each writing sample was graded by two raters using an analytic rubric. Inter-rater reliability of .95, .94, .97, .95, and .97 showed that there was agreement between the two raters (see Table 4.4).

Table 4.5 shows the minimum and maximum writing quality of each CW task for the two classes. Similarly, the first writing was the baseline. Its differences between the other four writings were the four gain scores. The gain score here referred to the "collaborative quality change". Since there were 12 CW groups in each class, and each group produced four collaborative quality changes, there were totally 48 collaborative quality changes obtained from each class. Table 4.6 shows the minimum and maximum of these quality changes in each class.

To examine if there were statistically significant differences in CW quality between control and experimental classes, four collaborative quality changes of each class were compared by conducting four independent t-tests. The results showed that there were no significant differences between classes, which means that the experimental class did not perform better than the control class in terms of the quality of collaborative writing ($t = -0.58$, $p = 0.56$, $d = 0.36$; $t = -1.44$, $p = 0.16$, $d = 0.59$; $t = -0.25$, $p = 0.80$, $d = 0.19$; $t = -0.12$, $p = 0.90$, $d = 0.12$) (see Table 4.7).

Each written product was evaluated for six different areas, and, thus, generated a score for each area. To understand whether the collaborative writing products between classes differed in these areas, by using the first collaborative writing as the covariance, *ANCOVAs* were conducted to examine each of these areas between classes for each collaborative writing task. The results showed that the two classes only significantly differed in the area of grammar regarding the third CW product ($F = 6.26$; $p < .05$), with the control class ($M = 3.88$) outperforming the experimental class ($M = 2.88$). All the other areas of the other CW products showed no significant differences (see Table 4.8).

Table 4.4

The Inter-rater Reliability regarding the Quality of CW

		CW1-rater1	CW2-rater1	CW3-rater1	CW4-rater1	CW5-rater1
CW1-rater2	*Pearson*	.956***				
	Sig.	.000				
	N	24				
CW2-rater2	*Pearson*		.945***			
	Sig.		.000			
	N		24			
CW3-rater2	*Pearson*			.971***		
	Sig.			.000		
	N			24		
CW4-rater4	*Pearson*				.958***	
	Sig.				.000	
	N				.24	
CW5-rater5	*Pearson*					.974***
	Sig.					.000
	N					24

***$p < .001$

Table 4.5

Descriptive Statistics on the Writing Quality of the CW Tasks

Class	CW quality	*N*	Minimum	Maximum	*Mean*	*SD*
Experimental	The 1st CW	12	18	28	23.00	3.40
	The 2nd CW	12	16	27	22.17	3.64
	The 3rd CW	12	**13.5**	29	21.42	5.23
	The 4th CW	12	16.5	28.5	22.17	3.90
	The 5th CW	12	16	**30**	21.04	4.13
Control	The 1st CW	12	16.5	28.5	23.38	2.85
	The 2nd CW	12	17	**30**	23.50	3.69
	The 3rd CW	12	19.5	**30**	24.29	4.43
	The 4th CW	12	14.5	29	22.92	3.95
	The 5th CW	12	**6**	**30**	21.67	6.27

Table 4.6

The Range of the Gain Score on the Writing Quality of the CW Tasks

Class	Collaborative quality changes	*N*	Minimum	Maximum	*Mean*	*SD*
Experimental	Differences between 1CW and 2CW	12	-8	4	-0.83	3.12
	Differences between 1CW and 3CW	12	**-10**	4	-1.58	4.21
	Differences between 1CW and 4CW	12	-8	4	-0.83	4.02
	Differences between 1CW and 5CW	12	**-10**	**10**	-1.96	5.18
Control	Differences between 1CW and 2CW	12	-6	**12**	0.13	4.77
	Differences between 1CW and 3CW	12	-6	7	0.92	4.27
	Differences between 1CW and 4CW	12	-4	6	-0.46	3.26
	Differences between 1CW and 5CW	12	**-10**	8	-1.71	4.77

Table 4.7

The Difference of Gain Scores on the CW Quality between Classes

CW		*N*	*Mean*	*SD*	Gain scores (collaborative quality changes)	*t-test*	*p value*	*d*
1	Experimental	12	23.00	3.40				

Table 4.7 (Continued)

CW		N	Mean	SD	Gain scores (collaborative quality changes)	t-test	p value	d
1	Control	12	23.38	2.85				
2	Experimental	12	22.17	3.64	-0.83	-0.58	0.56	0.36
2	Control	12	23.50	3.69	0.13			
3	Experimental	12	21.42	5.23	-1.58	-1.44	0.16	0.59
3	Control	12	24.29	4.43	0.92			
4	Experimental	12	22.17	3.90	-0.83	-0.25	0.80	0.19
4	Control	12	22.92	3.95	-0.46			
5	Experimental	12	21.04	4.13	-1.96	-0.12	0.90	0.12
5	Control	12	21.67	6.27	-1.71			

Table 4.8

The Differences in the Six Graded Areas of Collaborative Writings between Classes

	Class	N	Mean	SD	F	p
Content1	Experimental	12	4.83	0.58		
	Control	12	4.96	0.14		
Content2	Experimental	12	4.92	0.19	1.44	0.243
	Control	12	4.71	0.62		
Content3	Experimental	12	4.79	0.40	0.96	0.338
	Control	12	4.58	0.87		
Content4	Experimental	12	4.96	0.14	2.88	0.104
	Control	12	4.67	0.62		
Content5	Experimental	12	4.83	0.44	1.69	0.207
	Control	12	4.38	1.23		
Cohesion1	Experimental	12	3.50	1.00		
	Control	12	3.79	0.40		

Table 4.8 (Continued)

	Class	N	Mean	SD	F	p
Cohesion2	Experimental	12	3.46	0.94	0.68	0.416
	Control	12	3.79	0.62		
Cohesion3	Experimental	12	3.46	1.18	1.78	0.195
	Control	12	4.13	0.71		
Cohesion4	Experimental	12	3.33	0.98	0.39	0.535
	Control	12	3.71	0.89		
Cohesion5	Experimental	12	3.46	0.72	0.31	0.583
	Control	12	3.33	1.13		
Coherence1	Experimental	12	3.75	0.84		
	Control	12	3.83	0.62		
Coherence2	Experimental	12	3.67	0.78	0.60	0.446
	Control	12	3.92	0.67		
Coherence3	Experimental	12	3.50	1.00	1.62	0.216
	Control	12	4.00	0.85		
Coherence4	Experimental	12	3.50	1.02	1.45	0.241
	Control	12	3.92	0.73		
Coherence 5	Experimental	12	3.42	0.85	0.06	0.795
	Control	12	3.54	1.05		
Grammar1	Experimental	12	3.33	0.75		
	Control	12	3.42	0.67		
Grammar2	Experimental	12	3.17	0.96	0.35	0.557
	Control	12	3.42	0.85		
Grammar3	Experimental	12	2.88	1.03	**6.26***	**0.021**
	Control	12	3.88	0.96		
Grammar4	Experimental	12	2.96	0.94	0.96	0.337
	Control	12	3.33	0.81		
Grammar5	Experimental	12	2.88	1.11	1.56	0.225
	Control	12	3.46	1.08		
Vocabulary1	Experimental	12	3.83	0.69		
	Control	12	3.46	0.92		
Vocabulary2	Experimental	12	3.42	0.67	0.82	0.373
	Control	12	3.67	0.83		
Vocabulary3	Experimental	12	3.33	1.03	1.10	0.305

Table 4.8 (Continued)

	Class	N	Mean	SD	F	p
Vocabulary4	Control	12	3.79	1.03		
	Experimental	12	3.58	0.67	0.00	0.941
Vocabulary5	Control	12	3.54	0.81		
	Experimental	12	3.33	0.96	0.53	0.471
Mechanics1	Control	12	3.42	1.02		
	Experimental	12	3.75	0.62		
Mechanics2	Control	12	3.96	0.50		
	Experimental	12	3.54	0.69	2.18	0.154
Mechanics3	Control	12	4.00	0.56		
	Experimental	12	3.46	0.96	0.62	0.440
Mechanics4	Control	12	3.92	0.93		
	Experimental	12	3.83	0.62	0.29	0.591
Mechanics5	Control	12	3.75	0.62		
	Experimental	12	3.13	0.86	0.56	0.461
	Control	12	3.54	1.14		

*$p < .05$

Individual writing performance. An independent t-test was conducted to examine whether there were significant differences between classes in terms of individual writing performance before the treatment. The results showed that experimental and control classes were not significantly different in writing quality, but were significantly different in writing quantity ($t = 2.7$, $p < .01$) with the experimental class ($M = 86.81$) outperforming the control class ($M = 67.26$) (see Table 4.9). This result suggests that there were preexisting differences between classes before the treatment.

Table 4.9

The Writing Performance between Classes before the Treatment

	Class	N	Mean	SD	t	p
Pre-test of writing quantity	Experimental	48	86.81	42.29	2.7**	0.008

Table 4.9 (Continued)

	Class	N	Mean	SD	t	p
	Control	50	67.26	28.29		
Pre-test of writing quality	Experimental	48	21.97	5.30	1.07	0.286
	Control	50	23.21	6.10		

**p < .01

The quantity of writing. All students received pre and post writing tests. For each student, the difference between pre-test and post-test was his/her gain score. The gain score here referred to the "individual quantity change". Table 4.10 shows the maximum and minimum of the raw scores on the individual writing quantity of pre and post writing tests for each class. Table 4.11 shows the minimum and maximum of the individual quantity changes of pre and post writing tests for each class. Then, an independent t-test was applied to examine if there was a significant difference in the quantity changes between experimental and control classes. The results showed that there was no significant difference between classes ($t = -0.09$, $p = 0.92$, $d = 0.02$), which means that experimental class did not outperform the control class regarding the quantity of individual writing (see Table 4.12).

Table 4.10

Descriptive Statistics on the Writing Quantity of the Individual Writing

Class	IW quantity	N	Minimum	Maximum	Mean	SD
Experimental	Pre-test	48	33	227	86.81	42.29
	Post-test	47	46	196	106.72	28.54
Control	Pre-test	50	32	180	67.26	28.29
	Post-test	50	42	162	87.68	27.18

Table 4.11

The Summary of the Gain Score on the Writing Quantity of the Individual Writing

Class	Individual quantity change	N	Minimum	Maximum	*Mean*	*SD*
Experimental	Differences between pretest and posttest	46	-118	101	18.46	44.86
Control	Differences between pretest and posttest	49	-46	113	19.20	29.44

Table 4.12

The Differences of Gain Scores on the Quantity of Individual Writing between Classes

Class	N	Mean	SD	t-test	p value	d
Experimental	46	18.46	44.86	-0.09	0.923	0.02
Control	49	19.20	29.44			

The quality of writing. Similar to collaborative writing samples, each individual writing sample was also graded by the same two raters. Inter-rater reliability showed that there was agreement between the two raters. Regarding the pre-test writing of control and experimental classes, the reliability is .96 and .95 respectively. The reliability of the post-test writing of the two classes is .83 and .95 respectively (see Table 4.13).

Table 4.14 shows the minimum and maximum of the raw scores on the individual writing quality of pre and post writing test for the two classes. Similarly, the difference between pretest and posttest for each student is his/her gain score. The gain score here referred to the "individual quality change". Table 4.15 shows the minimum and maximum of these quality changes in each class. An independent t-test was applied to examine if there was a significant difference in the individual quality changes between classes. The result showed that the performance between classes on the quality of individual writing was significantly different ($t = 2.92$, $p < .01$, $d = 0.60$). The experimental class ($M = 4.02$) outperformed the control class ($M = 0.58$) (see Table 4.16).

Similar to collaborative writing samples, each individual writing product was also evaluated for six different areas, and generated a score for each area. *ANCOVAs* were conducted

to examine if there were significant differences in each of these areas between classes for post writing test. The results showed that the two classes significantly differed in the areas of cohesion ($F = 5.39$, $p < .05$), grammar ($F = 18.81$, $p < .01$), vocabulary ($F = 4.45$, $p < .05$) and mechanic ($F = 5.57$, $p < .05$). The experimental class ($M = 4.34, 3.86, 4.16, 4.29$) had higher score than the control class ($M = 4.08, 3.26, 3.90, 4.03$). However, there were no significant differences between classes in the areas of content and coherence ($F = 1.27$, $p = 0.26$; $F = 2.95$, $p = 0.09$) (see Table 4.17).

Table 4.13

The Inter-rater Reliability regarding the Quality of Individual Writing

	Experimental class		Control class	
	Pre-test writing score 1&2	Post-test writing score 1&2	Pre-test writing score 1&2	Post-test writing score 1&2
Pearson	**.95***	**.95***	**.96***	**.83***
Number	46	46	49	49
Sig.	**.000**	**.000**	**.000**	**.000**

***$p < .001$

Table 4.14

Descriptive Statistics on the Writing Quality of the Individual Writing

Class	IW quality	*N*	Minimum	Maximum	*Mean*	*SD*
Experimental	Pre-test	48	6	30	21.97	5.30
	Post-test	47	17.5	30	25.84	3.14
Control	Pre-test	50	6	30	23.21	6.10
	Post-test	50	6.5	30	23.91	4.57

Table 4.15

The Range of the Gain Score on the Writing Quality of the Individual Writing

Class	Individual quality change	N	Minimum	Maximum	*Mean*	*SD*
Experimental	Differences between pre-test and post-test	46	-7	19	4.02	5.31
Control	Differences between pre-test and post-test	49	-12.5	23.5	0.58	6.08

Table 4.16

The Difference of Gain Scores on the Quality of Individual Writing between Classes

Class	N	Mean	SD	t-test	p value	d
Experimental	46	4.02	5.31	**2.92****	**0.004**	**0.60**
Control	49	0.58	6.08			

**p < .01

Table 4.17

The Differences in the Six Graded Areas of Individual Writings between Classes

	Class	Mean	SD	N	F	p
Content	Experimental	4.88	0.47	46	1.27	0.263
	Control	4.74	0.70	49		
Cohesion	Experimental	4.34	0.55	46	**5.39***	**0.022**
	Control	4.08	0.86	49		
Coherence	Experimental	4.28	0.66	46	2.95	0.089
	Control	4.06	0.85	49		
Grammar	Experimental	3.86	0.73	46	**18.81****	**0.000**
	Control	3.26	1.05	49		
Vocabulary	Experimental	4.16	0.65	46	**4.45***	**0.037**
	Class	Mean	SD	N	F	p
	Control	3.90	0.88	49		
Mechanics	Experimental	4.29	0.61	46	**5.57***	**0.020**
	Control	4.03	0.85	49		

*p < .05; **p < .01

Writing Anxiety

Research Question 2: Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?

To measure students' writing anxiety, students completed pre and post test SLWAI. An independent t-test was conducted to examine whether there were significant differences in writing anxiety between classes before the treatment. Table 4.18 shows the results that experimental and control classes were not significantly different in writing anxiety prior to the treatment.

Table 4.18

Writing Anxiety between Classes before the Treatment

Class	N	Mean	SD	t	p
Experimental	46	68.70	6.83	0.38	0.699
Control	45	69.29	7.72		

Similarly, for each student, the difference between pre-test and post-test was his/her gain score which referred to his/her anxiety change. The lower anxiety change meant that students had lower writing anxiety after the treatment. The higher anxiety change meant that students had higher writing anxiety after the treatment. Then, an independent t-test was applied to examine if there were significant differences in the anxiety change between control and experimental classes. The results showed that there were significant differences between classes ($t = 6.59$, $p < .001$). The control class ($M = -3.33$) had lower writing anxiety than the experimental class ($M = 13.19$) (see Table 4.21).

Table 4.19

Descriptive Statistics on the Writing Anxiety of the Two Classes

Class	Writing anxiety	N	Minimum	Maximum	Mean	SD
Experimental	Pre-test	46	53	83	68.70	6.83
	Post-test	47	60	107	82.60	12.16
Control	Pre-test	45	47	82	69.29	7.72
	Post-test	49	22	82	64.94	10.56

Table 4.20

The Range of Gain Score on the Writing Anxiety of the Two Classes

Class	Anxiety change	N	Minimum	Maximum	Mean	SD
Experimental	Differences between pretest and posttest	43	-22	40	13.19	13.83
Control	Differences between pretest and posttest	43	-33	14	-3.33	8.84

Table 4.21

The Difference of Gain Scores on the Writing Anxiety between Classes

Class	N	Mean	SD	t-test	p value	d
Experimental	43	13.19	13.83	**6.59****	**0.000**	**1.42**
Control	43	-3.33	8.84			

***$p < .001$

Perceptions of Collaborative Writing

Research Question 3: How do the EFL college students perceive blog-supported and traditional collaborative writing?

Each class of students completed a collaborative writing questionnaire after the treatment. The questionnaire for the experimental class asked students' perceptions of collaborative writing via blogs. The questionnaire for the control class asked students' perceptions of collaborative writing via paper-and-pencil. The questionnaire had a response rate of 90.0%.

Tables 4.22 to 4.25 present participants' perceptions of the collaborative feature of blogs

(items 1 to 6), their writing performance (items 7 to 12), their writing anxiety (items 13 to 18), and their motivation for future use (items 19 to 22). The Cronbach's alpha for the overall questionnaire is 0.89 ($N = 47$). The reliability for the four subsections were .65, .79, .78, and .52 respectively. These tables all showed the numbers coming from strongly agree (SA), agree (A), neutral (N), disagree (D), and strongly disagree (SD) categories. Students' positive responses came from the A and SA categories while their negative responses came from D and SD categories.

In terms of the collaborative feature of blogs (see Table 4.22), the results showed that students who made the positive responses were more than those who made the negative responses (e.g., items 1-6). For example, eighteen students agreed and strongly agreed that they could fully interact with group members in the blog environment. The number, 18, came from the SA (5) and A (13) categories. One strongly disagreed and three disagreed that they could not. Twenty-six students agreed and strongly agreed that they could collaborate with group members easily; however, six expressed that they could not. Sixteen students felt that they could easily write collaboratively with group members, but six felt they could not. Sixteen students expressed that they did not feel lonely when writing collaboratively with members; however, ten felt that they felt lonely. Fourteen students expressed that they obtained encouragement and support when writing collaboratively with group members in the blog environment, but only four felt they did not. Nineteen students expressed that they felt comfortable as they wrote collaboratively with group members in the blog environment, but six expressed they did not.

In addition, the results also showed that many students gave neutral responses. Some items are found to have the neutral responses more than the positive and negative responses (e.g., items 1,3,4,5 & 6). Particularly, in item 5, more than half of the students (i.e., 29 students) made neutral responses.

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Table 4.22

Perceptions of the Collaborative Features of Blogs (the Experimental Class)

	Items	SD	D	N	A	SA
1	I can fully interact with group members in the blog environment.	1 (2.1%)	3 (6.4%)	25 (53.2%)	13 (27.7%)	5 (10.6%)
2	I can collaborate with group members easily in the blog environment.	1 (2.1%)	5 (10.6%)	15 (31.9%)	20 (42.6%)	6 (12.8%)
3	I can easily write collaboratively with group members in the blog environment.	1 (2.1%)	5 (10.6%)	25 (53.2%)	14 (29.8%)	2 (4.3%)
4	Writing collaboratively with group members in the blog environment, I do not feel lonely.	0 (0%)	10 (21.3%)	21 (44.7%)	12 (25.5%)	4 (8.5%)
5	Writing collaboratively with group members in the blog environment, I obtain encouragement and support.	1 (2.1%)	3 (6.4%)	**29** (61.7%)	11 (23.4%)	3 (6.3%)
6	Writing collaboratively with group members in the blog environment, I feel comfortable.	1 (2.1%)	5 (10.6%)	22 (46.8%)	15 (31.9%)	4 (8.5%)

N=47

Table 4.23 shows students' perceptions on writing performance. The results showed that students who made the positive responses were more than those who made the negative responses (e.g., items 7, 9, 10, 11 & 12). For example, seventeen students thought that collaborative writing via blogs was beneficial for their English writing, but eleven students thought that it was not beneficial. Ten students thought that collaborative writing via blogs had helped them to write an English composition with more quantity while eleven did not think it had helped. Nineteen students felt that it had helped them write faster in English, but seven did not think so. Nineteen students expressed that it had helped them know how to revise their writing better, but eight students did not think it had helped. Fifteen students thought that it had helped improved their writing while nine students thought it had not. Fifteen students felt that it had helped them express themselves in English better; however, ten students felt it had not helped them.

In addition, the results also showed that most students gave neutral responses which were more than the positive and negative responses (e.g., items 7-12). Particularly, regarding item 8, more than half of the students (26 students) made neutral responses.

Table 4.23

Perceptions of the Writing Performance (the Experimental Class)

	Items	SD	D	N	A	SA
7	Collaborative writing via blogs is beneficial for my English writing.	1 (2.1%)	10 (21.3%)	19 (40.4%)	10 (21.3%)	7 (14.9%)
8	Collaborative writing via blogs has helped me to write an English composition with more quantity.	4 (8.5%))	7 (14.9%)	**26** (55.3%)	9 (19.1%)	1 (2.1%)
9	Collaborative writing via blogs has helped me to write faster in English.	1 (2.1%)	6 (12.8%)	21 (44.7%)	15 (31.9%)	4 (8.5%)
10	Collaborative writing via blogs has helped me to know how to revise my writing better.	1 (2.1%)	7 (14.9%)	20 (42.6%)	15 (31.9%)	4 (8.5%)
11	Collaborative writing via blogs has helped improve my English writing.	1 (2.1%)	8 (17.0%)	23 (48.9%)	13 (27.7%)	2 (4.3%)
12	Collaborative writing via blogs has helped me to express myself in English better.	3 (6.3%)	7 (14.9%)	22 (46.8%)	12 (25.5%)	3 (6.3%)

Table 4.24 shows students' perceptions on writing anxiety. The results showed that students with positive responses were more than those with negative responses (e.g., items 13, 15, 16 & 17). For example, eighteen students felt that collaborative writing via blogs has helped them be less afraid of writing English compositions. The number, 18, came from the SA (4) and A (14) categories. However, eleven felt that it has not. The number, 11, came from the D (10) and SD (1) categories. Ten students thought it had helped them be less nervous about writing English compositions; however, sixteen students thought it had not. Sixteen students felt that it had motivated them to write English compositions; seven students thought it had not. Fifteen students expressed that it had increased their interest in writing English compositions, but nine students

thought it had not increased their interest. Fifteen students felt that it had made them like to write

English compositions, but eight students felt that it had not. Eight students felt it had made them

feel that writing English compositions was interesting; however, eight felt it had not.

In addition, the results also showed that most students gave neutral responses which were

more than the positive and negative responses (e.g., items 14-18). Particularly, regarding item 31,

more than half of the students (31 students) made neutral responses.

Table 4.24

Perceptions of the Writing Anxiety (the Experimental Class)

	Items	SD	D	N	A	SA
13	Collaborative writing via blogs has helped me to be less afraid of writing English compositions.	1 (2.1%)	10 (21.3%)	18 (38.3%)	14 (29.8%)	4 (8.5%)
14	Collaborative writing via blogs has helped to be less nervous about writing English compositions.	4 (8.5%)	12 (25.5%)	21 (44.7%)	8 (17.0%)	2 (4.3%)
15	Collaborative writing via blogs has motivated me to writing English compositions.	2 (4.3%)	5 (10.6%)	24 (51.1%)	11 (23.4%)	5 (10.6%)
16	Collaborative writing via blogs has increased my interest in writing English compositions.	2 (4.3%)	7 (14.9%)	23 (48.9%)	11 (23.4%)	4 (8.5%)
17	Collaborative writing via blogs has made me like to write English compositions.	1 (2.1%)	7 (14.9%)	24 (51.1%)	9 (19.1%)	6 (12.8%)
18	Collaborative writing via blogs has made me feel that writing English compositions is interesting.	3 (6.4%)	5 (10.6%)	**31** (66.0%)	5 (10.6%)	3 (6.4%)

Table 4.25 shows students' perceptions on their motivation to continue to write. The results

showed that, for items 19 and 22, students with negative responses were more than the positive

responses. Only item 20 showed that students' positive responses were more than the negative

responses. For example, twelve students enjoyed using blogs for collaborative writing this

semester; however, fifteen did not enjoy. Twenty students would keep using blogs for

collaborative writing to improve their English writing after this semester, but five expressed that

they would not. Twelve students expressed that they would invite their friends to participate in collaborative writing via blogs while twelve expressed that they wouldn't. Eight expressed that they hoped the teacher would let them use blogs for collaborative writing next semester, but thirteen did not hope so.

In addition, the results also showed that all items were found to have the neutral responses more than the positive and negative responses (e.g., items 19-22). Particularly, in item 22, more than half of the students (i.e., 26 students) made neutral responses.

Table 4.25

Perceptions of the Future Motivation (the Experimental Class)

	Items	SD	D	N	A	SA
19	I enjoyed using blogs for collaborative writing this semester.	3 (6.4%)	12 (25.5%)	20 (42.6%)	11 (23.4%)	1 (2.1%)
20	I will keep using blogs for collaborative writing to improve my English writing after this semester.	0 (0%)	5 (10.6%)	22 (46.8%)	15 (31.9%)	5 (10.6%)
21	I will invite my friends to participate in writing collaboratively via blogs.	0 (0%)	12 (25.5%)	23 (48.9%)	6 (12.8%)	6 (12.8%)
22	I hope the teacher will let us use blogs for collaborative writing next semester.	1 (2.1%)	12 (25.5%)	**26** (55.3%)	4 (8.5%)	4 (8.5%)

Tables 4.26 to 4.29 present participants' perceptions of traditional collaborative writing with respect to the collaborative feature of paper-and-pencil (items 1 to 6) , their writing performance (items 7 to 12), their writing anxiety (items 13 to 18), and their motivation for future use (items 19 to 22). The Cronbach's alpha for the overall questionnaire was 0.97 ($N = 48$). The reliability for the four subsections were .97, .95, .93, .93, and .94 respectively. Similarly, the positive responses came from the SA and A categories while the negative responses came from the D and SD categories. The neutral responses were from the N category.

In terms of the collaborative feature of paper-and-pencil (see Table 4.26), the results

showed that students' positive responses were much more than the negative responses (e.g., items 1-6). For example, thirty-two students expressed that they could fully interact with group members with paper-and-pencil. The number, 32, came from the SA (9) and A (23) categories. Only two students had negative responses. Thirty-three students felt they could collaborate with group members easily using paper-and-pencil, and only two students thought they could not. Thirty-three students felt that they could easily write collaboratively with group members using paper-and-pencil while two students thought they could not. Thirty-six students expressed that they did not feel lonely as they wrote collaboratively with members using paper-and-pencil, but three students expressed that they felt lonely. Thirty students expressed that they obtained encouragement and support as they wrote collaboratively with members, but five students did not think they did. Thirty-four students expressed that they felt comfortable when they wrote collaboratively using paper-and-pencil; however, five students did not feel comfortable.

Table 4.26

Perceptions of Collaborative Feature of Paper-and-pencil (the Control Class)

	Items	SD	D	N	A	SA
1	I can fully interact with group members using paper-and-pencil.	2 (4.2%)	0 (0%)	14 (29.2%)	23 (47.9%)	9 (18.8%)
2	I can collaborate with group members easily using paper-and-pencil.	2 (4.2%)	0 (0%))	13 (27.1%)	21 (43.8%)	12 (25.0%)
3	I can easily write collaboratively with group members using paper-and-pencil.	2 (4.2%)	0 (0%)	13 (27.1%)	21 (43.8%)	12 (25.0%)
4	Writing collaboratively with group members using paper-and-pencil, I do not feel lonely.	2 (4.2%)	1 (2.1%)	9 (18.8%)	23 (18.8%)	13 (27.1%)
5	Writing collaboratively with group members using paper-and-pencil, I obtain encouragement and support.	1 (2.1%)	4 (8.3%)	13 (27.1%)	20 (41.7%)	10 (20.8%)
6	Writing collaboratively with group members using paper-and-pencil, I feel comfortable.	3 (6.3%)	2 (4.2%)	9 (18.8%)	23 (47.9%)	11 (22.9%)

N=48

Table 4.27 shows how students perceived the influence of collaborative writing on their writing performance. The results showed that students with positive responses were much more than those with negative responses. (e.g., items 7-12) For instance, thirty-one students felt that collaborative writing was beneficial for their English writing. The number, 31, came from SA (11) and A (20) categories. Only two students felt that it was not beneficial. Thirty-four students felt that it had helped them to write an English composition with more quantity. Similarly, the number, 34, came from SA (12) and A (22) categories. Only three students felt that it had not. Thirty students felt that it had helped them to write faster; only two students felt that it had not. Thirty-six students felt that it had helped them to know how to revise their writing better while two felt that it had not. Thirty-four students felt that it had helped improved their English writing, and only two felt that it had not. Thirty-three students felt that it had helped them to express themselves in English better; however, three felt that it had not.

Table 4.27

Perceptions of Writing Performance (the Control Class)

	Items	SD	D	N	A	SA
7	Collaborative writing is beneficial for my English writing.	2 (4.2%)	0 (0%)	15 (31.3%)	20 (41.7%)	11 (22.9%)
8	Collaborative writing has helped me to write an English composition with more quantity.	1 (2.1%)	2 (4.2%)	11 (22.9%)	22 (45.8%)	12 (25.0%)
9	Collaborative writing has helped me to write faster in English.	2 (4.2%)	0 (0%)	16 (33.3%)	18 (37.5%)	12 (25.0%)
10	Collaborative writing has helped me to know how to revise my writing better.	2 (4.2%)	0 (0%)	10 (20.8%)	25 (52.1%)	11 (22.9%)
11	Collaborative writing has helped improve my English writing.	2 (4.2%)	0 (0%)	12 (25.0%)	24 (50.0%)	10 (20.8%)
12	Collaborative writing has helped me to express myself in English better.	2 (4.2%)	1 (2.1%)	12 (25.0%)	25 (52.1%)	8 (16.7%)

Regarding the influence of collaborative writing on students' writing anxiety, Table 4.28 shows students' perceptions. The results showed that students with positive responses were more than those with negative responses (e.g., items 13-18). For example, thirty-two students felt that it had helped them be less afraid of writing compositions. The number, 32, came from SA (14) and A (18) categories. Only three students thought it had not. The number, 3, came from SD (1) and D (2) categories. Thirty-four students felt that it had helped them be less nervous about writing compositions, and three felt it had not. Twenty-two students felt that it had motivated them to write compositions while four felt that it hadn't. Twenty-five students expressed that it had increased their interest in writing compositions; however, five students expressed that it had not. Thirty students expressed that it had made them like to write compositions while six students thought it had not. Thirty-three students felt that it had made them feel that writing compositions was interesting; only three students felt it had not.

Table 4.28

Perceptions of Writing Anxiety (the Control Class)

	Items	SD	D	N	A	SA
13	Collaborative writing has helped me to be less afraid of writing English compositions.	1 (2.1%)	2 (4.2%)	13 (27.1%)	18 (37.5%)	14 (29.2%)
14	Collaborative writing has helped to be less nervous about writing English compositions.	2 (4.2%)	1 (2.1%)	11 (22.9%)	24 (50.0%)	10 (20.8%)
15	Collaborative writing has motivated me to writing English compositions.	2 (4.2%)	2 (4.2%)	22 (45.8%)	16 (33.3%)	6 (12.5%)
16	Collaborative writing has increased my interest in writing English compositions.	4 (8.3%)	1 (2.1%)	18 (37.5%)	18 (37.5%)	7 (14.6%)
17	Collaborative writing has made me like to write English compositions.	2 (4.2%)	4 (8.3%)	12 (25.0%)	22 (45.8%)	8 (16.7%)
18	Collaborative writing has made me feel that writing English compositions is interesting.	3 (6.3%)	0 (0%)	12 (25.0%)	23 (47.9%)	10 (20.8%)

Table 4.29 shows students' perceptions on their motivation to continue collaborative writing. Students' positive responses were more than the negative responses (e.g., 19-22). For example, regarding whether they enjoyed writing collaboratively this semester, fifteen students strongly agreed and thirteen students agreed. Only five students felt that they did not. The number, 5, came from D (2) and SD (3) categories. Concerning whether they would keep writing collaboratively to improve their English writing after this semester, nine students strongly agreed and eighteen students agreed. However, six students expressed that they would not. Moreover, twenty-seven students expressed that they would invite their friends to participate in collaborative writing. Only five students felt that they would not. Finally, thirty-two students hoped the teacher would let them write collaboratively next semester while only three students did not hope so

Table 4.29

Perceptions of Future Motivation (the Control Class)

	Items	SD	D	N	A	SA
19	I enjoyed writing collaboratively this semester.	3 (6.3%)	2 (4.2%)	15 (31.3%)	13 (27.1%)	15 (31.3%)
20	I will keep writing collaboratively to improve my English writing after this semester.	3 (6.3%)	3 (6.3%)	15 (31.3%)	18 (37.5%)	9 (18.8%)
21	I will invite my friends to participate in writing collaboratively.	3 (6.3%)	2 (4.2%)	16 (33.3%)	17 (35.4%)	10 (20.8%)
22	I hope the teacher will let us write collaboratively next semester.	2 (4.2%)	1 (2.1%)	13 (27.1%)	16 (33.3%)	16 (33.3%)

In order to further examine the positive and negative responses between classes, students' perceptions were broken into two parts (see Table 4.30): The percentage of students in control and experimental classes who indicated "Strongly agree"/"Agree" (positive response) versus the percentage of students in the two classes who indicated "Strongly disagree"/ "Disagree"

(negative response). This clearly showed the difference in the positive responses between classes and in the negative responses between classes.

The results showed that students with positive responses in the control class were much more than those in the experimental class, which could be found in the sections of (1) collaborative features of the media, (2) writing performance, (3) writing anxiety, and (4) motivation for future use. Students with negative responses in the control class were less than those in the experimental class. This result could also be found in the four sections, except item 5 in the section on collaborative feature and item 20 in the section on motivation.

Table 4.30

The Comparison of Students' Responses between Classes

	Items	Strongly Disagree/ Disagree		Strongly agree/ agree	
		Blog (N)	P-P (N)	Blog (N)	P-P (N)
	Collaborative features of the media				
1	I can fully interact with group members in the blog environment/using paper-and-pencil.	4 8.5%	2 4.2%	18 38.3%	32 66.7%
2	I can collaborate with group members easily in the blog environment /using paper-and-pencil.	6 12.7%	2 4.2%	26 55.4%	33 68.8%
3	I can easily write collaboratively with group members in the blog environment /using paper-and-pencil.	6 12.7%	2 4.2%	16 34.1%	33 68.8%
4	Writing collaboratively with group members in the blog environment /using paper-and-pencil, I do not feel lonely.	10 21.3%	3 6.3%	16 34.1%	36 45.9%
5	Writing collaboratively with group members in the blog environment /using paper-and-pencil, I obtain encouragement and support.	**4** **8.5%**	**5** **10.4%**	14 29.7%	30 62.5%
6	Writing collaboratively with group members in the blog environment /using paper-and-pencil, I feel comfortable.	6 12.7%	5 10.4%	19 40.4%	34 70.8%
	Writing performance				
7	Collaborative writing is beneficial for my English writing.	11 23.4%	2 4.2%	17 36.2%	31 64.6%

Table 4.30 (Continued)

	Items	Strongly Disagree/ Disagree		Strongly agree/ agree	
		Blog (N)	P-P (N)	Blog (N)	P-P (N)
8	Collaborative writing has helped me to write an English composition with more quantity.	11 23.4%	3 6.3%	10 21.2%	34 70.8%
9	Collaborative writing has helped me to write faster in English.	7 14.9%	2 4.2%	19 40.4%	30 62.5%
10	Collaborative writing has helped me to know how to revise my writing better.	8 17.0%	2 4.2%	19 40.4%	36 45.9%
11	Collaborative writing has helped improve my English writing.	9 19.1%	2 4.2%	15 32.0%	34 70.8%
12	Collaborative writing has helped me to express myself in English better.	10 21.3%	3 6.3%	15 32.0%	33 68.8%
	Writing anxiety				
13	Collaborative writing has helped me to be less afraid of writing English compositions.	11 23.4%	3 6.3%	18 38.3%	32 66.7%
14	Collaborative writing has helped to be less nervous about writing English compositions.	16 34.0%	3 6.3%	10 21.3%	34 70.8%
15	Collaborative writing has motivated me to writing English compositions.	7 14.8%	4 4.2%	16 34.1%	22 45.8%
16	Collaborative writing has increased my interest in writing English compositions.	9 19.2%	5 10.4%	15 32.0%	25 52.1%
17	Collaborative writing has made me like to write English compositions.	8 17.0%	6 12.5%	15 32.0%	30 62.5%
18	Collaborative writing has made me feel that writing English compositions is interesting.	8 17.0%	3 6.3%	8 17.0%	33 68.8%
	Motivation for future use				
19	I enjoyed writing collaboratively this semester.	15 31.9%	5 10.5%	12 26.5%	28 58.4%
20	I will keep writing collaboratively to improve my English writing after this semester.	**5** **10.5%**	**6** **12.5%**	20 42.5%	27 56.2%
21	I will invite my friends to participate in writing collaboratively.	12 25.5%	5 10.5%	12 26.5%	27 56.2%

Table 4.30 (Continued)

	Items	Strongly Disagree/ Disagree		Strongly agree/ agree	
		Blog (N)	P-P (N)	Blog (N)	P-P (N)
22	I hope the teacher will let us write collaboratively next semester.	13 27.6%	3 6.3%	8 17.0%	32 66.7%

N = 95

Descriptive statistics only showed the number of the students with positive and negative responses. To further understand if the responses between classes were significantly different, independent t-tests were conducted (see Table 4.31). The results showed that there were significant differences in the sections of the collaborative features of the media ($t = -3.29$; $p < .01$), writing anxiety ($t = -3.53$; $p < .01$), writing performance ($t = -4.32$; $p < .001$), and the motivation for future use. ($t = -3.57$; $p < .01$). The control class ($M = 22.88, 22.94, 22.02, 14.79$) got higher score than the experimental class ($M = 19.96, 19.04, 18.72, 12.40$) in terms of their responses to each section. The higher score in a section meant that participants had more positive responses to the items in that section.

Table 4.31

The Difference of Students' Responses between Classes in terms of the Four Sections

Four sections	Class	N	Mean	t-test	P value
Collaborative features	experimental	47	19.96	**-3.29****	**0.001**
	control	48	22.88		
Writing performance	experimental	47	19.04	**-4.32*****	**0.000**
	control	48	22.94		
Writing anxiety	experimental	47	18.72	**-3.53****	**0.001**
	control	48	22.02		

Table 4.31 (Continued)

Four sections	Class	N	Mean	t-test	P value
Future motivation	experimental	47	12.40	**-3.57****	**0.001**
	control	48	14.79		

**p < .01; ***p < .001

Part Two: Qualitative Results

The participants' perceptions of collaborative writing have been identified through questionnaires, and have been presented in the previous part. However, the fixed-response questions may not be able to sufficiently elicit participants' perceptions. Therefore, semi-structured interviews were conducted in order to further understand them.

In addition, participants with different writing performance may think about and feel this collaborative writing activity in different ways. To understand their thoughts and experience more deeply, the researcher particularly interviewed the participants who made the largest, medium, and lowest gains between pre- and post- writing tests. The selection was based on the gain score as measured by the analytical scale. In the present study, the students making the largest gain means that their gain scores were in the first 25% of the gain scores. As for the students making the lowest gains, their gain scores were in the last 25% of the gain scores. The rest of the students were considered the students making the medium gains. By selecting the participants with different levels of gains, the understanding of participants' perceptions of collaborative writing could be more completed.

In the following section, I describe the results of the interview analyses. The description of the interview results is to answer the fourth research question of the study, which is "In what ways do the students making the largest, medium and the lowest gains describe their experience of collaborative writing?"

Experience of Blog-supported and Traditional Collaborative Writing

A total of 24 students were interviewed. Eleven were in the blog-supported class; thirteen were in the paper-and-pencil class. To better understand their background of English study prior to this study, before formally interviewing them, they were asked to talk about their experience of learning English and English writing. Their responses were organized and presented below (see Tables 4.32 & 4.33).

As shown in Table 4-32 which describes the experience of the eleven students in the experimental class, two of them started to learn English in the kindergarten; seven started to learn English in elementary school; two began to learn English in junior high school. As a whole, all of them had six years of English study experience. However, almost all of them had little or no experience of English writing. Table 4.33 describes the experience of the thirteen students in the control class. Three of them started to learn English in the kindergarten; ten started to learn English in elementary school; three began to learn English in junior high school. As a whole, except student 5 (S5), who only studied English in junior high school, almost all of them had at least six years of English study experience. However, no one had abundant English writing experience. Almost all of them had little or even no experience of English writing.

Of all the eleven interviewees in the experimental class, four made the largest gains: Student 2 (S2), student 5 (S5), student 8 (S8), student 9 (S9). Three made the medium gains: Student 7 (S7), student 10 (S10), student 11 (S11). Four made the lowest gains: Student 1 (S1), student 3 (S3), student 4 (S4), student 6 (S6). As for the control class, among the 13 interviewees, four students (S6, S8, S11 & S12) made the largest gains. Five students (S5, S7, S9, S10 & S13) made the medium gains. Four students made the lowest gain (S1, S2, S3 & S4). Table 4.34 shows the range of gain scores, such as the minimum and maximum, for the largest, medium and lowest gains in the experimental and control classes.

The results of the in-depth interview helped further understand students' experience of blog-mediated collaborative writing and traditional collaborative writing. Data from the interview revealed the following main themes: Functions of collaborative writing, difficulty of collaborative writing, features of the media, factors influencing motivation, and suggestion. These themes were discussed in the following section. Relative responses/comments from students' interview, organized by largest, medium and lowest gains, as well as positive, negative and neutral responses, were quoted and presented under each theme in the form of tables.

Table 4.32

English Study Background of the Students in the Experimental Class

	Sex	English study experience				English writing experience
		kindergarten	elementary	junior	senior	
Student 1 (S1)	M	○	○	○	○	No
Student 2 (S2)	M		○	○	○	No
Student 3 (S3)	M		○	○	○	No
Student 4 (S4)	M			○	○	No
Student 5 (S5)	M	○	○	○	○	Little
Student 6 (S6)	M		○	○	○	Little
Student 7(S7)	M		○	○	○	Very little
Student 8 (S8)	M			○	○	No
Student 9 (S9)	M		○	○	○	Much
Student 10 (S10)	M		○	○	○	Some
Student 11 (S11)	M		○	○	○	No

Table 4.33

English Study Background of the Students in the Control Class

	Sex	English study experience				English writing experience
		kindergarten	elementary	junior	senior	
Student 1 (S1)	M		○	○	○	No
Student 2 (S2)	M		○	○		Little
Student 3 (S3)	M		○	○		Little
Student 4 (S4)	M			○	○	Only one time
Student 5(S5)	M			○		Little
Student 6 (S6)	M		○	○	○	No
Student 7(S7)	M	○	○	○	○	Some
Student 8 (S8)	M		○	○	○	No
Student 9(S9)	M	○	○	○	○	Little
Student 10 (S10)	M		○	○	○	Some
Student 11 (S11)	M	○		○	○	Little
Student 12 (S12)	M		○	○	○	Little
Student 13 (S13)	F		○	○	○	Some

Table 4.34

Descriptive Statistics on the Largest, Medium and Lowest Gains in Both Classes

Class	Gain scores (differences between pre-and post- writing quality)	N	Minimum	Maximum	*Mean*	*SD*
Experimental	Lowest gain	6	-7	-1.00	-3.67	1.94
	Medium gain	25	-0.5	4.50	2.26	1.55
	Largest gain	15	5.5	19.00	10.03	3.93

Table 4.34 (Continued)

Class	Gain scores (differences between pre-and post- writing quality)	*N*	Minimum	Maximum	*Mean*	*SD*
Control	Lowest gain	22	-12.5	-1.00	-4.02	3.24
	Medium gain	18	-0.5	4.50	1.61	1.76
	Largest gain	9	5	23.50	9.78	5.66

Function of collaborative writing. The responses of the students from both classes revealed that the function of collaborative writing included (1) the improvement of writing and (2) the decrease of writing anxiety. The two sub-themes were further discussed below.

The improvement of writing. In the control class, students making the largest (S6, S8, S11 & S12), medium (S5, S7, S9, S10 & S13) and lowest gains (S1 & S2) all felt that their English and writing ability improved. For example, they expressed that they knew more vocabulary (S8 & S10), phrase (S7) and grammar (S5, S6, S10 & S12). Their thinking skills also improved. For example, they could think more ideas (S11), and be able to write down English sentences (S1, S2 & S13). They could also write faster (S5) and translate faster (S9). Their ability to connect sentences (S4) as well as correct errors (S8 & S13) was also enhanced. Only one student, S3 making the lowest gains, expressed that his writing did not improve. (See Tables 4.36- 4.38)

Similar to the control class, in the experimental class, students making the largest (S2, S8 & S9), medium (S7), and lowest (S1 & S3) gains felt that their writing and English ability was improved. For example, S1 (lowest gain) and S9 (largest gain) felt that they learned some vocabulary. S1 (lowest gain), S7 (medium gain), S8 (largest gain) and S9 (largest gain) felt that collaborative writing helped improve their grammar. S7 (medium gain) also expressed that his reading ability was enhanced. Only two students, S2 making the largest gain and S3 making the lowest gain, felt that their writing did not improve. They expressed that their group members

were not active in collaboration and did not interact often. This might be the reason why their writing did not improve (see Tables 4.36 - 4.38).

In particular, some students in the experimental class also talked about what factors led to the improvement of writing. S8 (largest gain), S9 (largest gain) and S11 (medium gain) felt that both the use of blogs and collaboration influenced their writing. S9 (largest gain) and S11 (medium gain) further expressed that the use of blogs made them feel relaxed and enhanced their motivation to write. However, S7 (medium gain), S5 (largest gain) and S10 (medium gain) felt that it was the collaboration instead of the use of blogs that helped improve their writing (see Table 4.39).

Within the control class, both the students making the largest and medium gains expressed that they learned more vocabulary and grammar. The difference between the students making the largest and medium gains was that the former expressed that their thinking skills were enhanced and the later felt that they could write and translate faster. Students making the lowest gain did not talk about any improvement in these areas, but they expressed that they knew more phrases and were able to write sentences. Within the experimental class, students making the largest and medium gains expressed that their writing improved. Students making the largest and lowest gains expressed that they learned more vocabulary because they could look up the words they did not know online. All of them all expressed that their grammar improved. The key differences between them are that only the students making the medium gain expressed that their reading ability was improved; the students making the lowest gain expressed that they could write better sentences and online translator helped check the accuracy of a sentence.

When the two classes were compared with each other, it was found that students in the control class made more positive responses. The difference was that students in the experimental class seemed to make more negative responses (see Table 4.35). The negative responses were

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related to the group interaction. They felt that their writing was not improved due to the little interaction among group members. The negative responses made by the control class were related to the insufficient practices. They thought that they needed more writing practices so that they could feel that their writing was improved.

Table 4.35

The Number of the Responses Between Classes (the Improvement of Writing)

	Control Class			Experimental Class		
	largest	medium	lowest	largest	medium	lowest
positive	4	5	3	3	3	2
negative	0	0	1	1	0	1
neutral	0	0	0	0	0	1

Table 4.36

The Responses of the Students Who Made the Largest Gains (the Improvement of Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes. This activity gave me more chances to practice writing English. It improves my writing and grammar." (S8-1) 2. "Yes, my writing is enhanced, especially in the aspects of vocabulary and grammar. We didn't use pencil to write. Instead, we used technology which is mostly used in the modern society."(S9-1) 3. "I think ""yes"". This activity provided me with more chances to write and made me look up the words that I didn't know. (S5-1)	1. "Yes. I learn some vocabulary that I didn't know before. I know how to correct grammar mistakes." (S8-1) 2. "Yes, a little. For example, my grammar is improved." (S6-1), (S12-1) 3. "Yes, my writing is improved. I can think more ideas and write them down." (S11-1)
Negative responses	1. "I do not feel that my writing is improved. Because I feel that we did not collaborate a lot. Each member wrote his or her own part. Maybe it is due to the less interaction." (S2-1)	

Table 4.37

The Responses of the Students Who Made the Medium Gains (the Improvement of Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, it is helpful for my writing. It improves my grammar and reading ability." (S7-1) 2. "Yes, a little. I can pay more attention to the use of grammar. I also want to write more difficult sentences." (S10-1) 3. "Yes. It helps improve my English writing." (11-1)	1. "Yes, my grammar, vocabulary, and sentence are improved." (S10-1) 2. "Yes, it is supposed to be. My grammar is improved. I can also write faster than before." (S5-1) 3. "Yes, I can think which sentence is needed and know how to write sentences. I could think what grammar is correct." (S13-1) 4. "Yes, when writing, I always think Chinese sentences first and then translate them into English. I can translate faster now." (S9-1) 5. "Yes, and I feel that I know more phrases." (S7-1)

Table 4.38

The Responses of the Students Who Made the Lowest Gains (the Improvement of Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, I learn how to write a better sentence. I learn some vocabulary and feel my grammar is also improved."(S1-1) 2. "Yes, it is. During writing, I would google the words that I didn't know. I would also write down my ideas first and then use Google Translate to check the accuracy of the sentences." (S6-1)	1. "Yes, it is a more relaxed way to write. I also know more phrases." (S7-1) 2. "I can write down sentences according to my thoughts." (S1-1) 3. "Yes, writing is not like answering multiple-choice questions. It needs thinking. Now, I am able to write sentences." (S2-1) 4. "Yes, it improves my writing especially in the aspect of linking sentences." (S4-1)

Table 4.38 (Continued)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Negative responses	1. "I think it can not improve my writing. I feel that each member has his or her own idea and it's hard to integrate all of them. This makes me feel troublesome. Some members are also not very active in this activity. I think more interaction among group members will be very helpful for improving my writing." (S3-1)	1. "I think that we completed only five compositions. I feel that there is no significant effect on my writing. There will be some effects if we can practice writing for more than 12 compositions." (S3-1)
Neutral/Other responses	1. "I think it can be, but the effect is limited. I think it is because students in our university are not very earnest. It is the problem with students' quality." (S4-1)	

Table 4.39

Students' responses about what factors lead to the improvement of writing

Groups	Experimental class (Blog group)
Factors	
Both blog and collaboration	1. "Both the use of blogs and collaboration influence my writing. I typed my writing on the group blog, and then my classmates could easily read and edit my writing. I didn't need to meet with my classmates and ask them to read my writing together. It was post on the blog and it was there. There was no limit of time. We could read at any time. Besides, due to the collaboration, we could discuss together, which helped strengthen each other's English ability." (S8-1) 2. "I think both the use of blogs and collaboration help improve my writing. Via collaboration, my writing can be edited by my group members. As for the blog, it makes me feel more relaxed when writing on the blog. The Internet connection also helps look up the words that I didn't know before." (S9-1) 3. "Yes, it improves my writing. During writing, I could share my writing and experience with my group members. We could monitor each other. Via the use of blogs, I could surf on the Internet and look up the words through the Internet. I also feel more relaxed when writing on the blog. Using pencil to write, I will be more nervous. During collaboration, I could ask my classmates when I have no ideas or have questions, which helps me to write." (S11-1)

Table 4.39 (Continued)

Groups	Experimental class (Blog group)
Factors	
Only collaboration	1. "I think my writing is improved because of the collaboration. Each member discusses together and points out the part that needs to be edited. The use of blogs seems to have little effect on my writing." (S7-1)
	2. "I feel my writing is improved because of the collaboration, not the use of blog. But the use of blogs motivates me to write." (S5-1)
	3. "I think my writing is enhanced because I collaborated with my classmates. I was given some suggestions that I could not think by myself. As for the blog, I think it is only a place to post articles." (S10-1)

The decrease of writing anxiety. In the experimental class, only S5 (largest gain), S6 (lowest gain), S7 (medium gain) and S8 (largest gain) felt that their writing anxiety was decreased. They were afraid of writing alone (S5 & S7), and originally were not confident in English writing (S5 & S8). Through collaborative writing, they could interact with group members, and obtain members' help during collaboration (S7 & S5). In addition, they could have more practices in English writing, which made them less nervous in writing (S6 & S7). S6 also expressed that he could use online tools like Google Translate to help him write. Peers' help, online tools and more practice could explain why those students were less anxious in collaborative writing (see Tables 4.41 – 4.43).

However, S3 (lowest gain) and S10 (medium gain) felt that they were more nervous in collaborative writing. They preferred to write individually. Their anxiety might originate from the pressure from peers. For example, S3 (lowest gain) was afraid that he could not keep up with his group members during the process of writing. S10 (medium gain) thought that he needed to hear and care about other members' voices. It was interesting to find that five students, S1 (lowest gain), S2 (largest gain), S4 (lowest gain), S9 (largest gain) and S11 (medium gain), in the

experimental class expressed that they originally were not anxious in English writing. Therefore, collaborative writing seemed to have little influence in decreasing their writing anxiety (see Tables 4.41 – 4.43).

In the control class, S1 (lowest gain), S4 (lowest gain), S5 (medium gain), S6 (largest gain) and S9 (medium gain) expressed that collaborative writing made them feel less nervous. S9 felt that collaborative writing was interesting. S1, S4, and S6 expressed that they could interact with group members. S5 expressed that he could ask for members' help if he encountered difficulty.

Similarly, S2 (lowest gain), S7 (medium gain), S8 (largest gain), S10 (medium gain), S12 (largest gain) and S13 (medium gain) also felt that collaborative writing helped decrease writing anxiety. However, they further expressed their concerns. For example, if there was time limit (S7 & S2) or if the writing needed to be graded (S2), they still could feel nervous even though they collaborated with others. S12 expressed that working with the people he was familiar with would make him feel more comfortable. S13 expressed that he felt nervous at the beginning. He felt less and less nervous as the time went by. S8 and S10 expressed that they themselves did not feel anxious about writing at all, but they felt collaborative writing helped decrease writing anxiety (see Tables 4.41 – 4.43).

Only S3 (lowest gain) and S11 (largest gain) expressed that they felt more anxious during collaboration. It was because there was the pressure from group members (S11) particularly if the group members were not very collaborative. For example, S3 expressed that members were playing and chatting during collaboration. They were afraid they did not have sufficient time to finish the group writing. Therefore, the members who were not collaborative could result in the process of collaborative writing to be not collaborative. These members added other members' burden and thus made other members more nervous during writing. (See Tables 4.41 – 4.43)

Within the experimental class, the similarity between different gain levels was that

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students making the largest, medium and lowest gains all expressed that the activity of collaborative writing provided them with the chances of practicing writing, and the more practice made them feel less nervous about writing. The differences were that students making the largest gain expressed that they felt less anxious because of peers' help during collaborative writing; students making the medium gain expressed that discussing with group members made them feel less nervous; students making the lowest gain expressed that the use of online tools helped them to write, and made them feel less nervous. Within the control class, the similarity of the comments made by the students with different gain levels was that they all felt that writing together and interacting with each other decreased their writing anxiety. The difference between different gain levels was that students making the medium and lowest gains further expressed that they still felt nervous about writing if there was time limits and if the writing needed to be graded even though they wrote collaboratively with other people (see Tables 4.41 – 4.43).

When the two classes were compared with each other, it was found that students in the control class made more positive responses than those in the experimental class. Both classes of students made less negative responses, and there were similarities between these negative responses. The students making the medium gain in the experimental class and the students making the largest gain in the control class all expressed that they felt more nervous about writing because they needed to care about group members' thoughts during collaborative writing. In other words, they felt that there was the pressure from team members when writing. There were also differences between these negative responses. Students making the lowest gain in the experimental class expressed that they felt more nervous because they wrote slowly and they were afraid of delaying the progress of group writing. Students making the lowest gain in the control class expressed that their group members spent time chatting instead of writing; therefore, they were afraid they could not complete group writing on time even though they were given

plenty of time to write. As for the neutral responses, they were only made by the students with

different gain levels in the experimental class. They all expressed that they themselves did not

feel anxious at all when writing (see Table 4.40).

Table 4.40

The Number of the Responses Between Classes (the Decreased of Writing Anxiety)

	Control Class			Experimental Class		
	largest	medium	lowest	largest	medium	lowest
positive	3	5	3	2	1	1
negative	1	0	1	0	1	1
neutral	0	0	0	2	1	2

Table 4.41

The Responses of the Students Who Made the Largest Gains (the Decreased of Writing Anxiety)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, it is. During collaboration, group members would edit my writing and give me suggestions. Through their help, there would be fewer mistakes in my writing. I feel more anxious when I write alone because I am afraid whether I write correctly or not. If there is collaborative writing activity after this class, I will participate. However, if the activity is about individual writing, I will think about whether to participate or not. Probably, I am less confident of myself." (S5-2) 2. "Yes, it is. I think more practices made me feel less nervous. Before this activity, I always think that I can't write well. I am scared of writing. Now, I think English writing is so-so." (S8-2)	1. "Yes, it could decrease my writing anxiety because we write together and interact with each other. I am more nervous if I write by myself." (S6-2) 2. "I think it can be effective. But in fact I myself am not anxious about English writing." (S8-2) 3. "Yes. And I will feel more comfortable if I work with the people that I am familiar with." (S12-2)

Table 4.41 (Continued)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Negative responses		1. "I feel more nervous because of the pressure from group members." (S11-2)
Neutral/Other responses	"I feel so-so. I do not feel nervous at all when I am writing." (S2-2), (S9-2)	

Table 4.42

The Responses of the Students Making the Medium Gains (the Decreased of Writing Anxiety)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, it is. I think more practices make me feel less nervous. During collaborative writing, everybody discussed together, which makes me feel less nervous about writing. I feel more anxious if I need to write alone." (S7-2)	1. "Yes. Collaboration is less stressful. I can ask for other people's help if I encounter difficulty." (S5-2) 2. "Yes. Because collaborative writing is very interesting. I feel interesting during the process of thinking and writing. It is also interesting after writing." (S9-2) 3. "I think it can be effective. But in fact I myself am not anxious about English writing." (S10-2) 4. "Yes, I am less nervous about English writing through this activity. However, if there is time limit during collaborative writing, I am still nervous." (S7-2) 5. "I think it can be. Although, at the beginning, I felt nervous. In the end, however, I felt more relaxed." (S13-2)
Negative responses	1. "Compared to individual writing, I still feel that collaborative writing makes me feel more nervous. When writing alone, I don't need to care about other people's thoughts." (S10-2)	

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Table 4.42 (Continued)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Neutral/Other responses	1. "I feel so-so. I do not feel nervous at all when I am writing." (S11-2)	

Table 4.43

The Responses of the Students Making the Lowest Gains (the Decreased of Writing Anxiety)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes. And I used Google Translate, which helped me to write. I also feel that I am more comfortable as I write more writings." (S6-2)	1. "Yes. It is effective because you are not alone." (S1-2) 2. "Yes, it could decrease my writing anxiety because we write together and interact with each other. I am more nervous if I write by myself." (S4-2) 3. "Yes, it can be. But if there is time limit or if the writing needs to be graded, I will also feel nervous. Compared to individual writing, I feel more relaxed when writing collaboratively with other people." (S2-2)
Negative responses	1. "No. I feel more anxious. I am afraid if I write slowly, I would delay the progress of the group writing. I am afraid of hearing the complaint from my group members. I feel more comfortable when writing individually." (S3-2)	1. "I feel so-so because of the pressure from time. Though we had plenty of time to write, my group members spent lots of time chatting with each other. I was always afraid that we couldn't finish writing before the deadline." (S3-2)
Neutral responses	"I feel so-so. I do not feel nervous at all when I am writing." (S1-2), (S4-2)	

Features of the Media. In the experimental class, students' experience of using blogs to write revealed two features of blogs: ease of use and interaction. In the control class, students write collaboratively in a traditional way. Paper-and-pencil is commonly used nowadays. Few people don't know how to use paper-and-pencil. Therefore, students did not talk about whether it is easy to use. However, students' responses revealed whether paper-and-pencil hinder interaction or collaboration. Therefore, the feature, ease of use, is only discussed in the experimental class. The feature, interaction, is discussed in both classes.

Ease of use. Students making the largest (S2, S5, S8 & S9), medium (S7), and lowest (S1, S3 & S4) gains all felt that blogs were easy to use. For example, S2 expressed that blogs were easy to edit and post article. Some students, S4, S5, S7 and S8, mentioned another blogging platform, Wretch, which was commonly used in Taiwan. These students had different thoughts about Wretch. S5 and S7 thought the platform used in the study (Blogger) was easier than Wretch. S8 thought Blogger was easy to use because he had used Wretch before. His familiarity with blogging made him feel that Blogger was easy to use. S4 thought Blogger was easy but he still preferred Wretch because he was used to using Wretch (see Tables 4.45 – 4.47).

Only S6 (lowest gain), S10 (medium gain) and S11 (medium gain) thought that blog was not easy to use. S11 expressed that he was not used to using blogs, so he though blogs were not easy to use. S6 and S10 expressed that they were not used to using the platform, Blogger, because they preferred to use the blogs they used before like Wretch (see Tables 4.45 – 4.47).

The positive responses were made by the students making the largest, medium and lowest gains. There were also negative responses. However, they were only made by the students making the medium and lowest gains (see Table 4.44).

Table 4.44

The Number of the Responses (Ease of Use)

	Experimental Class		
	largest	medium	lowest
positive	4	1	3
negative	0	2	1
neutral	0	0	0

Table 4.45

The Responses of the Students Who Made the Largest Gains (Ease of Use)

	Experimental class (Blog group)
Positive responses	1. "It is easy to use and convenient. I could also use it at home. Young people now all know how to use blogs. It's easy to post and edit articles." (S2-4) 2. "Yes, it is easy. It is easier than another platform, called Wretch. This was my first time to use it, and I was surprised that it is very convenient. Wretch is more common now. I would like to introduce this platform to my friends." (S5-4) 3. "It is very easy because I used Wretch before." (S8-4) 4. "It is easy to use. I think everybody now knows how to use it." (S9-4)

Table 4.46

The Responses of the Students Making the Medium Gains (Ease of Use)

	Experimental class (Blog group)
Positive responses	1. "Yes. It is easy to use. It is suitable to be used for writing. It is better than Wretch. I think Wretch is more difficult to use." (S7-4)
Negative responses	1. "I think it is not easy to use. But it doesn't mean that it is difficult. I am used to using Wretch or Yahoo. It is not bad. It is because I am not used to it." (S10-4) 2. "It is not easy because I seldom use blog. I am not use to it." (S11-4)

Table 4.47

The Responses of the Students Making the Lowest Gains (Ease of Use)

	Experimental class (Blog group)
Positive responses	1. "It is very easy. But I am not used to using this platform. I prefer another one, Wretch." (S4-4)
	2. "Yes, it is easy to use." (S1-4)
	3. "Yes, it is easy to use. I think it is suitable to be use in collaborative writing. Nowadays, many people use blogs to interact with each other." (S3-4)
Negative responses	1. "I think it is not easy to use. But it doesn't mean that it is difficult. I am used to using Wretch or Yahoo. It is not bad. It is because I am not used to it." (S6-4)

Interaction. In the experimental class, students making the largest, medium, and lowest gains all agreed that blogs facilitated interaction during collaboration. For example, S4 (lowest gain) expressed that members could post articles on the blog. S2 (largest gain), S4 (lowest gain) and S6 (lowest gain) expressed that they could comment on members' articles through the function of comment on blogs. S7 (medium gain) expressed that he could highlight the sentences on the article and made corrections. These students' expressions could explain that blogs were helpful for interaction (see Tables 4.49 – 4.51).

In addition, S10 (medium gain) expressed that all the writings on the blog were public. He could read his members writings easily, which could result in more interaction between members. Moreover, S1 (lowest gain) and S11 (medium gain) expressed that they could use blogs in different places, not just at school as long as there was Internet connection. The combination of the three elements, publish, the function of comment and time-and-place independent made blogs as interactive tools (see Tables 4.49 – 4.51).

However, S8 (largest gain) and S3 (lowest gain) felt that blogs were not helpful for the interaction among members. They expressed that their members seldom discussed in the group

though they posted their writing on the group blog. It seemed that they did not collaborate with group members and they wrote alone. In this way, the function of making comment on the blog was not thoroughly used. This could explain why they did not feel the blog was an interactive online tool (see Tables 4.49 & 4.51).

Only the three elements (publish, the function of comment and time-and-place independent) were not sufficient for making blogs as interactive tools. If students do not want to collaborate, even though the tool itself is interactive, no or little interaction took place among members in a group. Based on the comments made by the students making the largest gain (S8), the reasons for not wanting to collaborate might be a lack of motivation. Moreover, it might also be a lack of skills based on the comment made by the students making the lowest gain (S3). Therefore, students' motivation and skills were also important factors for collaborative writing.

In the control class, students making the largest (S6, S8, S11 & S12), medium (S5, S7, S9, S10 & S13) and lowest (S1, S3 & S4) gains all felt comfortable with the traditional way of collaborative writing. They felt that they could interact with group members without difficulty, and thought the use of paper-and-pencil was convenient. S3 and S5 talked about the use of technology in collaborative writing. However, S5 expressed that he still preferred paper-and-pencil, and S3 expressed that there was no need to use technology in collaborative writing (see Tables 4.49 – 4.51).

However, S2 (lowest gain) and S12 (largest gain) expressed their viewpoint in a different way. They thought paper-and-pencil was only a tool for writing. Although it did not hinder collaboration, it was not directly related to collaboration. It was group members' degree of participation that decided on the effectiveness of collaboration. Therefore, students' motivation to write was very important for collaborative writing (see Tables 4.49 – 4.51).

In both classes, students making the largest, medium, and lowest gains all positively

responded to the interaction among members in blog-supported and traditional collaborative writing. Negative responses were only found in the experimental class, not in the control class. This showed that, in the present study, traditional collaborative writing might be perceived to be easier and friendlier than online collaborative writing (see Table 4.48).

Table 4.48

The Number of the Responses Between Classes (Interaction)

	Control Class			Experimental Class		
	largest	medium	lowest	largest	medium	lowest
positive	3	5	3	3	3	3
negative	0	0	0	1	0	1
neutral	1	0	1	0	0	0

Table 4.49

The Responses of the Students Making the Largest Gains (Interaction)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, it does. The blog allows us to make comments, which helps us interact with each other." (S2-5) 2. "Yes, it does." (S5-5) 3. "Yes. It does. It doesn't hinder interaction. Compared to the use of pencil, I feel that using blogs makes me more easily interact with other people" (S9-5)	1. "I think it is convenient. I can interact with group members without any difficulties." (S8-4) 2. "Yes, it can. Though we use paper-and-pencil, we can still communicate orally." (S6-4) 3. "Yes, it can. It facilitates us to express ourselves." (S11-4)

Table 4.49 (Continued)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Negative responses	1. "My group members were usually late for the class. When we were together, they would not focus on collaborative writing. They completed their own part and posted their writing on the blog and that is it. We seldom discussed. When I asked them what part may need to be edited or revised, they usually responded me that the writing was okay. I think in my group the use of blogs is only helpful for enhancing my writing, instead of interaction." (S8-5)	
Neutral responses		1. "But the paper-and-pencil doesn't interfere us to write. Paper-and-pencil is only a tool for writing. To make collaboration more effective, group members need to talk and discuss together.' (S12-4)

Table 4.50

The Responses of the Students Making the Medium Gains (Interaction)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, people would be motivated to discuss things about English. We read other people's writing, discussed the wrong part, and made changes. We highlighted the wrong part and made correction." (S7-5) 2. "Yes, a little. I think if the writing is not posted on the Internet, there would be less discussion." (S10-5) 3. "Yes, it does. At school, we discuss together. Then, I could still post messages on the blog even at home. It is convenient." (S11-5)	1. "I think it is convenient. I can interact with group members without any difficulties." (S9-4), (S13-4) 2. "Yes, it does. It is convenient. I can have paper-and-pencil everywhere." (S10-4) 3. "Okay, I think it can. Using technology is also not bad. But I still prefer to use paper-and-pencil. We can sit and write together which facilitates us to discuss together." (S5-4) 4. "Yes, it can. I can write everywhere using paper-and-pencil." (S7-4)

Table 4.51

The Responses of the Students Making the Lowest Gains (Interaction)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, it does. We could post articles and respond to the writing other people posted. The function of making comment facilitates collaboration." (S4-5) 2. "Yes, certainly. People could discuss together through the function of comment on the blog."(S6-5) 3. "Yes. It does. It is convenient. I could discuss with my group members on the Internet even though I am not at school." (S1-5)	1. "I think it is convenient. I can interact with group members without any difficulties." (S1-4) 2. "I think there is no problem with interaction. Don't need to use a computer, and type and print the writing out. The traditional way is okay." (S3-4) 3. "Yes, it can help me fully interact with my team members." (S4-4)
Negative responses	1. "It is suitable for writing. But in our group, it seems that we wrote alone. We seldom discussed, and seldom used blog to exchange ideas." (S3-5)	
Neutral responses		1. "I think it doesn't matter with the tools for writing. It is students' participation that influences the interaction.' (S2-4)

Difficulty of collaborative writing. In the experimental class, most students felt that they encountered difficulties during collaborative writing. The reasons that resulted in these difficulties were related to their English ability and their group members. Regarding the English ability, students making the largest (S2 & S9), medium (S7 & S10), and lowest (S6) gains all expressed that they did not have sufficient English ability and writing ability to complete the collaborative writing task. For example, S6 expressed that he did not know much English vocabulary and much grammar. Because of the weak English ability, editing and revising members' writing was very difficult for him. S10 felt that it was hard for him to express himself in English. In addition, S9 and S7 expressed that they did not know what to write at the

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beginning of the task. S2 expressed that it was hard for him to integrate group members' writing after they wrote. Therefore, the lack of mature English and writing skills made students encounter difficulties during the process of collaborative writing (see Tables 4.53 – 4.55).

In addition to the weak English ability, students making the largest (S5 & S8), medium, (S10) and lowest (S3 & S4) gains also expressed that the interaction among group members was another difficulty. For instance, S4 complained that his group members were often absent. S5 expressed that his group members were not active in writing. S10 expressed that he felt uncomfortable with working with the members he was not familiar with. The unfamiliarity influenced the group interaction. Therefore, the communication among group members at the beginning stage was a problem. S8 expressed that some members could not get on well with others, which also resulted in the difficulty of interaction in his group (see Tables 4.53 – 4.55).

These difficulties were expressed by the students making the largest, medium and lowest gains. Only two students, S1 (lowest gain) and S11 (medium gain), reported that there was not any difficulty during the process of collaborative writing (see Tables 4.54 & 4.55).

In the control class, students making the largest (S6), medium (S5 & S13), and lowest (S3, S4 & S1) gains also expressed that their English ability was a problem for the collaborative writing task. For instance, S5 and S6 expressed that they did not know much about grammar and vocabulary. Therefore, they did not know how to write a composition, how to make a start, or make sentences be smoothly linked. S1 expressed that thinking and planning during writing were difficult. S3, S4 and S13 expressed that it was difficult for them to edit group members' writing. Therefore, the weak English ability made students feel that writing itself was a difficulty (see Tables 4.53 – 4.55).

Another difficulty of collaborative writing was related to group members, and this difficulty was reported by the students making the largest, medium and lowest gains. For example, S2

(lowest gain), S8 (largest gain) and S9 (medium gain) expressed that their group members were often absent. S3 (lowest gain) and S10 (medium gain) expressed that their members were usually sick and felt uncomfortable. Also, S3 (lowest gain), S7 (medium gain) and S12 (largest gain) expressed that group members chatted with each other and were not active in collaborative writing. S7 (medium gain) talked about that it was hard to get along with the members who were not collaborative. S11 (largest gain) expressed that his group members did not like that he used the words they were not familiar with (see Tables 4.53 – 4.55).

The students making the largest, medium and lowest gains from both classes all reported that they encountered difficulties during collaborative writing. Compared with these students' comments, it was found that the students with different levels of gains from both classes encountered similar difficulties. First, they all reported that their insufficient and weak English ability made them feel difficult to write English sentences, let alone to complete collaborative writing tasks. Second, they all felt that it was difficult to interact with the group members who were not collaborative and friendly. The bad interaction influenced the progress, quality and completion of collaborative tasks in a group. Regarding the negative responses, only the students in the experimental class expressed that they did not encountered any difficulties. Students in the control class did not make any negative responses, which means that they all reported they encountered difficulties during collaborative writing (see Table 4.52).

Table 4.52

The Number of the Responses Between Classes (Difficulty of Collaborative Writing)

	Control Class			Experimental Class		
	largest	medium	lowest	largest	medium	lowest
positive	4	5	4	4	2	3
negative	0	0	0	0	1	1
neutral	0	0	0	0	0	0

Table 4.53

The Responses of the Students Who Made the Largest Gains (Difficulty of Collaborative Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Sometimes all of us didn't know what to write. Then, there would be not enough time for us to complete a composition." (S9-6)	1. "Yes. It's hard for us to make start. We don't know much grammar and how to connect sentences." (S6-5)
	2. "I think the content that we wrote was similar. It was hard to integrate all of them. I felt that the content was repetitive." (S2-6)	2. "Certain member was often absent. We needed to share his workload; assigned his work to another member or sometimes we even skipped his part." (S8-5)
	3. "I feel it is tired to work with the people who do not get on well with others. It is a difficulty in collaborative writing." (S8-6)	3. "Some members are not active in writing." (S12-5)
	4. "Sometimes my group members played instead of writing. For example, they used Facebook and watched the videos on Youtube. I think we were a team. Why didn't they complete the writing first and then play?" (S5-6)	4. "Sometimes I use the words that my group members don't know and they would feel uncomfortable with it." (S11-5)

Table 4.54

The Responses of the Students Making the Medium Gains (Difficulty of Collaborative Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "At first, I am not familiar with my group members, so I don't know how to communicate with them. In addition, we need to respond to members' writings. But the problem is that I don't know how to express myself in English. That's the difficulty that I encounter." (S10-6)	1. "It is hard for us to edit members' writings probably because our English ability is not good enough. We were afraid that we wrongly edited other people's writing." (S13-5)
	2. "I think it is hard to write at the beginning because I am still not familiar with English writing. I feel writing is smooth as I write more." (S7-6)	2. "We don't know much grammar and many vocabularies. We don't know how to write. Though we discussed, we still didn't know how to write." (S5-5)
		3. "Certain member was often absent. We needed to share his workload; assigned his work to another member or sometimes we even skipped his part." (S9-5)
		4. "Some members were not active in writing.

		You may ask them to participate. However, they would be angry. It is hard to smoothly interact and get along with members." (S7-5) 5. "Collaborative writing needs every member's effort. If anyone of us is sick or feels uncomfortable, it would be hard for us to hand in a complete composition on time." (S10-5)
Negative response	1. "No, I think my group members all did a good job." (S11-6)	

Table 4.55

The Responses of the Students Making the Lowest Gains (Difficulty of Collaborative Writing)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, we don't know many vocabularies. We need to look them up, and translate them into English. Grammar is also a difficulty. We would copy our writings and paste them to Microsoft Word. The Word would help check if there are any mistakes in our writings. In addition, because we don't know much grammar, it is also hard to edit and revise writings. We don't know how to find the mistakes or even could not find the mistakes." (S6-6) 2. "Yes. I think the interaction among group members is the most difficult." (S3-6) 3. "Yes, some group members were absent. This is a big problem." (S4-6)	1. "Thinking and planning are very difficult for me." (S1-5) 2. "It is hard for us to edit members' writings probably because our English ability is not good enough. We are afraid that we wrongly edit other people's writing." (S3-5), (S4-5) 3. "Some members like to chat during writing. That group members are not fully participative is also a difficulty." (S3-5) 4. "Certain member was often absent. We needed to share his workload; assigned his work to another member or sometimes we even skipped his part." (S2-5)
Negative response	1. "No, there are not any difficulties." (S1-6)	

Factors influencing motivation. In the experimental class, students making the largest (S2, S5, S8 & S9), medium (S11) and lowest (S1) gains all expressed that they would like to continue to write collaboratively. They also talked about the reasons. For instance, S5 expressed that he gained a lot from this activity. S8 and S9 felt that their writing and English ability improved. In addition, this activity helped decrease their anxiety (S8 & S11) and helped them feel more relaxed when they were writing (S2). S9 also expressed that collaborative writing helped promote his interpersonal relationship. Those advantages and positive feelings were the reasons that made them have strong motivation to continue to write (see Tables 4.57 – 4.59).

Only the students making the medium gains (S7 & S10) and lowest gains (S3, S4 & S6) expressed that they did not want to write collaboratively after the study. Students making the medium gains expressed their unwillingness more tactfully. They expressed their likeness of blog-supported collaborative writing first and then reported their unwillingness for future participation. For example, S7 expressed that he liked the collaborative writing activity and talked about its many advantages. However, he preferred to use paper-and-pencil to write instead of blogs. He would continue to write collaboratively if it was carried out in a traditional way. S10 liked this activity because it made him less nervous during writing. However, he thought working with other people was a troublesome matter because he needed to spend time discussing with other people. Therefore, he expressed that he preferred to write alone, not collaboratively (see Tables 4.57 – 4.59).

However, students making the lowest gains (S3, S4 & S6) directly expressed their unwillingness. For example, S3 expressed that he did not want his writing to be read by everyone unless his writing was really great. He also preferred to work with the members he chose by himself. S6 expressed that he did not like the blogging platform, Blogger. In addition, he was also not confident of his English ability, so he did not want to try collaborative writing again. S4

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expressed that the Internet was a problem. He found that group members played online game instead of focusing on writing. He thought the activity needed to be held in other departments where the students' quality was better (see Tables 4.57 – 4.59).

Based on the comments made by the students with different levels of gains in the experimental class, the main factors that influencing their motivation were found. Some of the factors were positive. These positive factors causing students to have strong motivation to continue to write included (1) the gains from collaborative writing, (2) the improved English and writing ability, (3) relaxed feelings during writing, (4) decreased writing anxiety, and (5) building up interpersonal relationship. However, some of the factors were negative. These negative factors leading to students' low motivation for continuing to write collaboratively were (1) personal preference, (2) less confident of their own ability, (3) the uncollaborative members, and (4) the use of the blogging platform that they do not like.

In the control class, most students expressed that they liked this activity, and were willing to continue this type of activity after this course. They were the students making the largest (S6, S8, S11 & S12), medium (S5, S7, S9, S10 & S13) and lowest (S1 & S3) gains. They felt this activity helped improve their English ability (S1), stimulated their thoughts (S3), and built their confidence in English (S6). In addition, they also made some friends through this activity (S5). Some students also expressed that, through this activity, they felt writing was a relaxed activity (S7 & S12); understood that writing was a process (S8); learn that unity was very important (S9 & S11) (see Tables 4.57 – 4.59).

Only two students making the lowest gains did not like the activity. S2 (lowest gain) expressed that he was not interested in writing and was not good at writing. S2 also expressed that it was hard to find people to join such activity. S4 (lowest gain) expressed that collaborative writing was very difficult for him (see Table 4.59).

Similar to the experimental class, these students' comments also generalized some factors that influencing their motivation. The positive factors included (1) improved English ability, (2) be more confident of their ability, (3) making friends, (4) the further understanding about writing as a process and a relaxed activity), and (5) the importance of unity. The negative factors comprised (1) weak English ability, (2) the lack of interest in writing, (3) the difficulty of finding partners, and (4) the feeling of collaborative writing as a hard activity.

In the experimental class, only the students making the medium and lowest gains had negative responses. The students making the largest gains had more positive responses. In the control class, the negative responses were made by the students making the lowest gains. The students making the largest and medium gains did not make any. These results found in both classes showed that students with better achievement might not reject writing and, thus, had stronger motivation to write (see Table 4.56).

When the two classes were compared with each other, it was found that students in the control class had more positive responses than those in the experimental class; students in the control class also made fewer negative responses than those in the experimental class. The result suggested that, in this study, students involved in traditional collaborative writing had higher motivation to write than those involved in blog-supported collaborative writing (see Table 4.56).

Table 4.56
The Number of the Responses Between Classes (Factors Influencing Motivation)

| | Control Class | | | Experimental Class | | |
	largest	medium	lowest	largest	medium	lowest
positive	4	4	2	4	1	1
negative	0	0	2	0	2	3
neutral	0	0	0	0	0	0

Table 4.57

The Responses of the Students Who Made the Largest Gains (Factors Influencing Motivation)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Yes, I like this activity. I think it is not bad to use blogs to write. I gain a lot from this activity. I will continue to write after this class if there is a chance." (S5-7) 2. "Yes, I like this activity because it is convenient. I think blog writing could decrease my anxiety and enhance my writing ability. I have talked about the activity to my friends. If there is also a chance of collaborative writing, I will continue to write." (S8-7) 3. "Yes, I like the activity. It promotes my English ability and the interaction among people. And everyone helps with each other in the activity. I will continue to write after this class if there is a chance." (S9-7) 4. I felt the activity is not bad. Writing on the blog makes me feel that writing is relaxed. It is fantastic to write on the blog. If there are people who want to continue to write collaboratively, I would like to join them." (S2-7)	1. "I think this activity is great. Through this activity, I learn the importance of unity. I will continue to write after this class in order to enhance my English ability." (S11-7) 2. "I think it is a more relaxed and an interesting way to enhance my English ability. If there is an activity like this after class, I will continue to participate." (S12-7) 3. "Before this activity, whenever I was asked to read English sentences/articles or to revise sentences, I always felt scared. But through this activity, I become to have less rejection to them. I am more confident now. I will continue to write after this class if there is a chance." (S6-7) 4. "I think this is a good experience for me. This activity makes me understand that writing a composition needs thinking, revision or editing. Through these processes, I can find what sentences are right sentences and how to write a complete sentence. If possible, I will continue to write after this class." (S8-7)

Table 4.58

The Responses of the Students Making the Medium Gains (Factors Influencing Motivation)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "Compared to lectures, I like blogs more. I hope I can continue to use blogs in the future class because using blogs makes me be less nervous. I will continue to write after this class if there is a chance." (S11-7)	1. "It's like learning by playing. It is an exciting activity, and it needs great unity. I think I will continue to write after this class." (S9-7) 2. "I think this activity is great and very

		positive. I told my friends about this activity and that my English class was very interesting." (S10-7)
		3. "It is interesting. I can make friends via this activity. I will continue to write after this class and invite my friends to join collaborative writing if possible." (S5-7)
		4. "I think this activity is wonderful. In my opinion, collaborative writing can make writing be more relaxed and more interesting. When discussing together, group members can interact with each other, which makes us be less nervous. You will need to look up the words by yourself and then you can memorize these words much longer. If there is a chance to write collaboratively, I will participate again." (S7-7)
Negative responses	1. "I like this activity very much because it would promote everyone's relationship. Interpersonal relationship could become better. English would also make progress, such as writing and reading abilities. By using blogs, everyone could read your article. If there are also mistakes, people would help make corrections. This would make you write better and better. However, I still prefer to use paper-and-pencil. I will continue to write after this class if the collaborative writing is through paper-and-pencil instead of blogs." (S7-7) 2. "I like to use blogs for collaborative writing because it made me feel relaxed. This activity is good. However, in my opinion, collaborating with other people is a troublesome matter because I need to discuss with others. I prefer to write alone." (S10-7)	

Table 4.59

The Responses of the Students Making the Lowest Gains (Factors Influencing Motivation)

	Experimental class (Blog group)	Control class (Paper-and-pencil group)
Positive responses	1. "I feel this activity is okay, and it is novel to me. I may try it again if there is a chance after this class." (S1-7)	1. "This activity helps improve my English reading ability. I won't reject this kind of activity after this class if I am asked to participate." (S1-7) 2. "This activity helps stimulate my thoughts. It is not good for us to only learn grammar and sentences. I think we need to practice writing to make us be more competitive in the future. I will continue to write after this class." (S3-7)
Negative responses	1. "Actually I don't like to use blogs. I am a more conservative person. I don't like collaboration and to post my writing. I don't like my writing to be read by other people. Only if the writing is really great; otherwise if there is no necessary, I usually don't want to post my article on the Internet. I feel that group members influence the most on collaborative writing. Therefore, if I can choose whom to work with, I may consider continuing to write after this class." (S3-7) 2. "This is my first time to write collaboratively, so I feel it is novel to me. But I don't like to use this platform. I prefer to use Yahoo or Wretch. In addition, my English is not very good. Though I want to write, I am still unable to write well. I think I won't continue to write after this class. If there is a chance, I also don't want to try again." (S6-7) 3. "I don't like the activity but not very much. Because of the Internet, I think learning efficiency is low. I think this activity could be held in the English department where students	1. "I won't continue to write after this class because it is not my interest and I am still not good at writing. Besides, it is difficult to find people to join the activity like this." (S2-7) 2. "Collaborative writing is very difficult. And I don't want to continue to write collaboratively after this class" (S4-7)

may be more interested in English writing. In

our department, boys are more than girls and

they like to play, not study. In addition, the

quality of the students in our university is also

not very good. So the efficiency may be low."

(S4-7)

Suggestion. In the experimental class, students with different gain levels made suggestions

regarding the collaborative writing activity. Some of these suggestions were different and some

were similar. For example, students making the lowest gains (S3) would like to choose the group

member by themselves; students making the medium gains suggested that, before the

collaborative writing activity, there should be classes about grammar instruction, which would

help students to write; students making the largest gains (S9) suggested that the time for writing

was too long and needed to be shortened. However, students making the largest gains (S5 & S8),

medium gains (S10) and lowest gains (S4) all made one suggestion. They expressed that group

members were not active in writing because of the distraction from the Internet. They suggested

that the teacher should monitor the students during the writing process (see Tables 4.60 – 4.63).

In the control class, students making the largest (S8) and medium (S7 & S13) gains tended

to propose more challenging suggestions. For example, S7 and S8 suggested that the topic of

writing could be more authentic and current. S13 suggested that the time for writing could be

shortened gradually. Furthermore, students making the lowest (S3) and medium (S5 & S9) gains

suggested that teachers' help was important during collaborative writing. Students making the

lowest gains (S2) also suggested that homogeneous grouping was suitable because it was hard

for the students with weak English ability to quickly keep up with the students with better

English ability (see Tables 4.60 – 4.63).

Since the experimental class wrote via the assistance of blogs while the control class did

not, compared with the suggestions made by the students between classes, the key difference was related to the distraction from the Internet. Students in the experimental class suggested the need of teacher's monitor during the writing process while those in the control class didn't mention this. There were also similarities between classes. Students making the largest gains in both classes suggested that the time for each writing task was too long and could be shortened. Students making the lowest gains in both classes all talked about the way of grouping. They would like to choose group members by themselves and to work with the members who had similar English ability with them.

Table 4.60

The Number of the Responses Between Classes (Suggestion)

	Control Class			Experimental Class		
	largest	medium	lowest	largest	medium	lowest
responses	1	5	2	3	1	2

Table 4.61

The Suggestions from the Students Who Made the Largest Gains

Experimental class (Blog group)	Control class (Paper-and-pencil group)
1. "The Interne is a problem. The teacher could keep a more close watch on the students." (S5-10) 2. "I suggest that the teacher should force students to participate in discussion. Otherwise, they would surf the Internet instead of joining the discussion." (S8-10) 3. "I think the time for collaborative writing could be changed. I think it is too long to take two weeks to complete a writing. I think one week is sufficient."(S9-10)	1. "I suggest that the topic could be more authentic and current. If you feel the topic is interesting, you would feel like to write or be motivated to write." (S8-9)

Table 4.62

The Suggestions from the Students Making the Medium Gains

Experimental class (Blog group)	Control class (Paper-and-pencil group)
1. "The teacher needs to monitor every student and makes sure all of them participate in writing instead of playing computer games in the laboratory Besides, some students use Google Translate on the Internet. And they use it to directly translate Chinese into English. I think there should be some grammar classes before this activity began. Students should be trained and instructed grammar first." (S10-10)	1. "I hope the teacher could provide some reference books for students, which would facilitate them to write." (S5-9) 2. "The teacher could remind participants of bringing an electronic translator/dictionary if they would like to participate in the activity." (S9-9) 3. "I suggest that the topic could be more authentic and current. If you feel the topic is interesting, you would feel like to write or be motivated to write. (S7-9) 4. "I think it is too long for us to take two weeks to write a composition. It is okay for the first writing. The time for writing could be shortened gradually." (S13-9)

Table 4.63

The Suggestions from the Students Making the Lowest Gains

Experimental class (Blog group)	Control class (Paper-and-pencil group)
1. "I think it would be better if we could choose group members ourselves." (S3-10) 2. "The Interne is a problem. The teacher could keep a more close watch on the students." (S4-10)	1. "I hope the teacher can guide students when students are writing." (S3-9) 2. "I think students in a group need to have similar English ability. Otherwise students whose English ability is not good may not keep up with the students who have better English ability." (S2-9)

Summary of the Results

The present study investigated the effect of online collaborative writing by comparing the writing performance, writing anxiety and perceptions of the students engaged in blog-supported and traditional collaborative writing. This study is a quasi-experimental study because convenience sampling was used and two intact classes were used as control and experimental

classes. Three quantitative research questions were posed. Students' writing performance, writing anxiety, and perceptions serve as dependent variable whereas blog-supported writing was the independent variable.

In addition to the quantitative research questions, one qualitative research question was also posed to further understand specific students' experience of collaborative writing, namely the experience of the students making the largest, medium and lowest gains. Interviews were conducted, with 11 interviewees from the blog-supported class and 13 interviewees from the traditional class. The summary of results for each research question is presented as follows.

Quantitative Results

Research question 1. Are there any significant differences in the gain scores of writing performance between blog-supported and traditional collaborative writing groups in terms of (1) the quantity of collaborative writing, (2) the quality of collaborative writing, (3) the quantity of individual writing, and (4) the quality of individual writing?

Results. The analysis of students' individual and collaborative writings shows the following results. First, two classes are not significantly different in the quantity of collaborative writing, the quality of collaborative writing, and the quantity of individual writing. Second, a significant difference, however, is found in the quality of individual writing, with the blog-supported class performing better than the traditional class. Students' writing products were evaluated in six different areas. A further examination shows that the two classes significantly differed in the areas of cohesion, grammar, vocabulary and mechanics, but not in the areas of content and coherence.

Research question 2. Are there any significant differences in the gain scores of writing anxiety between blog-supported and traditional collaborative writing groups?

Results. The analysis of SLWAI shows that the gain scores of the blog-supported class is significantly higher than that of the traditional class. The higher gain score means that students' post-test writing anxiety was higher than their pre-test writing anxiety. The result suggests that students in the traditional class seemed to be less anxious about writing English compositions after the collaborative writing activity than those in the blog-supported class.

Research question 3. How do the EFL college students perceive blog-supported and traditional collaborative writing?

Results. Both the blog-supported and traditional collaborative writing questionnaires measure students' perceptions on (1) the collaborative feature of media used, (2) their writing performance, (3) their writing anxiety, and (4) their motivation for future use. The descriptive analysis of the questionnaire shows that there is a similarity between classes. That is, students with positive responses are more than those with negative responses. The results suggest the following points.

1. There were more students who felt comfortable with writing collaboratively in the traditional and blog environment than those who did not feel comfortable.

2. There were more students who thought their writing improved and their anxiety about English writing decreased than those who did not think so.

3. There were more students who would like to continue to write collaboratively in the future than those who wouldn't.

However, there are also differences in students' responses between the two classes. First, students in the blog-supported class make more neutral responses than those in the traditional class. The neutral responses in the blog-supported class are even more than the positive and negative responses. This result suggests that most students in the blog-supported class are neutral in their opinion about blog-supported collaborative writing.

Second, students in the traditional class make more positive responses than those in the blog-supported class. Also, students with negative responses in the traditional class are less than those in the blog-supported class. The result suggests that students in the traditional class have better experience of collaborative writing than those in the blog-supported class. T-tests are also conducted to further examine whether the differences between classes are significant. The results show that the responses between classes are significantly different with the responses in the traditional class being more positive than those in the blog-supported class, which suggests the following points. Compared to blog-supported collaborative writing,

1. Students seem to be more comfortable with writing collaboratively in the traditional environment.

2. Traditional collaborative writing seems to be more helpful in enhancing students' writing performance and decreasing students' writing anxiety.

3. Students seem to have much stronger motivation to continue to write collaboratively using paper-and-pencil.

Qualitative Results

Research question 4. In what ways do the EFL college students making the largest, medium and the lowest gains describe their experience of blog-supported and traditional collaborative writing?

Results. Regarding the blog-supported class, five themes emerge through the analysis of the data from the 11 interviews: (1) function of collaborative writing (sub-themes: the improvement of writing and the decrease of writing anxiety, (2) difficulty of collaborative writing, (3) features of the media (sub-themes: ease of use and interaction), (4) factors influencing motivation, and (5) suggestion. The experience of the students making the largest (*n*

= 4), medium (*n* = 3) and lowest (*n* = 4) gains is presented below.

The students making the largest gains (n = 4):

1. Most of them felt their writing was improved. Only one student had negative response to the improvement of his writing.

2. Some students felt that collaborative writing helped decrease their writing anxiety. Two originally were not anxious about English writing at all.

3. All expressed that blogs were easy to use. Most agreed that blogs facilitated interaction during collaborative writing. Only one expressed that blogs could not help interaction among group members.

4. All expressed that they encountered difficulties during the process of collaborative writing. The difficulties were related to their English ability and group members.

5. All of them were willing to continue to write collaboratively in the future.

6. They thought two weeks for completing each collaborative writing task was too long. They suggested that the time for writing could be shortened. They also thought the Internet made the students not concentrate on collaborative writing, so they suggested that teachers should frequently monitor students' process of online collaborative writing.

The students making the medium gains (n = 3):

1. All expressed that their writing ability was improved. One of them even expressed that his reading ability was also improved.

2. One felt that collaborative writing helped decrease his writing anxiety. One felt he was more nervous during collaborative writing. One expressed that he originally was not anxious about English writing at all.

3. Only one expressed that blogs were easy to use. The others expressed that blogs were not easy to use. But all of them agreed that blogs facilitated interaction during collaborative writing.

4. Most expressed that they encountered the difficulties related to their English ability and group members. Only one reported that he did not encounter any difficulties.

5. Only one expressed he would continue to write collaboratively in the future. The others did not want to continue to write collaboratively.

6. One suggested that teachers should frequently monitor each student during the process of online collaborative writing to avoid students playing online games and not concentrating on writing activity due to the distraction from the Internet. In addition, students should be trained and instructed grammar first before this activity. Therefore, some grammar classes were suggested because the more training could help students to write.

The students making the lowest gains (n = 4):

1. Some expressed that their writing ability was improved. One felt that his writing was not improved. One expressed that the effect of collaborative writing on writing performance was limited because it depended on the students' quality.

2. Only one felt that collaborative writing helped decrease his writing anxiety. One expressed that collaborative writing made him more nervous during writing. The others expressed that they originally were not anxious about English writing at all.

3. Most thought blogs were easy to use. Only one thought blogs were not easy to use. Most agreed that blogs facilitated interaction. Only one thought that blogs

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could not help interaction.

4.   Most expressed that they encountered the difficulties during writing. The difficulties were related to their English ability and group members. Only one expressed that he did not encounter any difficulties.

5.   Most expressed that they would not continue to write collaboratively. Only one expressed that he would.

6.   They suggested that students could choose the group members they would like to work with. Moreover, they thought the Internet was a distraction for the online collaborative writing activity, so they suggested that teachers should keep a more close watch on students during online collaborative writing.

Regarding the traditional class, five themes emerge through the analysis of the data from the 13 interviews: (1) function of collaborative writing (sub-themes: the improvement of writing and the decrease of writing anxiety, (2) difficulty of collaborative writing, (3) interaction, (4) factors influencing motivation, and (5) suggestion. The experience of the students making the largest ($n = 4$), medium ($n = 5$) and lowest ($n = 4$) gains is presented below.

The students making the largest gains (n = 4):

1. All felt that their writing ability was improved.

2. Most students expressed that collaborative writing made them less nervous about writing. One expressed that he felt more nervous during collaborative writing.

3. Most expressed that they could interact with group members without difficulty. One's opinion was neutral. He thought paper-and-pencil was not directly related to collaboration because it was only a tool for writing. The collaborative member was the key for effective interaction and collaboration.

4. All expressed that they encountered difficulties during collaborative writing. The

difficulties were related to their weak English ability and the group members who were not collaborative.

5. All students were willing to continue to write collaboratively in the future.

6. They suggested the topic for writing could be more interesting, authentic, and current, which would motivate them to write.

The students making the medium gains (n = 5):

1. All students felt their writing was improved.

2. All students expressed that collaborative writing helped decrease their writing anxiety.

3. All expressed that they could collaborate and interact with group members without difficulties by using paper-and-pencil.

4. All expressed that they encountered difficulties during collaborative writing. The difficulties were related to their weak English ability and the group members who were not collaborative.

5. All expressed that they were willing to continue to write collaboratively in the future.

6. Like the students making the largest gains, they also suggested that the topic for writing could be more interesting. In addition, they suggested that the time for completing each collaborative writing task could be shortened. They also suggested that teachers' help during collaborative writing was needed.

The students making the lowest gains (n = 4):

1. Most felt their writing ability was improved. Only one student felt that his writing was not improved.

2. Most expressed that collaborative writing helped decrease their writing anxiety.

However, one of them further expressed that if there was time limit or if his writing needed to be graded, he would still feel nervous about writing. Only one expressed that collaborative writing could not help decrease his writing anxiety.

3. Most thought that they could interact with group members without any difficulties.

4. All expressed that they encountered difficulties during collaborative writing.

5. Half of them expressed that they would continue to write collaboratively in the future. Half of them expressed that they would not.

6. They suggested that teachers' assistance during collaborative writing was important. They also preferred to work in a group in which members' English ability was similar. They thought it was hard for them to work with and keep up with the members with strong English ability.

The above summarizes the comments made by the students with different levels of gains in traditional and blog-supported classes. The following are some concluding paragraphs that summarize the similarities/differences of students' responses between gain levels and across treatment group. These paragraphs are organized by themes.

The improvement of writing. In the traditional class, students making the largest and medium gains expressed that they learned more vocabulary and grammar. Students making the lowest gain expressed that they knew more phrases and were able to write sentences. In the blog-supported class, all expressed that their grammar improved. Students making the largest and medium gain expressed that their writing improved. Students making the largest and lowest gain expressed that they learned more vocabularies because they could look up the words they did not know online. The key difference between them is that only the students making the medium gain expressed that their reading ability was improved.

The similarity between classes is that students make more positive responses than negative responses. The difference between classes is that students in the traditional class make more positive responses while students in the blog-supported class made more negative responses.

The decrease of writing anxiety. In the blog-supported class, the similarity is that students with different levels of gains all expressed that the activity of collaborative writing provided them with the chances of practicing writing, and the more practice made them feel less nervous about writing. The differences are that students making the largest, medium and lowest gains expressed that they felt less anxious because of (1) peers' help, (2) discussing with group members and (3) the use of online tools. In the traditional class, the similarity is that students with different gain levels all felt that writing together and interacting with each other decreased their writing anxiety. The difference is that students making the medium and lowest gains expressed that they still felt nervous if there was time limits and if the writing needed to be graded even though they wrote collaboratively.

The difference between classes is that students in the traditional class made more positive responses than those in the blog-supported class. The neutral responses were only made by the students with different gain levels in the blog-supported class. They all expressed that they themselves did not feel anxious at all when writing. The similarity is that both classes made less negative responses.

Ease of use. The positive responses were made by the students with different levels of gains. The negative responses were only made by the students making the medium and lowest gains.

Interaction. In the blog-supported class, students making the largest, medium, and lowest gains all agreed that blogs facilitated interaction during collaboration. In the traditional class, students making the largest, medium and lowest gains all felt comfortable with the traditional

way of collaborative writing. However, negative responses were only found in the blog-supported class, not in the traditional class. This showed that, in the present study, traditional collaborative writing might be easier and friendlier than online collaborative writing.

Difficulty of collaborative writing. The students making the largest, medium and lowest gains from both classes all reported that they encountered difficulties during collaborative writing. The difficulties that students with different levels of gains between classes encountered are very similar. First, they all reported that their insufficient and weak English ability made them feel difficult to write English sentences, let alone to complete collaborative writing tasks. Second, they all felt that it was difficult to interact with the group members who were not collaborative and friendly. Regarding the negative responses, only the students in the blog-supported class expressed that they did not encountered any difficulties. Students in the traditional class did not make any negative responses, which means that they all encountered difficulties during collaborative writing.

Factors influencing motivation. In the blog-supported class, only the students making the medium and lowest gains had negative responses regarding the motivation to continue to write collaboratively. The students making the largest gains had more positive responses. The main factors that influencing their motivation were found. Some were positive factors. They were (1) the gains from collaborative writing, (2) the improved English and writing ability, (3) relaxed feelings during writing, (4) decreased writing anxiety, and (5) building up interpersonal relationship. However, some of the factors were negative. They were (1) personal preference, (2) less confident of their own ability, (3) the uncollaborative members, and (4) the use of the blogging platform that they did not like.

In the traditional class, the negative responses were only made by the student making the lowest gains. The students making the largest and medium gains did not make any. Similar to the

blog-supported class, some factors that influencing their motivation were also found. The positive factors included (1) improved English ability, (2) be more confident of their ability, (3) making friends, (4) the further understanding about writing as a process and a relaxed activity), and (5) the importance of unity. The negative factors comprised (1) weak English ability, (2) the lack of interest in writing, (3) the difficulty of finding partners, and (4) the feeling of collaborative writing as a hard activity.

When the two classes are compared with each other, students in the traditional class had more positive responses and less negative responses than those in the blog-supported class. The result suggests that students involved in traditional collaborative writing had higher motivation to continue to write than those involved in blog-supported collaborative writing.

Suggestion. Since the blog-supported class wrote via the assistance of blogs while the traditional class did not, the key difference between classes was related to the distraction from the Internet. Therefore, students in the blog-supported class suggested the need of teacher's monitoring the writing process. Regarding the similarities between classes, students making the largest gains all suggested that the time for each writing task could be shortened. Students making the lowest gains all talked about the way of grouping. They would like to choose members by themselves and to work with the members who had similar English ability with them.

This chapter presents the quantitative and qualitative results of the dissertation study. The next chapter will discuss the findings and implications.

CHAPTER FIVE:

DISCUSSION

The present study investigated the effects of blog-supported versus traditional collaborative writing on writing performance, writing anxiety and perceptions of EFL College Students in Taiwan. Based upon the results presented in the previous chapter, this final chapter discusses the findings, implications, internal validity, suggestions for future research, and limitations of the study.

Discussion of Quantitative Results

There are two parts in the discussion section. In this part, the quantitative results are discussed by referring to previous studies and the theories that have guided the study. The quantitative results answer the first, second and third research questions of the study. The first research question investigates the writing performance of the students writing collaboratively in the blog and traditional environment. The writing performance explored includes the quality and quantity of collaborative writing, as well as the quality and quantity of individual writing. The second research question explores students' writing anxiety after the online and traditional collaborative writing activity. The third research question seeks to understand students' perceptions of collaborative writing.

Collaborative Writing Performance

The present study found that traditional and blog-supported classes were not significantly

different in the quality and quantity of collaborative writing. The result did not accord with that of Mak and Coniam's study (2008). In their study, students writing collaboratively through wiki for six weeks produced more text (quantity). In addition, the increased grammar complexity in their collaborative writing was found and the coherence of their writing also improved (quality).

The common point between the traditional and blog-supported classes is that both were engaged in collaborative writing. Researchers suggest that collaborative learning is thought to be able to foster the learning in general (Brandon & Hollingshead, 1999; Johnson & Johnson, 2008; Slavin, 1980; 1983; 1995) and language learning in particular (Richards & Rodgers, 2001). Based on the viewpoint, the application of collaborative learning in the field of writing is supposed to enhance students' writing performance in both classes.

The different part between the traditional and blog-supported classes is that the latter wrote collaboratively through the assistance of CMC technology, blog. Research on CMC writing (e.g., Liaw, 1998; Shang, 2007; Zhang, 2009; Perez, 2003; Gonzalez-Bueno & Perez, 2000) suggests that writing via CMC tools help improve students' writing.

In these studies, the CMC writing is conducted individually, which is different from the case in the present study because students write collaboratively. Warschauer (1997) claims that CMC technology has the features that make it possible to promote collaborative learning. These features also make CMC technology be able to provide more chances of interaction due to the use of the Internet. If students do collaborate and interact with each other, Bruffee (1984) suggests that the more interaction could result in more thoughts, and the more thoughts would facilitate students to compose. In addition, some online collaborative writing research also yields prominent findings on students' writing, such as Franco (2008), Lee (2010), and Mak and Coniam (2008). Based on the claims from the researchers and the findings of previous research, students in the blog-supported class were expected to significantly perform better than those in

the control class. However, the significant result was not found in the present study. Two reasons may help explain the non-significant result.

First, the sample size in the present study may be small. Only 101 college students participated in the study with 51 in the traditional class and 50 in the blog-supported class. Since each collaborative writing group comprised four to five students, therefore, there were only 12 groups in each class. A much bigger sample size for more collaborative writing groups is needed to get a significant result. In addition, the sample is also not normal. Among the participants, only 11 are female students; the others are males. They are all from the same university and most of them have weaker English ability. A normally distributed sample might help obtain a significant result.

Second, the non-significant result may be related to the role of the Internet in CMC writing. The Internet may help provide more chances of interaction, which facilitate students to write. However, the use of the Internet does not automatically lead to interaction. If students spend much time playing on the Internet, such as playing online games or logging into popular social networking sites, rather than focusing on discussing writing with group members, the Internet could be a distraction. Students' interview results in the present study indeed revealed that group members spent time using Facebook or Plurk, and watching the videos on Youtube. (S5-6) Therefore, there was little interaction between them. For example, students reported that members were not active in collaborative writing; they seldom discussed together and exchanged ideas; it seems they wrote alone rather than collaboratively. (S2-1, S3-1, S3-5 & S8-5)

In addition, the instructor also shared her observations with the researcher. According to her observations, there were group members who were not active and involved in collaborative writing in both classes. However, the phenomenon was more serious in the blog-supported class than in the traditional class. Though the teacher frequently asked students to focus on writing

rather than playing on the Internet, seldom students listened and most did as usual. They usually quickly and sloppily completed the group writing a couple of minutes ago before the deadline for completing the group writing. Teacher's observations seem to accord with the results of students' interview. In a word, it is possible that the Internet distracted students' attention on writing and contributed to the less interaction and discussion in writing between members. This might be one of the reasons why the blog-supported class did not produce the collaborative writing with better quality than the traditional class.

Individual writing performance

As for the quantity of individual writing, there was no significant difference between the two classes. Several reasons might cause the result. First, it may be that the small sample size leads to the result that is statistically non-significant. Second, it is possible that the treatment was not long enough for students to transfer the online collaborative writing ability into individual writing ability. If students could practice online collaborative writing more than five times, the effect of bog-supported collaborative writing on students' individual writing performance could be possibly appeared.

The significant difference of writing performance in the present study was only found in the quality of individual writing. A similar result is found in Lin's experimental study (2009), in which the writing performance of the two groups were compared: online collaborative writing group and face-to-face receiving traditional teaching group. The result of Lin's study showed that the online collaborative writing group outperformed the control group between pre-test and post-test in percent gains regarding their quality of individual writing samples. In other words, both the present study and Lin's study found that online collaborative writing group made significantly larger gains than the control group in terms of the quality of individual writing.

Students in the blog-supported class did not perform significantly better on collaborative writing tasks. Why did they do better on the posttest and perform better than the traditional class on the posttest individual writing task? The role of the Internet may help explain this phenomenon.

Students' interview revealed that they used online tools, such as Google Translate or online dictionary of Yahoo, to help them to write. (S6-2) The teacher's observations also revealed that students indeed took advantage of online tools and other websites like Wikipedia to help them compose. In light of this, the Internet also had a positive effect on assisting students to write in addition to the negative influence of distracting students from collaborative writing. As for the students in the traditional class, they were asked to bring reference books. However, only few of them brought dictionary. Hence, most students discussed their writings based on their original knowledge. On the contrary, students in the blog-supported class could refer to the knowledge obtained from online tools and websites. It is possible that the use of online tools and the knowledge gained from them help the blog-supported class perform better than the traditional class in the quality of individual writing.

Logically, the use of online tools and the knowledge gained from them might also help the blog-supported class perform better than the traditional class in collaborative writing tasks. However, it may be that the negative influence of the Internet makes the blog-supported class not significantly perform better on collaborative writing tasks.

The individual writing task was conducted traditionally instead of online. Without the distraction of the Internet, it is possible that students in the blog-supported class may focus more on writing and pay more attention to what they write when they write individually. This may result in their better performance on the writing quality of their individual writing task than on their collaborative writing task.

In addition to the role of the Internet, Hawthorne effect might be another factor that could explain the fact that the blog-supported class did better on four of the measures on individual writing quality. It is possible that, after participating in collaborative writing tasks, participants knew that they were in a research study, and, therefore, tried to perform better on their individual writing task. This is the potential threat to the internal validity to the present study and will also be discussed in the limitation section.

Writing Anxiety

According to the findings of previous research, writing anxiety is thought to be negatively related to writing performance. In other words, students with higher writing anxiety tend to have lower writing performance. To enhance students' writing performance, reducing students' writing anxiety could be one of the ways. Researchers suggest that collaborative learning works in teaching composition (Bruffee, 1980) and helps produce less anxiety and stress (Johnson, Johnson and Smith, 1991). In the present study, students in traditional and blog-supported classes were all engaged in collaborative writing. The former wrote traditionally and the latter wrote online. Therefore, both classes are supposed to have lower writing anxiety after the collaborative writing tasks.

In addition, researchers have claimed that CMC can help reduce anxiety (Greenfield, 2003) because it allows students to have more time to form responses (Sullivan, 2003). Moreover, CMC environment provides an informal atmosphere which often motivates students to participate more actively in discussion (Kern, 1995). Previous research (e.g., Perez, 2003) also suggests that students enjoy writing via CMC, which creates a nonthreatening atmosphere and lowered the affective filter. Based on researchers' claims and results from previous research, the writing anxiety of the blog-supported class could be reduced, and is supposed to be even lower

than the traditional class.

The present study found that there were significant differences between classes, with the students in the traditional class having lower writing anxiety than those in the blog-supported class. According to the descriptive statistics shown on Table 4.26, students in the traditional class reduced their writing anxiety after the collaborative writing activity (mean = -3.33). However, the writing anxiety of the students in the blog-supported class increased (mean = 13.19). In other words, the writing anxiety of the blog-supported class was not reduced and was even higher than the traditional class. The result suggests that, for the present study, the traditional collaborative writing seemed to be more effective in reducing anxiety than blog-supported collaborative writing.

One possible reason causing the result might be that students in the blog-supported class were not used to the way of writing blogs. In the present study, students needed to work in groups to complete writing tasks via blogs. In other words, students were using blogs for learning writing in English. Before the treatment, the background survey (See Table 3.1) showed that students all knew what blog is, and most knew how to use blogs. The interview results indeed revealed that most students felt that blogs were easy to use. (S1-4, S2-4, S3-4, S4-4, S5-4, S7-4, S8-4, S9-4) Therefore, students' writing anxiety might not be provoked due to the technology, blog itself.

The background survey also showed that most students visited blogs often, and had their own blogs. Therefore, they had the experience of writing blogs before the study. However, they might have the experience of writing blogs individually in Chinese and for personal purposes. Using blogs for personal purposes is different from using blogs for language learning. writing blogs in English is more challenging than writing blogs in Chinese. In other words, the way of writing blogs in the study is different from and more difficult than the one they did before. As a

result, the unfamiliarity is probably the factor causing that students in the experimental class had higher writing anxiety after blog-supported collaborative writing.

The interview results also help explain that students were unaccustomed to the use of blogs in the study. According to the results, few students felt that blogs were not easy to use. However, they further clarified that it did not mean that blogs were difficult to use. It is just that they were used to using the blogging platform that they used before, such as Wretch. (S6-4, S10-4) They were just not used to Blogger. Based on these statements, it is possible that the students' "not easy to use" might mean "not easy to use blogs for collaborative writing in English", and "the blogging platform that they used before" might imply "the way they used blogs before". Simply speaking, the manner of writing blogs is very different from their experience of writing blogs before. It might be the unfamiliarity that causes the increasing of students' writing anxiety in the blog-supported class. Moreover, the unfamiliarity might result from their lack of sufficient skills in using blogs for language learning purposes.

Students' Perceptions

Students' perceptions were measured through blog-supported and traditional collaborative writing questionnaires, which elicited their perceptions of the collaborative feature of the media they used for collaborative writing, their writing performance, their writing anxiety, and their motivation for future use. Based on students' responses to the questionnaires, the present study found one common point between classes: Students with positive responses were more than those with negative responses in both classes. The result suggests two points.

First, it suggests that the students feeling their writing was improved and writing anxiety was decreased were more than those who did not. In traditional collaborative writing research, seldom research yielded the results regarding students' perceptions on their writing performance

and writing anxiety, but online collaborative writing research did. For example, the results of Greenfield (2003) and Lin (2009) are similar to those of the present study. In Greenfield's study, students felt that they made progress in their writing after a 12-week collaborative email exchange. In Lin's study, students expressed that online collaborative writing helped reduce anxiety during the writing process.

Second, the result of the questionnaire also suggests that the students feeling comfortable with writing collaboratively in the traditional and blog environment were more than those who did not. They did not reject collaborative writing and would like to continue collaborative writing in the future. Regarding traditional collaborative writing, similar findings were found in Shehadel's (2011) and Storch's (2005) studies, in which most of the students showed positive attitude toward the experience of traditional collaborative writing. As for online collaborative writing, the findings also accord with those of Lee's (2010) and Greenfield's (2003) studies. Lee's study explored the efficacy of wiki-mediated collaborative writing. Students responded that writing in the wiki environment was enjoyable, and they had a very fruitful experience with wiki assignments. In Greenfield's study (2003), students' perceptions on a 12-week collaborative email exchange was investigated. The results showed that students showed strong support for the collaborative email exchange. They also felt that collaborative exchange was a helpful, enjoyable and good learning experience.

In addition to the common point found in both classes, students' responses to the questionnaires also showed some differences between classes. First, the control class had much more positive responses and less negative responses than the experimental class. The questionnaire result suggests that, for the EFL college students with weaker English and writing abilities, traditional collaborative writing seemed to be more effective in enhancing their writing performance and decreasing their writing anxiety than blog-supported collaborative writing. In

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addition, students of this type seemed to be more comfortable with and had stronger motivation to write collaboratively in the traditional environment than in the online environment.

These findings support those of the first research question: The blog-supported class did not significantly outperform the traditional class in collaborative writing performance and the quality of individual writing. The findings also agree with the results of the second research question. The two classes were significantly different in their writing anxiety, with the writing anxiety measured in the traditional class lower than the blog-supported class.

The second difference between classes is that, compared with the traditional class, students in the blog-supported class made many neutral responses which were more than their positive and negative responses. In addition, the neutral responses in the blog-supported class were much more than those in the traditional class. The results suggest that students were not able to clearly feel whether blog-supported collaborative writing helped improve their writing and decrease their writing anxiety. The findings indirectly help explain why the blog-supported class did not significantly outperform the traditional class as reported in the first and second research question.

Several reasons may help explain the more neutral responses in the blog-supported class. First, only the practice of five collaborative writing tasks may not be sufficient for students to feel its significant effect on their writing performance and anxiety. Therefore, they made neutral responses. Second, students in the interview reported that their members spent time playing on the Internet. They seldom discussed their writings together. They felt that it seemed they wrote alone instead of collaboratively. Since these students were not actually involved in collaborative writing, it is possible that they could not feel whether collaborative writing helped them or not. Third, they may answer the questions fast and casually without thinking. There might be different results if the questionnaire item did not include a neutral response (i.e., neither agree nor disagree).

Discussion of Qualitative Results

The qualitative results answer the fourth research question of the study, which seeks to discover the collaborative writing experience of the specific students: The students making the largest, medium and lowest gains. The qualitative data are obtained from 11 semi-structured interviews in the blog-supported class and 13 semi- structured interviews in th traditional class. Five themes and four sub-themes emerge through the interview analysis: (1) function of collaborative writing (its subthemes: the improvement of writing performance & the decrease of writing anxiety), (2) difficulty of collaborative writing, (3) features of the media (its subthemes: ease of use & interaction), (4) factors influencing motivation, and (5) suggestions. Under each theme, the responses of the students making the largest, medium and lowest gains in both classes are clearly presented in the previous chapter. In this chapter, the responses are further reviewed and discussed by referring to previous studies.

The Improvement of Writing Performance

In the traditional class, almost all of the students making the largest, medium and lowest gains felt that their English and writing ability improved. For example, they felt that they learned more vocabulary, phrases and grammar. They believe that their thinking skills improved and could write faster. They also felt that they knew how to connect sentences and correct mistakes found in group members' writings. Only one student with the lowest gain felt that his writing did not improve. The result that most students have positive responses suggests that traditional collaborative writing was perceived to be helpful in improving writing performance.

Similar to the traditional class, in the blog-supported class, many of the students making the largest, medium and lowest gains expressed that their writing and English ability also improved. For example, they learned new vocabulary and more grammar. One student making

the medium gain even expressed that his reading ability also improved. The improvement of reading may suggest a relation between reading and writing. When students' writing improves, their reading may improve at the same time and vice versa. However, one student making the largest gain and one making the lowest gain felt that their writing did not improved. They expressed that their group members worked on their own. They were not active in collaboration and interaction during the process of collaborative writing. Therefore, the little or no interaction and collaboration may have a negative influence on writing performance. The findings are similar to those of Storch's study (2001), which are that students working in pairs may not necessarily work in a collaborative manner. Moreover, collaboration may have an effect on the writing performance if students do collaborate.

In the blog-supported class, students making the largest and medium gains further discussed the factors that led to the improvement of their writing. They expressed that, via the use of blogs, they didn't need to meet with their classmates, but could read classmates' writing at any time. Students' responses suggest that blogs have the features of CMC, such as time-and-place independent communication and long distance exchange. With these features, students are able to interact with group members more easily and frequently. The more interaction may result in more thoughts. The more thoughts facilitate students to write (Bruffee, 1984), which helps lead to the improvement of writing. In addition to the chances for more interactions, through the connection of the Internet, they could also look up the words they do not know online. Moreover, they felt relaxed when writing on the blog, and the use of blogs motivated them to write. Some previous research on blogs in L2 learning also yields similar results. For example, students are found to enjoy the process of blogging in Jone (2006), Ducate and Lomicka (2008), and Armstrong and Retterer (2008). Pinkman's study (2005) suggests that students perceive they have increased interests and motivation to use English when using blogs.

In addition to the use of blogs, through collaboration, students express that they could discuss and edit each other's writing together, and ask for group members' help during writing. According to the theoretical perspectives supporting the use of collaborative learning, such as the cognitive-developmental perspective (Piaget, 1950), social constructivism (Bruner, 1996), and sociocultural theory (Vygotsky, 1978; 1986), knowledge is constructed through interaction with others. In the present study, the collaborative writing task provides chances of social interaction for students to help them gain knowledge and make their learning meaningful. Therefore, students could feel that collaborating with group members helps improve their writing.

Based on students' responses, the use of blogs makes collaborative learning easier and enhances students' motivation to write. Collaborative learning provides chances for interaction. Therefore, both the use of blogs and collaborative learning could enhance students' writing performance. However, students' responses further suggest that collaboration seems to have stronger effects than blogs in the improvement of writing due to the interaction among group members. Another interesting finding is that only the students making the largest and medium gains talk about the collaboration and interaction could lead to the improvement of their writing. The students making the lowest gains did not make any comments about this. Therefore, it is possible that the extent of collaboration and interaction could be one of the factors that have caused the different levels of gains.

When the traditional and blog-supported classes are compared with each other, it is found that students in the traditional class make more positive responses regarding the improvement of writing performance. Students in the blog-supported class, however, make more negative responses. Therefore, students' interviews suggest that traditional collaborative writing seems to be more effective than blog-supported collaborative writing in terms of the improvement of writing performance. The interview results help explain the quantitative results, which are that (1)

students in the blog-supported class does not significantly make more improvement in writing than those in the traditional class; (2) more students in the traditional class perceived that their writing performance is enhanced than those in the blog-supported class.

The Decrease of Writing Anxiety

In the traditional class, most of the students making the largest, medium and lowest gains expressed that collaborative writing made them less nervous about writing. They could interact with group members and ask for members' help during collaborative writing. Nevertheless, some of them further expressed that though collaborative writing made them feel less nervous, the anxiety would be provoked if there was time limit when writing; if their writing needed to be graded, and if they worked with the people they were not familiar with. Only two students making the largest and lowest gains expressed that they felt more anxious during collaborative writing. This is because they worked with the group members who were not collaborative during writing, and it could make them not be able to finish the group writing on time.

In the blog-supported class, some of the students making the largest, medium and lowest gains felt that collaborative writing helped decrease their writing anxiety due to the assistance from peers and the help of online tools, as well as the more practices in writing. Only two students making the lowest and medium gains felt that they were more nervous during collaborative writing. They were afraid that they could not keep up with group members, and delayed the progress of group writing. They were also afraid that they needed to care about members' voices and feelings during writing. Almost half of the students made neutral responses. They expressed that they did not feel whether collaborative writing increased or decreased their writing anxiety because they originally were not anxious about English writing at all.

Students' responses suggest that applying collaborative learning into writing helps

decrease writing anxiety. The findings accords with Johnson, Johnson and Smith's claim (1991), which is that collaborative learning helps produce less anxiety. One important factor that makes collaborative writing be able to reduce writing anxiety is that students can interact with each other and then obtain the assistance from peers. Other factors include the more practice in writing and the use of online tools. However, the study also found that students' anxiety may not be easily reduced or even be enhanced if some factors exist. They are time limit, grading, working with unfamiliar group members or the members who are not collaborative during writing, the pressure from peers, such as members' voice, feeling, and complaints, as well as the lack of confidence in working with members.

Among these factors, the students in each condition reporting that peers' help would help decrease their writing anxiety are mostly the ones making the largest and medium gains. The students in each condition reporting that they became more anxious because of the pressure from peers and working with uncollaborative members are mostly the ones making the lowest gains. Therefore, the extent of peers' help might be one of the factors that may have explained the different levels of gains in traditional and blog-supported classes.

Comparing the blog-supported class with the traditional class, it is found that students in the traditional class make more positive responses than the blog-supported class. Therefore, students' interviews suggest that traditional collaborative writing seems to be more effective in reducing writing anxiety than blog-supported collaborative writing. The interview results are accordance with the quantitative results, which are that (1) the writing anxiety of the traditional class is significantly lower than that of the blog-supported class; (2) more students in the traditional class perceive their writing anxiety is decreased than those in the blog-supported class. It is also interesting to find that almost half of the students in the blog-supported class make neutral responses. They don't agree or disagree the effect of collaborative writing because they

originally are not anxious about English writing. The result suggests that the application of different writing methods in reducing writing anxiety is more influential for the students who are anxious about writing than those who are not anxious about writing at all.

Ease of Use

In the blog-supported class, most of the students making the largest, medium and lowest gains all expressed that blogs were easy to use. Students' responses confirm the researchers' claim that blogs are easy to use (Ray, 2006; Imperatore, 2009; Peng, 2008; Huang, 2007). However, there were some students making the medium and lowest gains feeling that blogs were not easy to use. However, they further expressed that it does not mean that blogs were difficult to use. It is just that they did not have the habit of using blogs before, and were not used to using the blogging platform, Blogger. The students making the largest gains have more positive responses and don't make any negative responses. The negative responses are only made by the students making the medium and lowest gains. These results suggest that, in addition to the design of blog itself, the ease of use also depends on students' ability of using blogs and using blogs for language learning purposes. Therefore, when applying CMC technology in writing context, students' ability to use the technology and to use it for learning writing may influence their performance in writing. These results suggest that there might be a connection between students' ability to use technology itself/for language purposes and their gains, which may help explain the different levels of gains in the blog-supported class.

Interaction

In the traditional class, most students making the largest, medium and lowest gains expressed that they could interact with group members without difficulty, and the use of

paper-and-pencil was convenient. One students making the largest gains proposed a different point, which is that paper-and-pencil was only a tool for collaborative writing; it did not hinder or help collaboration. It was group members' participation and motivation that hindered or helped the collaboration in a group.

In the blog-supported class, except two students making the negative responses, most of the students making the largest, and medium and lowest gains agreed that blogs facilitated interaction during collaborative writing. One reason is that, through posting their writing on the blog, they could read each other's writing easily, and this could result in more interaction. Another reason is that they could comment on members' writing easily via the function of comment on blogs. In addition, they could use blogs not only at school but also after class as long as there is Internet connection. Students' responses suggest that blogs have the features of text-based interaction, many-to-many communication, long distance exchange, publish, making comment, and time-and-place independent communication. With these features, students feel that blogs facilitate interaction during collaborative writing, which confirms the claim that blogs have the possibility of interaction and collaboration (Huffaker, 2005; Roy, 2006; Lucking et al., 2009; Boling et al., 2008), and the claim that CMC technology has the potential for promoting collaborative learning (Warschauer, 1997).

As stated above, two students making the largest and lowest gains felt that blogs could not help interaction among group members. They expressed that their group members did not discuss and interact with each other. It seemed that they wrote individually, not collaboratively. Moreover, although blogs have the function of making comment, this function is not thoroughly used in their groups. Therefore, students' responses also suggest that blogs are not able to facilitate collaboration in a group if group members' motivation to participate in collaborative writing is weak.

Although researchers have claimed that blogs have the possibility to facilitate collaboration and interaction; however, it doesn't mean that blog itself can produce and result in collaboration. If there is no or little interaction among group members during collaborative writing, many features of blogs that are thought to facilitate collaboration will not be thoroughly realized. In this way, blogs are used as individual writing tools instead of collaborative writing tools. The possibility of collaboration can take place under the condition that blogs are indeed used as collaborative tools, and students do collaborate. In other words, blogs are able to bring their potential of collaboration into full play if students have strong motivation to collaborate, interact and discuss with group members.

Comparing the blog-supported class with the traditional class, one common point is that most students with the largest, medium and lowest gains make positive responses regarding the interaction among group members during blog-supported and traditional collaborative writing. A different point is that students in the traditional class do not make any negative responses, but those in the blog-supported class do. This result suggests that traditional collaborative writing seems to be more able to facilitate interaction and collaboration than blog-supported collaborative writing probably because students in the blog-supported class are not motivated to use blogs for collaborative writing. This interview result is accordance with the questionnaire result, which is that students making the positive responses on the collaborative feature of the paper-and-pencil are more than those on the collaborative feature of blogs.

Difficulty of Collaborative Writing

In the traditional class, all students making the largest, medium and lowest gains expressed that they encountered difficulties during collaborative writing. These difficulties are related to their weak English ability and the group members who are not collaborative. The weak English

ability makes it difficult for them to compose a writing. The group members who are not active in collaboration and interaction influence the progress and quality of collaborative writing. For example, some members were often absent and some members liked to chat rather than focused on writing.

In the blog-supported class, most of the students making the largest, medium and lowest gains also encountered the difficulties related to their weak English ability and uncollaborative group members. The insufficient English ability stops them from completing the collaborative writing task smoothly during the process of collaborative writing, including thinking, drafting, editing and revising. The group members who are not active in writing (e.g., absent frequently, playing online games and chatting during collaborative writing), and can't get on well with others influence the interaction among group members during collaborative writing.

Students in both classes encounter similar difficulties, weak English ability and uncollaborative group members, and the students making the largest, medium and lowest gains all expressed they encountered these difficulties. The weak English ability makes it difficult to write correct and completed sentences, let alone to compose a collaborative writing with others. Interacting with the group members who are not collaborative in writing and friendly negatively influences the quality, quantity, progress, and completion of a collaborative writing in a group.

As for the negative responses, students in the traditional class did not make any. Only the students in the blog-supported class did. They are the students making the lowest and medium gains. They might work in a group in which all members were very collaborative and friendly so that they felt they did not encounter any difficulties. Or they might not actively participate in collaborative writing so they did not encounter any difficulties.

Factors Influencing Motivation

In the traditional class, most of the students making the largest, medium and lowest gains expressed that they liked collaborative writing, and were willing to continue this activity after the class. The result is similar to those of Greenfield's study (2003), in which the results of students' interviews also suggest that students showed strong support for the collaborative email exchange. Students' responses yield some factors that cause students to have higher motivation to continue to write. For example, they would like to continue to write collaboratively because of (1) their improved writing, (2) their decreased writing anxiety, (3) the chances of making friends through this activity, (4) the understanding that writing is a process and a relaxed activity, and (5) learning the importance of unity.

Only two students making the lowest gains did not like collaborative writing. The factors causing students to have lower motivation to continue to write are that (1) they felt their English and writing abilities were too weak to be competent for collaborative writing; (2) they themselves were not interested in collaborative writing; (3) they thought it is hard to find partners to join the activity; (4) they thought collaborative writing is very difficult.

In the blog-supported class, half of the students making the largest, medium and lowest gains also expressed that they were willing to continue to write collaboratively via blogs after this class. Students were highly motivated to continue this activity because of (1) the gains from this activity, (2) their improved English and writing, (3) the feeling that writing is a relaxed activity as they write on the blog, (4) the decreased writing anxiety, and (5) the promotion of interpersonal relationship through this activity.

However, two students making the medium gains and three making the lowest gains expressed they did not want to write collaboratively via blogs. The factors causing their low motivation are that (1) they preferred traditional collaborative writing and individual writing; (2)

they were less confident of their ability; (3) they were not used to the blogging platform and did not like it, which may result from their lack of skills to use blogs for language learning; (4) they did not want to work with uncollaborative members and the members they did not want to work with; (5) the Internet may distract members from writing.

The positive and negative factors may provide instructors with a sense of the way that could motivate and demotivate students to write. Instructors should particularly notice the negative factors and try to avoid them if they would like to have students use blogs for collaborative writing, and obtain positive effects on students' learning.

When the two classes are compared with each other, one common point is found. That is, students making the largest gains make only positive responses. In the blog-supported class, only the students making the medium and lowest gains have negative responses. In the traditional class, the negative responses are made by the students making the lowest gains. This result suggests that students' motivation might be one of the factors that may have explained the different levels of gains. More precisely, students who are active in collaborative writing and who actually collaborate are the ones who have strong motivation in the activity. These students can gain from the activity. Then, the students with better writing performance may not reject collaborative writing and have stronger motivation to continue to write. It is a positive cycle. Students with higher motivation to write tend to perform better in writing; as they feel their writing improve, they would be motivated to continue to write.

Nevertheless, a different point is also found between the two classes. That is, students in the traditional class have more positive responses and less negative responses than those in the blog-supported class. The result suggests that, in the study, students involved in traditional collaborative writing have higher motivation to continue to write than those engaged in blog-supported collaborative writing. The interview result supports the questionnaire result,

which is that more positive responses are made by the students in the traditional class than in the blog-supported class regarding their motivation for future participation.

Suggestion

In the traditional class, students making the largest and medium gains expressed that the writing topic could be more authentic, and the time for each collaborative writing task could be shortened. Students making the lowest and medium gains proposed that they needed teachers' help during collaborative writing. In addition, they thought it was difficult to work with and keep up with the students with better English ability during collaborative writing. Hence, they proposed that homogeneous grouping can be considered being used. Sutherland and Topping (1999) conducted a study in which students' writing completed by different-ability collaborative writing groups and same-ability collaborative writing groups are investigated. The results suggest that different-ability and same-ability groupings of collaborative writing could be effective in improving the quality of students' writing. Sutherland and Topping's study was conducted in the L1 context. L2 research seldom explores this issue. Based on the findings of previous L1 research, L2 writing instructors could consider using homogeneous grouping in collaborative writing activity, particularly for the students with lower achievement, to avoid them feeling pressure from their peers who have better achievement.

In the blog-supported class, similar to the traditional class, students making the largest gains also expressed that the time for writing could be shortened. They thought two weeks for completing each collaborative writing task was too long. Students making the lowest gains preferred to choose the group members they would like to work with. In addition, students making the largest, medium and lowest gains all made one common suggestion. They thought the Internet was a key distraction that made their group members not concentrate on

collaborative writing. They suggested that teachers should monitor students' writing activity more frequently if students are completing collaborative writing tasks online.

Based on students' responses, one common point is found in both classes. That is students making the largest and medium gains tend to propose more challenging suggestions. However, students making the lowest gains and some making the medium gains are inclined to make the suggestions related to assistance. Different from the traditional class, students in the blog-supported class write online, and they notice that the Internet could be a distraction for online collaborative writing activity. Therefore, they suggest the importance of monitoring students' writing activity during the process of collaborative writing. These students' suggestions may help explain the reason why the blog-supported class did not significantly outperform the traditional class in terms of the collaborative writing performance. The students' suggestions can also help L2 instructors who would like to have students use blogs for collaborative writing.

Implications

Based on both quantitative and qualitative results, traditional collaborative writing seemed to be more effective in decreasing writing anxiety of the EFL college students with weak English and writing abilities than blog-supported collaborative writing. In addition, the former also seemed to be more acceptable than the latter. Though the influence of blog-supported collaborative writing on writing anxiety seemed to be limited, its effect on writing performance was found since students did do better on four measures of individual writing quality particularly in the aspects of vocabulary, mechanics, and grammar. In light of this, blog-supported collaborative writing seemed to help students with more local issues of writing (i.e., vocabulary, mechanics, and grammar), but did not seem to influence students' ability to generate and organize ideas. Based on the results of the study, the use of blog-supported collaborative writing

seemed to be not completely favored. However, these results do not mean that teachers should not use blogs for teaching writing. Instead, they imply that teachers must realize what needs to be done if they do use blogs. Some pedagogical implications are provided for the teachers who would like to employ blog-supported collaborative writing as an instructional method for teaching L2 writing.

First, the lack of skills, such as in (1) English writing, (2) collaborative writing, and (3) using blogs for language learning purposes, may influence students' participation and involvement in collaborative writing. Therefore, it is important that teachers need to hold more than one training session for all students to clearly understand each process of collaborative writing and how to use blogs for collaborative writing. During the training session, the teacher should explain and demonstrate each step of collaborative writing for students. Then, students should be given sufficient time to be familiar with and to use blogs. They should also be given time to practice using blogs for collaborative writing more than once. Particularly for the students with weaker English ability, the teacher should assist them more. For example, teachers could provide them with extra instructions, such as grammar and writing instructions, before the online collaborative writing formally begins. The extra assistance in grammar and writing may help the students with weaker English ability be less afraid of working with the classmates with better English ability, and increase their involvement in collaborative writing.

Second, teachers are recommended to employ the online collaborative writing activity as an out-of-class assignment rather than the in-class activity. Therefore, some features of CMC, such as many-to-many communication, time-and-place independent communication, and long distance exchange, could be brought into full play. If the activity is conducted in class, it is suggested that teachers should not have students spend the whole class writing. Teachers could spend some of the time in class doing other activities, such as delivering grammar instructions,

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and providing students with chances to share their experience of collaborative writing with classmates after each writing task. For example, students are encouraged to express what difficulties they encounter during writing. Through students' report, the teacher could offer proper assistance and support in time. If the online collaborative writing activity is all held in class, on one hand, the teacher must have less time to provide extra instructions for students, as well as understand students' needs and difficulties. On the other hand, some students may only interact with group members in class. There would be little or even no interaction after class. In this way, the collaborative features of blogs may not be fully realized.

Third, the role of the Internet should be considered if teachers use blogs in class. The Internet could have negative influence on students' learning because it may distract students from writing. Students may spend time surfing on the Internet, such as playing online games, viewing social networking site like Facebook or Plurk, and watching the videos on Youtube. Therefore, teacher's monitoring the process of collaborative writing is very important. For example, teachers are suggested to walk around in the computer lab and observe students' behaviors. Teachers could further go to each group, listen to the group discussion, and even join the discussion with students for a while. By doing so, teachers may understand what difficulty students in each group encounter; students are probably more concentrated on collaborative writing due to the teacher's participation. In addition to the interaction in class, online interaction is also a way for teachers to monitor students. For instance, teachers could leave messages on students' group blogs, such as commenting on students' writing and online discussion. Students may be more involved in collaborative writing if they know that teachers would read their blogs. In one word, teachers' monitoring is necessary. It lessens the chance for students surfing on the Internet, and may increase students' participation and involvement.

Suggestions for Future research

In the light of the non-significant quantitative results, some suggestions are provided for the researchers who are interested in conducting online collaborative writing research.

First, students in the present study completed five collaborative writings. However, only five writings might not be able to result in significant effects in improving students' writing performance. Students during the interview indeed reported that they needed more practice (e.g., S3-1). Researchers are suggested to extend the period of treatment and have students complete more than five collaborative writing tasks to obtain significant results.

Second, collaborative writing is a more complex activity than individual writing. It needs not only writing skills but also social skills. When collaborative writing is conducted via the assistance of CMC, the knowledge for the CMC technology is also needed. Participants in the present study have weaker English ability and little or no experience in English writing. Writing collaboratively in English might be strenuous for them. Therefore, if there is not sufficient training provided for them, their participation in group discussion and editing members' writing would not be very active. In other words, they may not have strong motivation to write. Researchers are suggested to recruit the participants with better English ability, such as English majors. Different results might be obtained if participants in the future research have better English and writing ability.

Third, in the present study, one training session lasting around 60 minutes was held to help students familiarize the use of blogs and practice collaborative writing. However, one session might be insufficient for students to master both skills, particularly for the students who seldom use blogs and have little knowledge of collaborative writing. In addition, even though students have the experience of writing blogs, they might have no experience of using blogs for learning writing and of writing blogs in English. Therefore, more training sessions are suggested to make

sure that students all know how to use blogs for collaborative writing and how to write collaboratively with group members. They may also help students realize that they are using blogs for learning English writing instead of for personal purposes. Different results might have been obtained in the present study if there was solid training before the treatment began.

Fourth, almost all participants in the present study are male students. However, based on the findings of previous research in the EFL context (e.g., Jafari & Ansari, 2012), female students tended to perform better in writing than male students. More research is suggested to examine whether there is gender effect in writing performance in the context of EFL collaborative writing. Different results might have been obtained if female participants were more than the male ones or if the number of female and male participants were similar in the present study.

Fifth, the present study used heterogeneous groups. Participants did not choose the group members by themselves. Nevertheless, some students making the lowest gain reported that they felt pressure to work with the members with better English ability, and they preferred to work with the members they were familiar with. The uncomfortable feelings might result in their low motivation to engage in collaborative writing, which may make them obtain little or even no gains from the activity, and therefore they do not want to continue to write collaboratively. Future research is suggested to examine if making group homogeneous in abilities in the EFL context could yield more significant results. Researchers are also suggested to compare the effect of different ways of grouping on writing performance, such as homogeneous and heterogeneous grouping, as well as working with the familiar or unfamiliar members.

Sixth, the collaborative writing activity was not assigned as take-home assignment in the present study. Students could write in class and after class. However, almost all students wrote and discuss orally in class. Very little online interaction was found after class. Therefore, some features of CMC which distinguish it from paper-and-pencil may not be fully realized. In other

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words, it makes no differences between traditional collaborative writing and blog-supported collaborative writing. Researchers might obtain different results if blog-supported collaborative writing tasks are arranged as a take-home assignment.

Internal Validity

Perry (2005) suggests that when discussing cause and effect in research, internal validity to the study is of critical importance. While external validity is concerned with the extent to which findings can be generalized to populations, internal validity is related to the extent to which differences on dependent variables are a direct result of the operation of independent variables. Though having internal validity is not sufficient for building external validity, a study which lacks internal validity limits its possibility of external validity. In other words, internal validity is a prerequisite for external validity (Perry, 2005). Since the current study discusses the cause (i.e., blog-supported and traditional collaborative writing) and effects (i.e., students' writing performance, writing anxiety, and perceptions), an examination of the internal validity is necessary.

The internal validity of the present study is influenced by a number of threats, and some strategies were employed to lessen these threats. For instance, the use of two intact classes as control and experimental groups is a threat to internal validity because there might be preexisting differences between groups, which could result in observed differences between groups that are not due to the variable investigated. Indeed, the result of the pretest writing showed that there were preexisting differences between the two groups. To avoid the threat, the present study conducted *ANCOVA*, a statistical method that is used to adjust for preexisting differences, and computed the gain scores of both groups to compare the differences between groups. Conducting *ANCOVA* and comparing the gain scores do not eliminate the threat because the preexisting

differences are still there. However, these techniques might help dodge the threat.

In addition, since there is a control class, control group contamination is also a threat, such as control group rivalry (i.e., John Henry effect), experimental treatment extension to the control group, compensatory equalization of treatment (i.e., providing the control group with extra help), and boycott of the control group. To lessen the threat, the teacher and the researcher kept both classes' identities a secret so that the control class didn't know they were in the control class, and there was another class as the experimental class. This might help prevent participants in the control class from outdoing the treatment class. In addition, students in the control and experimental classes studied in the different departments. Therefore, it is possible that the control class did not know that the experimental class was doing something in the computer lab that they were not. However, to produce an equal learning opportunity, the researcher delivered the training of blog-supported collaborative writing to the students in the control class after completing the data collection. Finally, the researcher also supervised the control class to prevent any extra help given to the control class provided by the course instructor.

Also, the researcher effect and the lack of treatment fidelity can be sources for data distortion. To avoid the two threats, the researcher did not administer the treatment to participants. Instead, the researcher trained the course instructor how to do the experiment. The researcher met with the teacher once a week to ensure that the treatment was administered in the correct manner as defined by the researcher.

Furthermore, if participants are not familiar with the new intervention, their performance can be disrupted due to their unfamiliarity. To avoid the disruption threat (Perry, 2005), there was a training session held before the treatment began. The time for the training session is around 60 minutes. In the training session, participants were instructed how to use blogs, as well as how to write collaboratively.

The final threat is related to the time of measurement effect (Perry, 2005), which is resulted from applying the posttest immediately after the completion of the treatment. Perry suggests that such study, even though it finds the intervention has an effect, may not be able to conclude that treatment has a long-term effect. To control for this effect, the present study conducted the interviews first, and then administered the posttest one week after the treatment.

The threats to the internal validity of the dissertation study were discussed above. These threats were controlled and lessened by the researcher using the above-mentioned strategies. However, there are still some threats that are not able or easy to control. These threats are thought of as the limitations of the study, and are further discussed in the following section.

Limitations

Although the experiment, instruments, and interviews in this dissertation were carefully planned and conducted, the results should be interpreted with caution because of some limitations. First, participants are only two classes of EFL students from a university in Taiwan. The generalization of the findings of the study to other educational contexts is limited.

Second, this study is quasi-experimental in nature. In a pure experimental design, participants would be randomly assigned to the control and experimental groups. However, it is not possible for the present research because the classes had already been in place by the time the researcher conducted the study. The use of quasi-experimental design might influence the findings of the study. Even though the researcher uses some statistical methods which may help avoid the touch of the preexisting difference between groups, the researcher still had no control over the participants' demographic variables or other variables such as their motivation to write. Therefore, the findings of the study should be interpreted with caution.

Third, the individual writing task could be a potential limitation. In the study, participants

needed to write a descriptive essay in the pre-and post writing tasks. However, participants may demonstrate different writing performance if they were asked to write different types of essays such as argumentative or exploratory ones. The collaborative writing task is a potential limitation, too. In the study, participants need to complete five tasks with different topics: Travel, computers, environment, technology, and relationship. Nevertheless, the levels of task difficulty might not be the same. For example, if participants are not familiar with the topic of writing task, the level of task difficulty would increase. Therefore, it may be that the lower gain score is due to the increasing task difficulty rather than the unimproved writing performance.

Fourth, self-reported data from the survey, questionnaire, and interviews are also potential limitations because participants may not be disposed to describe their realities when answering questions on the survey and questionnaire, as well as during the interview. Hence, the validity of the self-reported data should be considered. To help participants feel comfortable when answering questions, the researcher informed participants that all of their answers to the questions on the survey and questionnaire, and their responses during the interview are anonymous.

Fifth, the interpretation of the interview scripts is also a possible limitation. From the perspective of hermeneutics (Patton, 2002), the same text could be read and interpreted in different ways, other people might find themes and draw conclusions that differ from the researcher's when analyzing interview transcripts. To enhance the validity, a person at the similar level of the researcher was invited to evaluate all of the patterns and themes that the researcher identified from the transcripts to prevent influences from analytical biases.

Last but not least, there are still some potential threats to the internal validity to the quasi-experimental study, which are not easy to control, and may affect the results of the study. For instance, there is a loss of participants in either control or experimental classes during the

research study (i.e., subject attrition). In addition, participants may behave differently because they know they are in a research study, not because of the treatment. This is known as Hawthorne effect. Moreover, participants may behave differently while the researcher interviews them due to the presence of the recorder. The presence of the data gatherer can distort the way in which participants behave or think. Furthermore, participants writing collaboratively via blogs may be more motivated to write due to the novelty of using blogs for collaborative writing. In the study, participants in both classes received treatment for around 12 weeks. However, it is not sure if this period of time is long enough to allow the treatment newness to wear off. In previous research on online collaborative writing, the treatment lasted six weeks in Barile and Durso's (2002), Lin's (2009) and Mak and Coniam's (2008) studies. The period of treatment in Greenfield's (2003) and Lee's (2010) studies was 12 and 14 weeks respectively. In Franco's study (2008), participants received treatment for one semester. All of these investigators did not address the issue of novelty effect in their studies. Therefore, it is assumed that the novelty effect might be possible, but would not be a serious threat to the present study.

Due to these limitations, the results of the study need to be interpreted cautiously, and should be suggestive instead of being conclusive.

Conclusion

Most online collaborative writing research is not experimental research. In addition, the efficacy of using blogs as collaborative writing tools and the role of writing anxiety are seldom discussed in this line of research. To focus on these issues, this dissertation research utilized the quasi-experimental design. It compared the writing performance, writing anxiety, and perceptions of the EFL college students engaged in blog-supported and traditional collaborative writing quantitatively. Qualitative investigation was also conducted through semi-structured

interviews to further understand the collaborative writing experience of the students making the largest, medium, and lowest gains.

Regarding the writing performance measured, the present study found that there was no significant difference in collaborative writing performance and the quantity of individual writing between classes. The blog-supported class only significantly performs better than the traditional class in the quality of individual writing. Concerning the writing anxiety measured, the present study found that the writing anxiety of the traditional class is significantly lower than that of the blog-supported class.

Three major factors might help explain why blog-supported collaborative writing only has significant effect on the quality of individual writing. First, the Internet can provide more chances of interaction, but it may not automatically lead to interaction. Although through the Internet students can take advantages of online tools to assist them to write and gain knowledge, the Internet is also a distraction because students play on the Internet instead of focusing on writing and collaborating with members. Second, students are lack of sufficient skills in (1) English, (2) English writing, (3) collaborative writing, and (4) using blogs for language learning purposes. The lack of sufficient skills in these areas may provoke anxiety during writing. It may also cause that students are not very involved in writing and collaborating with members. The first and second factors together result in little interaction among members, and therefore, lead to the use of blogs as individual rather than collaborative writing tools. Third, the collaborative writing tasks are not arranged as a take-home assignment so that the collaborative features of blogs are not fully realized. More synchronous discussions and little asynchronous interaction are found in both classes, which makes no differences between blogs and paper-and-pencil.

As for students' perceptions, the results of the questionnaire showed that the traditional class makes much more positive responses than the blog-supported class, which suggests that

more students in the traditional class perceive their writing performance is enhanced and writing anxiety is decreased than those in the blog-supported class. Therefore, the results of the questionnaire support those of the writing performance and writing anxiety measured. The more positive responses in the traditional class also suggest that traditional collaborative writing seems to be more acceptable than blog-supported collaborative writing for the EFL college students with weaker English ability and little English writing experience.

As for the qualitative results, students' interviews reveal (1) the function of collaborative writing including the improvement of writing performance and the decrease of writing anxiety, (2) the features of the media such as ease of use and interaction, (3) the difficulty they encounter during collaborative writing, (4) the positive and negative factors influencing their motivation to write, and (5) their suggestions for teachers. Students' interviews also reveal that there are some factors that have caused students' different levels of gains, such as peers' help and motivation to continue to write. Particularly in the blog-supported class, the extent of interaction and collaboration, as well as the ability to use blogs and to use blogs for language learning purposes also help explain the different levels of gains.

The qualitative results support the quantitative results. Regarding the improvement of writing, students in the traditional class make more positive and less negative responses than those in the blog-supported class. This interview result is accordance with the statistic and questionnaire results, which are that (1) students in the blog-supported class did not significantly make more improvement in writing than those in the traditional class; (2) more students in the traditional class perceived that their writing performance is enhanced than those in the blog-supported class. As for the decrease of writing anxiety, students in the traditional class make more positive responses than those in the blog-supported class. This interview result is also consistent with the statistic and questionnaire results, which are that (1) the writing anxiety of the

traditional class was significantly lower than that of the blog-supported class; (2) more students

in the traditional class perceived their writing anxiety is decreased than those in the

blog-supported class. In terms of the interactive feature of blogs and paper-and-pencil, students

in the traditional class made more positive responses than those in the blog-supported class. The

negative responses were only made by the blog-supported class. The interview result is in line

with the questionnaire result, which is that students making the positive responses on the

collaborative feature of the paper-and-pencil were more than those on the collaborative feature of

blogs. Finally, concerning motivation, students in the traditional class reporting that they were

willing to continue to write are more than those in the blog-supported class. The interview result

also agrees that of the questionnaire, which is that students in the traditional class made more

positive responses than those in the blog-supported class regarding their motivation.

Based on the quantitative and qualitative results, it is suggested that the CMC technology,

blog, has the possibility to facilitate collaboration and interaction; however, it does not mean that

blog itself can produce collaboration. If there is no or little interaction among group members,

then blogs are used as individual writing tools instead of collaborative writing tools. Furthermore,

if blogs are used as synchronous tools rather than asynchronous tools, many features of blogs

that are thought to facilitate collaboration will not be thoroughly realized. Therefore, the

possibility that blogs can foster collaboration would take place under the condition that it is used

asynchronously as a collaborative tool, and students do collaborate. In other words, the second

hypothesis can be supported under such condition.

Overall, this dissertation study found that, based on statistic results, traditional

collaborative writing seems to be more effective than blog-supported collaborative writing in

decreasing the writing anxiety of the EFL college students with weaker English ability and little

writing experience. Moreover, according to students' perceptions and interview results,

traditional collaborative writing also appears to be more acceptable in this context. Although the statistic results suggest that the effect of blog-supported collaborative writing on writing performance and writing anxiety seems to be limited and little probably due to the use of blogs as individual and synchronous tools, its effectiveness can not be completely denied because students' perceptions and interviews suggest its positive influence and outcome. In addition, the statistic result suggests that students do better on four measures of individual writing quality particularly in the aspects of vocabulary, mechanics, and grammar. In light of this, blog-supported collaborative writing seems to help students with more local issues of writing, but does not seem to influence students' ability to generate and organize ideas. L2 teachers are suggested to provide more training sessions, employ the collaborative writing activity as an out-of-class assignment, and carefully monitor the process of collaborative writing if they do use blogs in L2 writing instruction. Finally, it should be noticed that the findings of the research need to be interpreted cautiously due to the limitations of the study.

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APPENDICES

Appendix A: The Classroom and Lab in the Private University

A Traditional Classrooms in the Private University

A Computer Labs in the Private University

Appendix B: The Syllabus of the English Course

Syllabus

Course Name: English (I)

Time & Day: Wednesday (2:00 PM – 5:00 PM)

Friday (9:00 AM – 12:00 AM)

Student: First-year students

Credit: 3 credits

Instructor: Professor Hu

＊Course Objectives

By the end of the course, you will:

1. be more familiar with and interested in English reading.

2. develop the ability to read in English.

3. be familiar with the English writing process.

3. improve your English writing skills.

＊Textbooks

Required text:

Zhang, S.-J., Hu, R.-J., Zhou, M.-Z., Zhau, Y.-J., Tzeng, S.-F., & Sun, M.-W. (2010). *CSU*

English. Taiwan: All-people Professional AEPT Publishing Company.

Recommended texts:

1. English magazine

2. English Newspaper

＊Course Requirements and Evaluation

1. Mid-term exam (20%)

2. Five collaborative writing tasks (30%) or Individual writing tasks (30%)

3. Final exam (20%)

4. Attendance, preparation for class, participation in class activities (30%)

＊Class Schedule

week	Teaching contents
1	Introduction
2	Topic: Communication Reading & writing instruction
3	Topic: Modern Life Reading & writing instruction
4	Topic: Shopping Reading & writing instruction

5	Topic: Work Reading & writing instruction
6	Mid-term exam
7	**Pre-test writing task** **Pre-test writing anxiety** **Background survey** **The training session**
8	**Topic: Travel** **Reading instruction** **Collaborative writing task 1**
9	**Topic: Travel** **Writing instruction** **Collaborative writing task 1**
10	**Topic: Computers** **Reading instruction** **Collaborative writing task 2**
11	**Topic: Computers** **Writing instruction** **Collaborative writing task 2**
12	**Topic: The environment** **Reading instruction** **Collaborative writing task 3**
13	**Topic: The environment** **Writing instruction** **Collaborative writing task 3**
14	**Topic: Technology** **Reading instruction** **Collaborative writing task 4**
15	**Topic: Technology** **Writing instruction** **Collaborative writing task 4**
16	**Topic: Relationship** **Reading instruction** **Collaborative writing task 5**
17	**Topic: Relationship** **Writing instruction** **Collaborative writing task 5** **Collaborative writing questionnaire**
18	**Final exam** **Post-test writing task** **Post-test writing anxiety** **Interview**

Appendix C: Instruction on Setting up and Using Blogs

Step 1: Create your new blog through the website: https://www.blogger.com/start

(This blog provider is selected because it is free and easy to use.)

Step 2: On this screen, you need to enter the email address that already exists. This email address would be the account for your new blog. Also, enter the password for your new blog. Finally, type in the special characters shown in blue into the word verification box.

Step 3: The next step will ask for you to name your blog. Also, type in some characters in order to get a complete blog address.
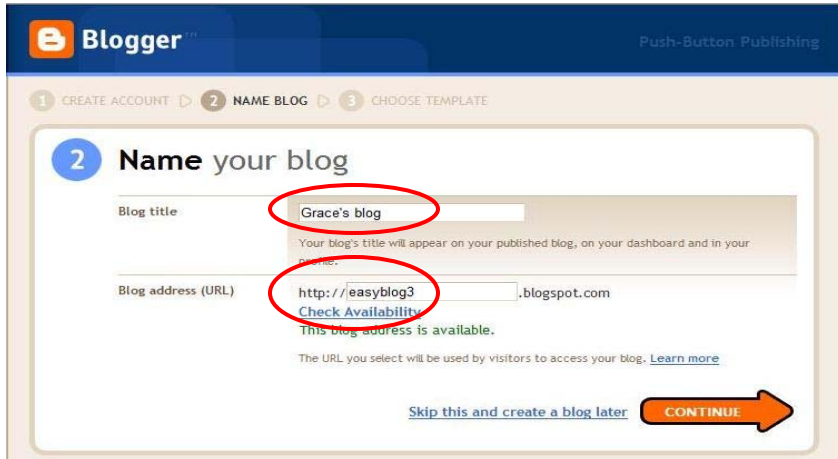
Step 4: In this step, you choose the appearance of your blog. You may choose any template you like. Then, click on "continue".
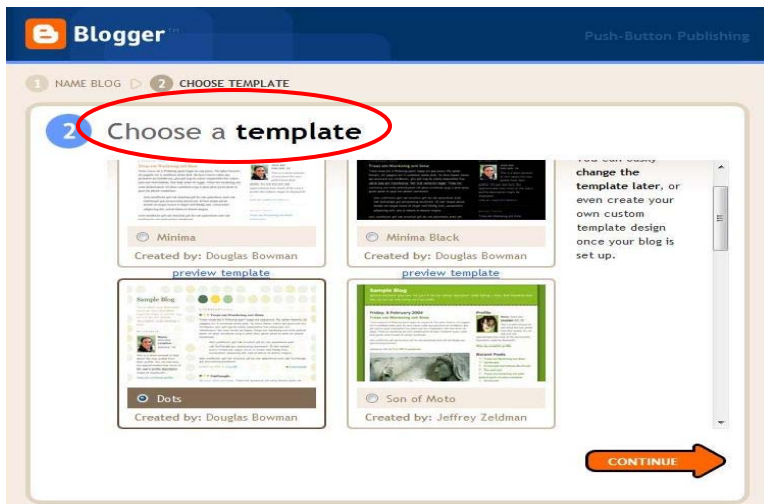
Step 5: This will set up your blog. You will see the message below. Then, you are ready for your first post. Click on the orange arrow to begin posting.
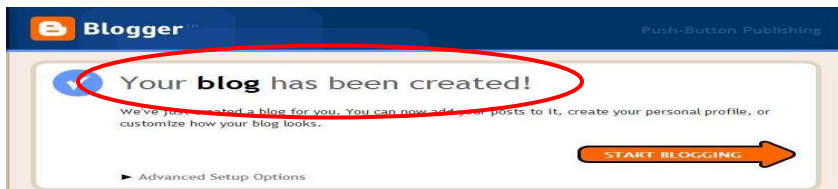
Step 6: Click on the tab marked "settings". You may add description if you wish, but it's not required.
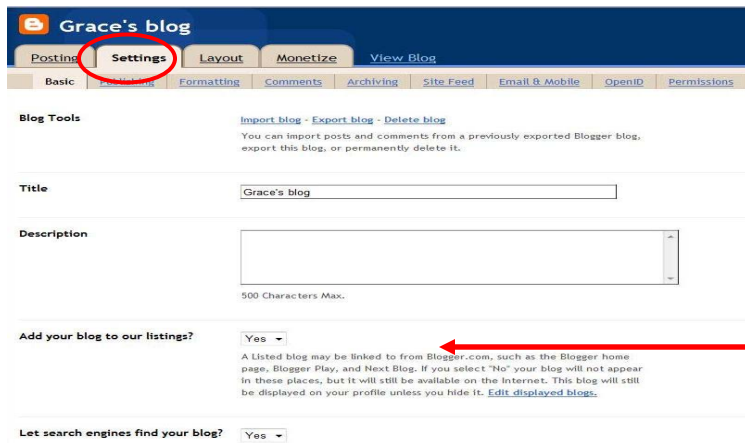
Please select "No" here.

Step 7: Click on the tab "Posting". Enter a title for this post you make. Make it relevant to what your writing is about. For this post, something like "Self-introduction!", "My first post!" or "Welcome to my blog!" would be appropriate. Click on "publish post" when you finish writing your first entry and would like to post it.
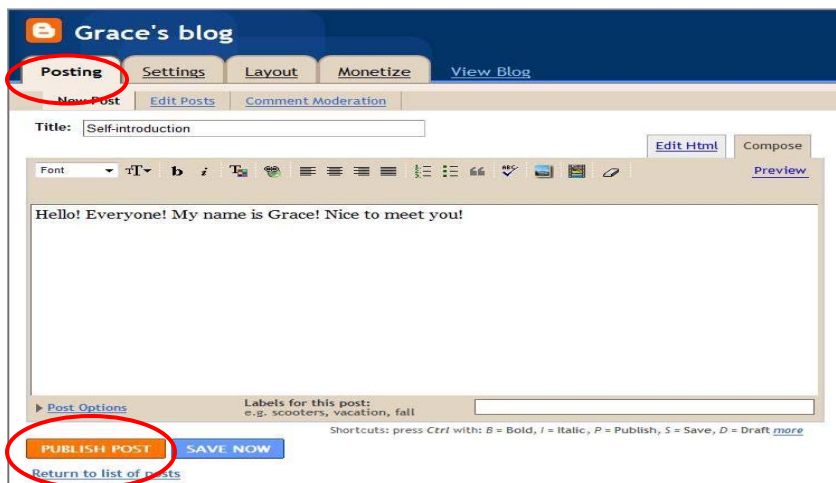
Step 8: This will publish your first entry. You can view the post on your blog by clicking on "view blog".

Step 9: On each blog, there is an opportunity to "comment". If you want to comment on other people's posts, click on "comment". (See the circle in red.)
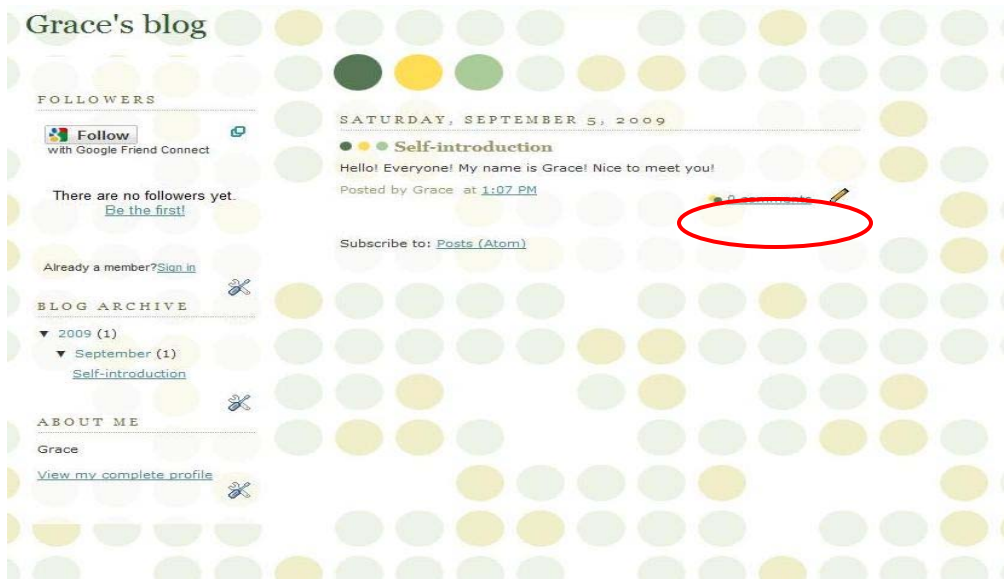
Step 10: You type in your comment in the area under "Post a Comment". Then, click on "post comment".

You can edit your post by clicking it.
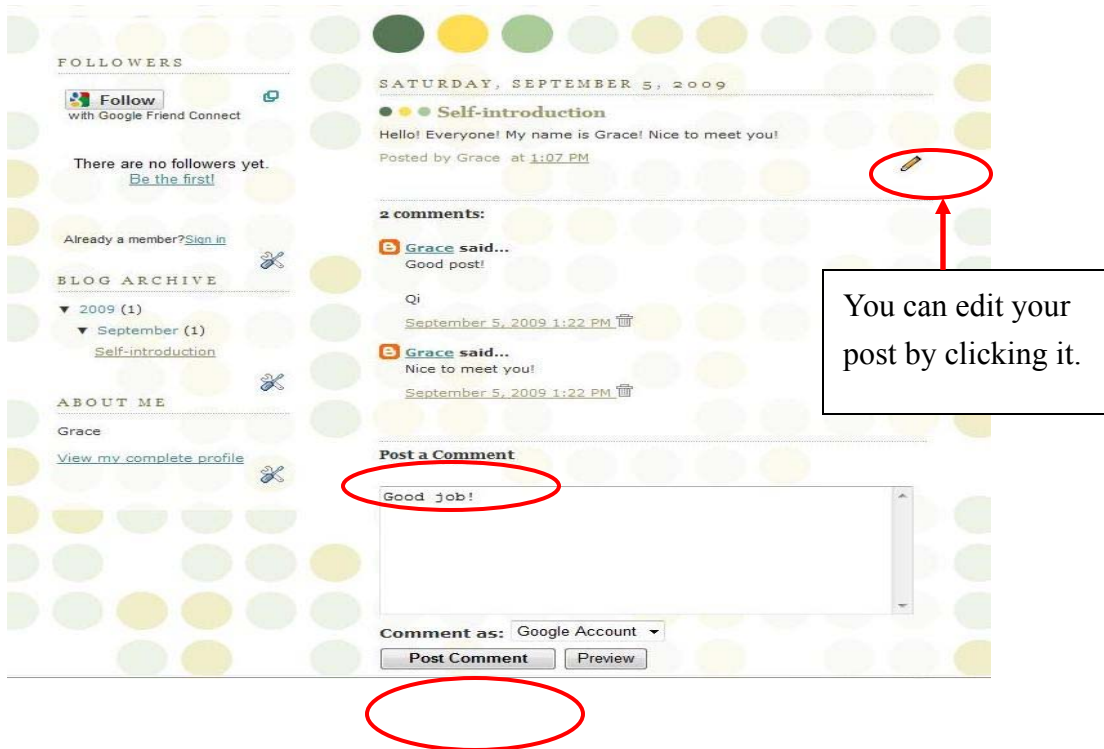
Step 11: If you already logged into your blog, you will be directed to the screen shown in step 12. However, if you didn't log into your blog, you will be directed to the screen shown below. Just enter your blog account and password. Click on "sign in".
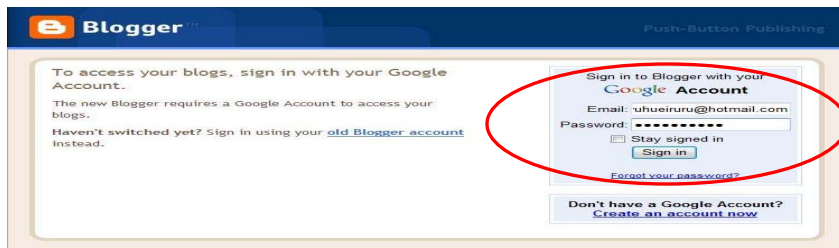
Step 12: On this screen, you can preview the comment. Click on "post comment".

Step 13: Then, you can see your comment is published.
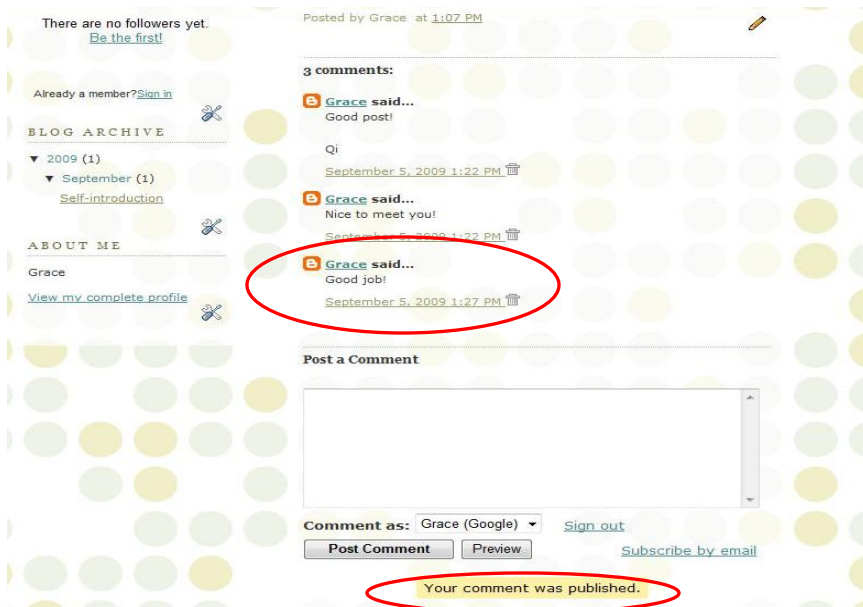
Appendix D: Instruction for Collaborative Writing

＊**Process for the online collaborative writing task**

1. Brainstorming/planning: Members in a group need to brainstorm what you would like to write in your group reflection. You need to post your ideas on your blogs. You are also asked to read each other's ideas, and provide feedback using the function of comment on blogs.

2. Drafting: You, as a group member, begin to write the draft of your reflection based on the ideas you bring up.

3. Revising/ Editing: After the draft is finished, all members need to read through the draft; discuss what to delete from or incorporate in your final product, and discuss where to make improvement including grammar, vocabulary use, organization, spelling, punctuation, etc.

4. Publishing: After all members reach a consensus about the final product, you will initiate a post to publish the final product of your group reflection on your group blog.

5. Evaluation: At the end of the collaborative writing task, each member will be asked to fill out a group evaluation form assessing group members' performance throughout the process of collaborative writing. Therefore, each member's score for each writing task is influenced by the group performance and group evaluation.

＊**The kinds of feedback you should provide**

After reading the sentences that have been written by your member, you can provide feedback about how you feel about your member's ideas. You can also provide feedback about how to revise your member's sentences in terms of (1) the use of subject/verb agreement, spelling, punctuation, cohesive devices, and verb tenses; (2) the completeness of sentences; (3) the creativeness and originality of the sentences. Most important of all, you need to rspect members' ideas and express your thoughts politely. For example, "I think your idea is great. However,…".

＊**The role you should fulfill during the process of collaborative writing**

Each member in a group will be assigned a specific role, and need to fulfill the role.

(1) "Checkers" are responsible for checking the grammar errors that have not been edited by the group members or that have been wrongly identified.

(2) "Cheerleaders" praise the group member who make improvement, and the member who have positive influence on the collaboration and the collaborative product. They encourage group members to make contributions, and ask silent members to participate in group discussion.

(3) "Monitors" are responsible for keeping group members following the right procedures of the collaborative writing task.

＊**Be sure to type your name:** Don't forget to type your name in parenthesis on your group blog every time when you provide feedback, add your sentences and participate in group discussion. For example, "I think that you did not use the right verb tense……" (Grace)

＊**Process for the traditional collaborative writing task:**

1. Brainstorming/planning: Members in a group need to brainstorm what you would like to write in your group reflection. You need to write down your ideas on your group notebook. You are also asked to read each other's ideas, and provide feedback.

2. Drafting: You, as a group member, begin to write the draft of your reflection based on the ideas you bring up.

3. Revising/ Editing: After the draft is finished, all members need to read through the draft; discuss what to delete from or incorporate in your final product, and discuss where to make improvement including grammar, vocabulary use, organization, spelling, punctuation, etc.

4. Publishing: After all members reach a consensus about the final product, you will need to write down the final product of you group reflection in the group notebook.

5. Evaluation: At the end of the collaborative writing task, each member will be asked to fill out a group evaluation form assessing group members' performance throughout the process of collaborative writing. Therefore, each member's score for each writing task is influenced by the group performance and group evaluation.

＊**The kinds of feedback you should provide**

After reading the sentences that have been written by your member, you can provide feedback about how you feel about your member's ideas. You can also provide feedback about how to revise your member's sentences in terms of (1) the use of subject/verb agreement, spelling, punctuation, cohesive devices, and verb tenses; (2) the completeness of sentences; (3) the creativeness and originality of the sentences. Also, you need to rspect members' ideas and express your thoughts politely. For example, "I think your idea is great. However,…".

＊**The role you should fulfill during the process of collaborative writing**

Each member in a group will be assigned a specific role, and need to fulfill the role.

(1) "Checkers" are responsible for checking the grammar errors that have not been edited by the group members or that have been wrongly identified.

(2) "Cheerleaders" praise the group member who make improvement, and the member who have positive influence on the collaboration and the collaborative product. They encourage group members to make contributions, and ask silent members to participate in group discussion.

(3) "Monitors" are responsible for keeping group members following the right procedures of the collaborative writing task.

＊**Be sure to write down your name:** Don't forget to write your name in parenthesis on the notebook every time when you provide feedback, add your sentences and participate in group discussion. For example, "I think that you did not use the right verb tense……" (Grace)

Appendix E: The Sample of Collaborative Writing Prompt

You have learned the article, entitled *Morakot Typhoon*, in the English class. As a group, write an English composition with your group member by following the procedures of brainstorming, drafting, revising, editing, and publishing. The English composition is your reflection on the article. You are encouraged to use the vocabulary, phrases and sentence patterns that you have learned from the article. You will have two weeks to complete your group writing in class and after class. The group writing should contain at least three paragraphs.

Appendix F: Group Evaluation Form

Group number:

Name:

Member 1 name:			
	Weak	Medium	Strong
1. The extent to which the member contributes to our group reflection 這位組員對於完成小組感想的貢獻度	1	2	3
2. The extent to which the member gets along with other member in the group 這位組員和其他組員和睦相處的程度	1	2	3
3. The extent to which the member participates in group discussion 這位組員參與小組討論的程度	1	2	3
4. The extent to which the member delays the completion of our group reflection 這位組員延遲我們完成小組感想的程度	1	2	3
5. The extent to which the member fulfill his/her role 這位組員扮演好他/她的小組角色的程度	1	2	3
Total points:			
Member 2 name:			
	Weak	Medium	Strong
1. The extent to which the member contributes to our group reflection 這位組員對於完成小組感想的貢獻度	1	2	3
2. The extent to which the member gets along with other member in the group 這位組員和其他組員和睦相處的程度	1	2	3
3. The extent to which the member participates in group discussion 這位組員參與小組討論的程度	1	2	3
4. The extent to which the member delays the completion of our group reflection 這位組員延遲我們完成小組感想的程度	1	2	3
5. The extent to which the member fulfill his/her role 這位組員扮演好他/她的小組角色的程度	1	2	3
Total points:			
Member 3 name:			
	Weak	Medium	Strong
1. The extent to which the member contributes to our group reflection 這位組員對於完成小組感想的貢獻度	1	2	3
2. The extent to which the member gets along with other member in the group 這位組員和其他組員和睦相處的程度	1	2	3

3. The extent to which the member participates in group discussion 這位組員參與小組討論的程度	1	2	3
4. The extent to which the member delays the completion of our group reflection　這位組員延遲我們完成小組感想的程度	1	2	3
5. The extent to which the member fulfill his/her role 這位組員扮演好他/她的小組角色的程度	1	2	3
Total points:			

Member 4 name:			
	Weak	Medium	Strong
1. The extent to which the member contributes to our group reflection 這位組員對於完成小組感想的貢獻度	1	2	3
2. The extent to which the member gets along with other member in the group 這位組員和其他組員和睦相處的程度	1	2	3
3. The extent to which the member participates in group discussion 這位組員參與小組討論的程度	1	2	3
4. The extent to which the member delays the completion of our group reflection　這位組員延遲我們完成小組感想的程度	1	2	3
5. The extent to which the member fulfill his/her role 這位組員扮演好他/她的小組角色的程度	1	2	3
Total points:			

Appendix G: Individual Writing Task

Pre-test Writing Task

Name: _____

Read the following instruction and write a composition according to the instruction. You will have 30 minutes to complete the composition with at least three paragraphs and a minimum of 150 words.

"Everyone has a favorite memory from the past. You may recall something that happened to you or even to someone else. It does not matter. Think about your favorite memory, and write about it. Be sure to make your writing about it as detailed as you can."

_____

_____

_____

_____

_____

_____

Post-test Writing Task

Name: _____

Read the following instruction and write a composition according to the instruction. You will have 30 minutes to complete the composition with at least three paragraphs and a minimum of 150 words.

"We all have dreams of what we would like to become in the future. Write about your dream, and describe in detail the person you hope to be in the future. You may write about what you will look like, where you will work, and all the other things. Be sure to make the description of your dream as clear and complete as you can."

_____

_____

_____

_____

_____

_____

＊**The writing tasks are adapted from the writing prompts used in Yaronczyk's study (1989).**

Appendix H: Second Language Writing Anxiety Inventory (SLWAI)

	Items	SD	D	N	A	SA
1	While writing in English, I am not nervous at all.	1	2	3	4	5
2	I feel my heart pounding when I write English compositions under time constraint.	1	2	3	4	5
3	While writing English compositions, I feel worried and uneasy if I know they will be evaluated.	1	2	3	4	5
4	I often choose to write down my thoughts in English.	1	2	3	4	5
5	I usually do my best to avoid writing English compositions.	1	2	3	4	5
6	My mind often goes blank when I start to work on an English composition.	1	2	3	4	5
7	I don't worry that my English compositions are a lot worse than others.	1	2	3	4	5
8	I tremble or perspire when I write English compositions under time pressure.	1	2	3	4	5
9	If my English composition is to be evaluated, I would worry about getting a very poor grade.	1	2	3	4	5
10	I do my best to avoid situations in which I have to write in English.	1	2	3	4	5
11	My thoughts become jumbled when I write English compositions under time constraint.	1	2	3	4	5
12	Unless I have no choice, I would not use English to write compositions.	1	2	3	4	5
13	I often feel panic when I write English compositions under time constraint.	1	2	3	4	5
14	I am afraid that the other students would deride my English composition if they read it.	1	2	3	4	5
15	I freeze up when unexpectedly asked to write English compositions.	1	2	3	4	5
16	I would do my best to excuse myself asked to write English compositions.	1	2	3	4	5
17	I don't worry at all about what other people would think of my English compositions.	1	2	3	4	5
18	I usually seek every possible chance to write English compositions outside of class.	1	2	3	4	5
19	I usually feel my whole body rigid and tense when write English compositions.	1	2	3	4	5
20	I am afraid of my English compositions being chosen as a sample for discussion in class.	1	2	3	4	5
21	I am not afraid at all that my English compositions would be rated	1	2	3	4	5

	as very poor.					
22	Whenever possible, I would use English to write compositions.	1	2	3	4	5

Appendix I: The Chinese version of the SLWAI

<div align="center">英語寫作焦慮調查問卷</div>

說明：在這部份，您會碰到 22 條敘述，這 22 條敘皆述涉及您對**英語寫作**的感受。對這些敘述的回答，沒有對錯之別。我們只是關心您的感受。每一項目皆有五個答案，請依您的直覺反應回答每一條敘述，**並且圈選**符合您所選擇的答案的數字代碼。

從 1 到 22 題，請讀完每一條敘述，然後決定您的同意或不同意程度：

		非常不同意	不同意	中立	同意	非常同意
1	用英文寫作時，我一點也不緊張。	1	2	3	4	5
2	在時間限制下用英文寫作，我會覺得心臟怦怦作響。	1	2	3	4	5
3	寫英文作文時，若知道文章會被評審，我會感到憂懼、不安。	1	2	3	4	5
4	我常常選擇用英文寫下自己對事物的想法。	1	2	3	4	5
5	我常儘可能的避免用英文寫文章。	1	2	3	4	5
6	用英文寫作時，我常一開始會頭腦一片空白。	1	2	3	4	5
7	我不會擔心自己寫出來的英文文章差別人一大截。	1	2	3	4	5
8	在時間壓力下用英文寫作時，我會發抖或冒汗。	1	2	3	4	5
9	英文文章若要被評分時，我會擔心自己拿到很爛的分數。	1	2	3	4	5
10	我儘可能避開一些迫使我非得用英文來寫文章的場合。	1	2	3	4	5
11	在時間限制下用英文寫作，我的思緒會變得非常混亂。	1	2	3	4	5
12	非不得以，我決不用英文寫文章。	1	2	3	4	5
13	在時間壓力下用英文寫作，我常常會驚慌失措。	1	2	3	4	5
14	我擔心同學看到我的英文作文，會嘲笑我寫得很差。	1	2	3	4	5
15	突然被要求用英文寫作時，我會當場僵愣在那兒。	1	2	3	4	5
16	別人請我用英文寫文章時，我會儘可能推拖。	1	2	3	4	5
17	別人對我所寫的英文文章會有什麼看法，我一點也不擔心。	1	2	3	4	5
18	課堂之外，我常會盡量找機會用英文寫文章。	1	2	3	4	5
19	用英文寫作時，我通常會覺得全身緊繃。	1	2	3	4	5
20	我害怕自己的英文作文被拿出來當範例，當眾討論其缺失。	1	2	3	4	5

| 21 | 我一點也不怕自己的英文文章被評得很差。 | 1 | 2 | 3 | 4 | 5 |
| 22 | 一有機會，我就用英文寫文章。 | 1 | 2 | 3 | 4 | 5 |

Items that require reverse scoring: 1, 4, 7, 17, 18, 21, 22
Somatic Anxiety: Items 2, 6, 8, 11, 13, 15, 19
Cognitive Anxiety: 1, 3, 7, 9, 14, 17, 20, 21
Avoidance Behavior: 4, 5, 10, 12, 16, 18, 22

Appendix J: The Permission Letter from Dr. Cheng

From: Yuh-show <t22035@ntnu.edu.tw>
Date: Mon, Jan 17, 2011 at 2:33 PM
Subject: RE: May I have your permission to use the instrument? Thank you, Dr. Cheng.
To: Hui-Ju Wu hnwu@mail.usf.edu

Dear Hui-Ju,

I am happy to grant you the permission to use the SLWAI if you can give appropriate citation. Because you will use it on Taiwanese students, you may need the original Chinese version. Do you want me to send the Chinese version to you?

Best,
Yuh-show

From: Hui-Ju Wu [mailto:hnwu@mail.usf.edu]
Sent: Monday, January 17, 2011 10:49 AM
To: t22035@ntnu.edu.tw
Subject: May I have your permission to use the instrument? Thank you, Dr. Cheng.

Dear Dr. Y.-S. Cheng,

This is a PhD candidate from University of South Florida, USA. My name is Hui-Ju Wu. I am interested in second language writing anxiety, and would like to conduct a study addressing this issue. The instrument from the article, "A measure of second language writing anxiety: Scale development and preliminary validation", published in 2004 and written by you in the Journal of Second Language Writing, fits to the purpose of my study. I am very happy that I read this article and very interested in adopting the instruments to the participants in Taiwan. I was wondering if I could have your permission to use the instrument to my potential participants, Taiwanese college students. For your reference, the topic of my proposed study is "The effect of collaborative writing via blogs versus paper-and-pen on writing performance, writing anxiety, and perceptions of EFL college students in Taiwan ".
Thank you very much for reading my e-mal and your responses will be greatly appreciated.
Sincerely yours,   Hui-Ju Wu

Appendix K: Background Survey

<table>
<tr><td colspan="4" align="center">Both control and experimental classes</td></tr>
<tr><td></td><td align="center">Items</td><td colspan="2" align="center">Response</td></tr>
<tr><td>1</td><td>I feel anxious when I write a composition in English.
寫英文作文時，我會感到焦慮。</td><td>Yes</td><td>No</td></tr>
<tr><td>2</td><td>I like to write a composition in English.
我喜歡寫英文作文。</td><td>Yes</td><td>No</td></tr>
<tr><td>3</td><td>I consider myself to be a good writer in English.
我覺得我是一個好的英文寫作者。</td><td>Yes</td><td>No</td></tr>
<tr><td>4</td><td>I know what collaborative writing is.
我知道「英文合作寫作」是什麼。</td><td>Yes</td><td>No</td></tr>
<tr><td>5</td><td>I have the experience of writing collaboratively.
我曾經有英文合作寫作的經驗。</td><td>Yes</td><td>No</td></tr>
<tr><td>6</td><td>I prefer (1) individual writing or (2) collaborative writing.
我喜歡(1)自己寫英文作文還是(2)和組員一起英文合作寫作。</td><td>(1)</td><td>(2)</td></tr>
<tr><td colspan="4" align="center">Experimental class only</td></tr>
<tr><td>7</td><td>I have the experience of composing using technology.
我有用科技輔助寫英文作文的經驗。</td><td>Yes</td><td>No</td></tr>
<tr><td>8</td><td>I prefer to compose (1) using pen-and-paper or (2) using technology.
我喜歡(1)用紙筆寫英文作文還是(2)用科技輔助寫英文作文。</td><td>(1)</td><td>(2)</td></tr>
<tr><td>9</td><td>I know what online collaborative writing is.
我知道什麼是線上英文合作寫作。</td><td>Yes</td><td>No</td></tr>
<tr><td>10</td><td>I have the experience of online collaborative writing.
我有線上英文合作寫作的經驗。</td><td>Yes</td><td>No</td></tr>
<tr><td>11</td><td>I am interested in online collaborative writing.
我對線上英文合作寫作感興趣。</td><td>Yes</td><td>No</td></tr>
<tr><td>12</td><td>I own a computer. 我有電腦。</td><td>Yes</td><td>No</td></tr>
<tr><td>13</td><td>I have Internet access at home. 我在家可以使用網路。</td><td>Yes</td><td>No</td></tr>
<tr><td>14</td><td>I know what a blog is. 我知道什麼是部落格。</td><td>Yes</td><td>No</td></tr>
<tr><td>15</td><td>I visit blogs often. 我時常參觀別人的部落格。</td><td>Yes</td><td>No</td></tr>
<tr><td>16</td><td>I have a blog. 我有自己的部落格。</td><td>Yes</td><td>No</td></tr>
<tr><td>17</td><td>I know how to use blogs. 我知道如何使用部落格。</td><td>Yes</td><td>No</td></tr>
</table>

Appendix L: Collaborative Writing Questionnaire

Blog-supported Collaborative Writing Questionnaire

【說明】下面的敘述是有關您對使用部落格合作寫作的看法。請在讀完每項敘述後,在每題之後的選項上,圈選和你的看法最接近的選項。如量表所示的「非常不同意」,「不同意」,「中立」,「同意」及「非常同意」。這份問卷並沒有絕對的標準答案,我們純粹是對於您的看法感興趣。謝謝您的協助。

【注意】本問卷的「合作寫作」是指「英文合作寫作」。

	Items	SD	D	N	A	SA
1	在部落格環境裡,我能夠完全地和組員互動。 I can fully interact with group members in the blog environment.	1	2	3	4	5
2	在部落格環境裡,我能夠容易地和組員合作。 I can collaborate with group members easily in the blog environment.					
3	在部落格環境裡,我能夠容易地和組員合作寫作。 I can easily write collaboratively with group members in the blog environment.	1	2	3	4	5
4	在部落格環境裡和組員一起合作寫作,我不會感到孤單。 Writing collaboratively with group members in the blog environment, I do not feel lonely.	1	2	3	4	5
5	在部落格的環境裡和組員一起合作寫作,我得到鼓勵和支持。 Writing collaboratively with group members in the blog environment, I obtain encouragement and support.	1	2	3	4	5
6	在部落格的環境裡和組員一起合作寫作,我覺得很自在。 Writing collaboratively with group members in the blog environment, I feel comfortable.	1	2	3	4	5
7	使用部落格合作寫作,有益於我的英文寫作。 Collaborative writing via blogs is beneficial for my English writing.	1	2	3	4	5
8	使用部落格合作寫作,能幫助我把文章寫得更長。 Collaborative writing via blogs has helped me to write an English composition with more quantity.	1	2	3	4	5
9	使用部落格合作寫作,能幫助我加快寫英文作文的速度。 Collaborative writing via blogs has helped me to write faster in English.	1	2	3	4	5
10	使用部落格合作寫作,能幫助我了解如何把文章修改得更好。	1	2	3	4	5

	Collaborative writing via blogs has helped me to know how to revise my writing better.					
11	使用部落格合作寫作，使我的英文寫作進步了。 Collaborative writing via blogs has helped improve my English writing.	1	2	3	4	5
12	使用部落格合作寫作，使我的英文寫作表達能力更好了。 Collaborative writing via blogs has helped me to express myself in English better.	1	2	3	4	5
13	使用部落格合作寫作，使我比較不害怕英文寫作。 Collaborative writing via blogs has helped me to be less afraid of writing English compositions.	1	2	3	4	5
14	使用部落格合作寫作，使我對英文寫作比較不緊張。 Collaborative writing via blogs has helped to be less nervous about writing English compositions.	1	2	3	4	5
15	使用部落格合作寫作，能增加我英文寫作的動機。 Collaborative writing via blogs has motivated me to writing English compositions.	1	2	3	4	5
16	使用部落格合作寫作，能提升我英文寫作的興趣。 Collaborative writing via blogs has increased my interest in writing English compositions.	1	2	3	4	5
17	使用部落格合作寫作，使我比較喜歡英文寫作。 Collaborative writing via blogs has made me like to write English compositions.	1	2	3	4	5
18	使用部落格合作寫作，使我覺得英文寫作變的有趣。 Collaborative writing via blogs has made me feel that writing English compositions is interesting.	1	2	3	4	5
19	這學期我喜歡用部落格合作寫作。 I enjoyed using blogs for collaborative writing this semester.	1	2	3	4	5
20	這學期結束後，我會繼續用部落格合作寫作來幫助我的英文寫作。 I will keep using blogs for collaborative writing to improve my English writing after this semester.	1	2	3	4	5
21	我會邀請更多朋友一起用部落格寫作。 I will invite my friends to participate in writing collaboratively via blogs.	1	2	3	4	5

22	我希望下學期老師也能讓我們用部落格合作寫作。 I hope the teacher will let us use blogs for collaborative writing next semester.	1	2	3	4	5

Traditional Collaborative Writing Questionnaire

【說明】下面的敘述是有關您對合作寫作的看法。請在讀完每項敘述後，在每題之後的選項上，圈選和你的看法最接近的選項。如量表所示的「非常不同意」，「不同意」，「中立」，「同意」及「非常同意」。這份問卷並沒有絕對的標準答案，我們純粹是對於您的看法感興趣。謝謝您的協助。

	Items	SD	D	N	A	SA
1	用紙筆寫作，使我能夠完全地和組員互動。 I can fully interact with group members using paper-and-pen.	1	2	3	4	5
2	用紙筆寫作，使我能夠容易地和組員合作學習。 I can collaborate with group members easily using paper-and-pen.					
3	用紙筆寫作，使我能夠容易地和組員一起合作寫作。 I can easily write collaboratively with group members using paper-and-pen.	1	2	3	4	5
4	用紙筆和組員一起合作寫作，我不會感到孤單。 Writing collaboratively with group members using paper-and-pen, I do not feel lonely.	1	2	3	4	5
5	用紙筆和組員一起合作寫作，我得到鼓勵和支持。 Writing collaboratively with group members using paper-and-pen, I obtain encouragement and support.	1	2	3	4	5
6	和組員一起用紙筆合作寫作，我覺得很自在。 Writing collaboratively with group members using paper-and-pen, I feel comfortable.	1	2	3	4	5
7	合作寫作，有益於我的英文寫作。 Collaborative writing is beneficial for my English writing.	1	2	3	4	5
8	合作寫作，能幫助我把文章寫得更長。 Collaborative writing has helped me to write an English composition with more quantity.	1	2	3	4	5
9	合作寫作，能幫助我加快寫英文作文的速度。 Collaborative writing has helped me to write faster in English.	1	2	3	4	5
10	合作寫作，能幫助我了解如何把文章修改得更好。 Collaborative writing has helped me to know how to revise my	1	2	3	4	5

	writing better.					
11	合作寫作，使我的英文寫作進步了。 Collaborative writing has helped improve my English writing.	1	2	3	4	5
12	合作寫作，使我的英文寫作表達能力更好了。 Collaborative writing has helped me to express myself in English better.	1	2	3	4	5
13	合作寫作，使我比較不害怕英文寫作。 Collaborative writing has helped me to be less afraid of writing English compositions.	1	2	3	4	5
14	合作寫作，使我對英文寫作比較不緊張。 Collaborative writing has helped to be less nervous about writing English compositions.	1	2	3	4	5
15	合作寫作，能增加我英文寫作的動機。 Collaborative writing has motivated me to writing English compositions.	1	2	3	4	5
16	合作寫作，能提升我英文寫作的興趣。 Collaborative writing has increased my interest in writing English compositions.	1	2	3	4	5
17	合作寫作，使我比較喜歡英文寫作。 Collaborative writing has made me like to write English compositions.	1	2	3	4	5
18	合作寫作，使我覺得英文寫作變的有趣。 Collaborative writing has made me feel that writing English compositions is interesting.	1	2	3	4	5
19	這學期我很喜歡合作寫作。 I enjoyed writing collaboratively this semester.	1	2	3	4	5
20	這學期結束後，我會繼續合作寫作來幫助我的英文寫作。 I will keep writing collaboratively to improve my English writing after this semester.	1	2	3	4	5
21	我會邀請更多朋友一起來合作寫作 I will invite my friends to participate in writing collaboratively.	1	2	3	4	5
22	我希望下學期老師也能讓我們合作寫作 I hope the teacher will let us write collaboratively next semester.	1	2	3	4	5

Appendix M: Interview Permission Form

I, _____ on this date _____ give my permission to conduct an audio interview of me and to use the words in support of the study as explained to me by the researcher. I agree that my words may be edited to be included as parts of a larger audio record but that all efforts should be made to truthfully and accurately portray my comments in the context in which they were given.

Your responses during the interview will be stored in my personal computer and be confidential. The interview will last around 10 minutes on campus. The interview questions will be related to your experience of wiring collaboratively via blogs or via paper-and-pen.

☐ I agree to have my interview be recorded.

_____   _____
　　　　　Signature　　　　　　　　　　　　　　　　　Date

Interview Permission Form (The Chinese version)
錄音訪談同意書

本人_____於民國_____年_____月_____日同意接受錄音訪談。訪談內容授權給研究者使用並剪輯內容所含一切聲音及文字，但是內容必須維持本人員原有意見並且僅限於使用在與該研究相關之範圍。訪談內容將儲存於研究者的個人電腦並保持機密。訪談時間約為十分鐘並且在學校舉行，訪談問題將與您使用部落格合作寫作或是使用紙筆合作寫作的經驗有關。

☐ 本人同意被訪談時錄音

_____   _____
　　　　　簽章　　　　　　　　　　　　　　　　　日期

Appendix N: Interview Questions

Interview Questions for the Experimental Class

1. Is collaborative writing via blogs effective in terms of improving your writing? 你覺得使用部落格合作寫作能有效改進你的寫作嗎?

    (1) If yes, what aspect of collaborative writing via blogs (blogs, collaborative writing, or both of them) helps improve your writing and why? 如果有，你覺得使用部落格合作寫作的哪方面（部落格、合作寫作、兩者皆是）幫助改進你的寫作？為什麼？

    (2) If no, why not? 如果沒有，為什麼？

2. Is collaborative writing via blogs effective in terms of decreasing your writing anxiety? 你覺得使用部落格合作寫作能有效減低你的寫作焦慮嗎？

    (1) If yes, what aspect of collaborative writing via blogs (blogs, collaborative writing, or both of them) helps decrease your writing anxiety and why? 如果有，你覺得使用部落格合作寫作的哪方面（部落格、合作寫作、兩者皆是）幫助減低你的寫作焦慮？為什麼？

    (2) If no, why not? 如果沒有，為什麼？

3. (1) In addition to improve your writing and/or decrease your writing anxiety, what are other advantages of collaborative writing via blogs? 除了改進你的寫作和/或是減低你的寫作焦慮，使用部落格合作寫作還有哪些其他的好處？

    (2) What do you think the advantages of collaborative writing via blogs? 你覺得合作寫作有哪些好處？

4. Are blogs easy to use? If yes, why? If no, why not? 部落格容易使用嗎？為什麼容易使用？為什麼不容易使用？

5. Do blogs help you fully interact and collaborate with group members? If yes, in what way? If no, why not? 部落格能幫助你完全地和組員互動嗎？如果有的話，請說明部落格如何幫助。如果沒有，為什麼？

6. What (other) difficulties have you experienced with throughout the process of collaborative writing via blogs? 在使用部落格合作寫作的過程中，你(還)遭受到哪些(其他的)困難？

7. In general, do you like the blog use in collaborative writing? If yes, why? If no, through which way do you prefer collaborative writing? 整體而言，你喜歡在合作寫作時使用部落格嗎？如果喜歡，為什麼？如果不喜歡，你比較喜歡用什麼方式合作寫作？

8. If you could sum up your experience of collaborative writing via blogs in this class with one adjective word or one sentence, what would you say? 請你用一個形容詞或是一個句子來說明你在這門課裡使用部落格合作寫作的經驗。

9. Will you continue to use blogs for collaborative writing after this class? 這門課結束之後你會繼續使用部落格來合作寫作嗎？

10. What are your suggestions for the teacher if she will have you use blogs for collaborative writing next semester? 如果你的老師在下學期的時候繼續讓你使用部落格來合作寫作，你會提供哪些建議給老師？

<div align="center">

Interview Questions for the Control Class

</div>

1. Is collaborative writing effective in terms of improving your writing? 你覺得合作寫作能有效改進你的寫作嗎?

2. Is collaborative writing effective in terms of decreasing your writing anxiety? 你覺得使用部落格合作寫作能有效減低你的寫作焦慮嗎？

3. (1) In addition to improve your writing and/or decrease your writing anxiety, what are other advantages of collaborative writing? 除了改進你的寫作和/或是減低你的寫作焦慮，使用部落格合作寫作還有哪些其他的好處？

    (2) What do you think the advantages of collaborative writing? 你覺得合作寫作有哪些好處？

4. Does the use of paper-and-pen helps you fully interact and collaborate with group members? If yes, in what way? If no, why not? 紙筆的使用能幫助你完全地和組員互動嗎？如果有的話，請說明如何幫助。如果沒有，為什麼？

5. What (other) difficulties have you experienced with throughout the process of collaborative writing using paper-and-pen? 在合作寫作的過程中，你(還)遭受到哪些(其他的)困難？

6. In general, do you like the use of paper-and-pen in collaborative writing? If yes, why? If no, through which way do you prefer collaborative writing? 整體而言,你喜歡使用紙筆來合作寫作？如果喜歡，為什麼？如果不喜歡，你比較喜歡用什麼方式合作寫作？

7. If you could sum up your experience of collaborative writing in this class with one adjective word or one sentence, what would you say? 請你用一個形容詞或是一個句子來說明你在這門課裡使用部落格合作寫作的經驗。

8. Will you continue to write collaboratively after this class? 這門課結束之後你會繼續合作寫作嗎？

9. What are your suggestions for the teacher if she will have you write collaboratively next semester? 如果你的老師在下學期的時候繼續讓你合作寫作，你會提供哪些建議給老師？

Appendix O: Rating Scale for Traditional Paragraph Writing

Sample Scoring Rubric

	Paragraph Rating Scale
5	The paragraph's main idea directly addresses the topic and is stated clearly and succinctly. The paragraph is logically organized, its coherence marked by explicit transitions. The paragraph contains specific supporting ideas, examples, and explanations explicitly connected to the main idea. Choice of vocabulary is excellent. Grammatical errors are minor and infrequent. Spelling and punctuation are generally accurate.
4	The paragraph's main idea is related to the topic and is reasonably clear. The paragraph shows solid organization and use of coherence markers. The paragraph contains at least two supporting ideas, examples, or explanations clearly related to the paragraph's main idea. Vocabulary use is above average. There may be minor grammatical errors that do not interfere with the main idea. Errors in spelling and punctuation occur but do not distract the reader.
3	The paragraph indicates a main idea related to the topic, but in ways that could be clear and more explicit. The paragraph's organization may lack logic or coherence because connectors and transition signals are not used consistently or effectively. Supporting points may be underdeveloped due to a lack of specificity or examples. The paragraph may also lack an adequate number of supporting ideas. Vocabulary use is average. The paragraph may contain major grammatical errors that compromise its comprehensibility. Spelling and punctuation errors may distract the reader.

2	The paragraph's main idea is only marginally related to the topic or is difficult to identity. The paragraph does not have an obvious organizational structure; coherence is weak because connectors and transition signals are inappropriate or absent. Supporting points are inadequate in number and either unclear or irrelevant. Vocabulary use is weak. Grammatical errors may be numerous and major, to the extent that the text cannot be easily read and understood. Errors in spelling and punctuation consistently distract the reader.
1	The paragraph does not address the topic or lacks a main idea. The text lacks organization and coherent. Attempts at supporting the main idea are ineffective due to inappropriateness or an absence of development; explicit coherence markers are altogether absent. Vocabulary use is extremely weak. Major grammatical errors abound, causing the reader major comprehension difficulties. Spelling and punctuation errors are frequent and highly distracting.

Appendix P: Analytic Writing Rubric for Individual and Collaborative Writing Samples

Score	
	Content
5	The paragraph's main idea directly addresses the topic and is stated clearly and succinctly.
4	The paragraph's main idea is related to the topic and is reasonably clear.
3	The paragraph indicates a main idea related to the topic, but in ways that could be clear and more explicit.
2	The paragraph's main idea is only marginally related to the topic or is difficult to identity.
1	The paragraph does not address the topic or lacks a main idea.
	Cohesion
5	The paragraph is logically organized, its coherence marked by explicit transitions.
4	The paragraph shows solid organization and use of coherence markers.
3	The paragraph's organization may lack logic or coherence because connectors and transition signals are not used consistently or effectively.
2	The paragraph does not have an obvious organizational structure; coherence is weak because connectors and transition signals are inappropriate or absent.
1	The text lacks organization and coherent.
	Coherence
5	The paragraph contains specific supporting ideas, examples, and explanations explicitly connected to the main idea.
4	The paragraph contains at least two supporting ideas, examples, or explanations clearly related to the paragraph's main idea.
3	Supporting points may be underdeveloped due to a lack of specificity or examples. The paragraph may also lack an adequate number of supporting ideas.
2	Supporting points are inadequate in number and either unclear or irrelevant.
1	Attempts at supporting the main idea are ineffective due to inappropriateness or an absence of development; explicit coherence markers are altogether absent.
	Grammar
5	Grammatical errors are minor and infrequent.
4	There may be minor grammatical errors that do not interfere with the main idea.

3	The paragraph may contain major grammatical errors that compromise its comprehensibility.
2	Grammatical errors may be numerous and major, to the extent that the text cannot be easily read and understood.
1	Major grammatical errors abound, causing the reader major comprehension difficulties.
	Vocabulary
5	Choice of vocabulary is excellent.
4	Vocabulary use is above average.
3	Vocabulary use is average.
2	Vocabulary use is weak.
1	Vocabulary use is extremely weak.
	Mechanics
5	Spelling and punctuation are generally accurate.
4	Errors in spelling and punctuation occur but do not distract the reader.
3	Spelling and punctuation errors may distract the reader.
2	Errors in spelling and punctuation consistently distract the reader.
1	Spelling and punctuation errors are frequent and highly distracting.
Total	

Appendix Q: Approval from the IRB (The pilot study)

USF
UNIVERSITY OF SOUTH FLORIDA

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

December 9, 2010

Hui-Ju Wu
Secondary Education

RE: **Expedited Approval** for Initial Review
        IRB#: Pro00002579
        Title: The Effects of Collaborative Writing via Blogs versus Paper-and-pen on Writing
Performance, Writing Anxiety and Perceptions of EFL College Students in Taiwan: Pre-testing of
Instruments

Dear Hui-Ju Wu:

On 12/9/2010   the Institutional Review Board (IRB) reviewed and **APPROVED** the above
referenced protocol**.** Please note that your approval for this study will expire on 12-9-11.

Approved Items:
Protocol Document(s):

dissertation proposal   10/17/2010 9:25 PM   0.01
Consent/Assent Documents:

Name	Modified	Version
Chinese version of the informed consent form.pdf	12/9/2010 11:51 AM	0.01
English version of the informed consent form.pdf	12/9/2010 11:51 AM	0.01

It was the determination of the IRB that your study qualified for expedited review which includes
activities that (1) present no more than minimal risk to human subjects, and (2) involve only

procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note, the informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on the form. Valid consent must be documented on a copy of the most recently IRB-approved consent form.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

John Schinka, PhD, Vice Chairperson
USF Institutional Review Board

Cc: Various Menzel, CCRP
    USF IRB Professional Staff

Appendix R: Consent Form (The pilot study)

Dear students:

I sincerely invite you to participate in my study (eIRB# 2579): The Effects of collaborative writing via blogs versus paper-and-pen on writing performance, writing anxiety and perceptions of EFL college students in Taiwan: A pilot study. My name is Hui-Ju Wu. I am studying for my Ph.D degree in SLA/IT program at the University of South Florida. The purpose for conducting the study is to pretest and validate the instruments that I will use for my doctoral dissertation study. You are invited to participate in my research because you are the college students learning English as a foreign language, and you are learning English writing now. If you participate in the study, you will be one of the 32 participants.

The period of participating in this study would be three weeks. If you agree to participate in the study, I would hope that you complete the second language writing anxiety inventory, a survey and a critique sheet at the first week. In addition, you will also participate in writing collaboratively via blogs in a computer laboratory or via paper-and-pen in a traditional classroom. To complete the collaborative writing task, you will need to collaboratively write a group reflection based on the reading article taught in class. Before you participate in collaborative writing, you will receive instructions on how to write collaboratively. After the collaborative writing, you will need to complete a questionnaire, interview questions, and the critique sheet. During the second week, you will not do anything for this study. At the third week, you will complete a questionnaire.

The information provided through the second language writing anxiety inventory, survey, questionnaire, critique sheet, and interview questions will be used exclusively for research purposes. Thus, your responses are very important for this study. Your responses will not affect your grades because none of the research information will be used to determine course grade. Not participating in the research study will also not affect your course grade as it is not part of the class. In addition, you do not have to answer any question that you do not wish to answer. I don't know if you will get any benefit by taking part in the study. For confidentiality, I must keep your study records as confidential as possible. However, certain people may need to see your study records. The only people who will be allowed to see these records are the United States Department of Health and Human Services, the University of South Florida, and the research

team.

If you have any questions about the right of participants, please contact Professor Rou-Jui Hu by email: K0378@mail.csu.edu.tw. Or, if you have any questions, you may contact the Principal Investigator, Hui-Ju Wu by email: hnwu@mail.usf.edu or by phone: 0972721089. You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research team. You are free to participate in this research or withdraw at any time.

Thank you very much for your time and help!

Signature of Person Taking Part in the Study   Date

Signature of Principal Investigator   Date

Appendix S: **Critique Sheet**

<p align="center">評論單</p>

Part I: Questions in the background survey「施測前調查問卷」的問題

Please check the most correct response for each of the following items: 以下有一道勾選題，請勾選對於完成「施測前調查問卷」之後您覺得最符合您的反應。

1. I complete this survey in 我完成這份問卷：

(　　) Less than 10 minutes 十分鐘之內　　(　　) 10 to 15 minutes 介於十到十五分鐘

(　　) 16 to 20 minutes 十六到二十分鐘　(　　) More than 20 minutes 超過二十分鐘

2. Circle the number of the survey items that you felt were unclear. 請圈選問卷裡任何你覺得不清楚的題目

3. Please enter changes you would make to those items found to be unclear. 對於這些不清楚的題目，請在問卷裡加入你覺得會讓題目更清楚的改變。

Part II: Questions in the collaborative writing questionnaire「教學實驗後調查問卷」問題

Please check the most correct response for each of the following items: 以下有一道勾選題，請勾選對於完成「教學實驗後調查問卷」之後您覺得最符合您的反應。

1. I complete this questionnaire in 我完成這份問卷：

(　　) Less than 10 minutes 十分鐘之內

(　　) 10 to 15 minutes 介於十到十五分鐘

(　　) 16 to 20 minutes 十六到二十分鐘

(　　) More than 20 minutes 超過二十分鐘

2. Circle the number of the items that you felt were unclear. 請圈選問卷裡任何你覺得不清楚的題目

3. Please enter changes you would make to those items found to be unclear. 對於這些不清楚的題目，請在問卷裡加入你覺得會讓題目更清楚的改變。

Part 3: Interview questions「訪談問題」

Please check the most correct response for the following item: 以下有一道勾選題，請勾選對於完成「訪談問題」之後您覺得最符合您的反應。

1. I complete these interview questions in 我完成這些訪談問題：

(　　) Less than 10 minutes 十分鐘之內　(　　) 10 to 15 minutes 介於十到十五分鐘

(　　) 16 to 20 minutes 十六到二十分鐘　(　　) More than 20 minutes 超過二十分鐘

2. Circle the number of the questions that you felt were unclear. 請圈選任何你覺得不清楚的訪談問題 (圈選題號即可)

3. Please enter changes you would make to those questions found to be unclear. 對於這些不清楚的訪談問題，請加入你覺得會讓這些問題更清楚的改變

Appendix T: Approval from the IRB (Dissertation)

USF
UNIVERSITY OF
SOUTH FLORIDA

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

October 20, 2011

Hui-Ju Wu
World Language Education

RE: **Expedited Approval** for Initial Review
       IRB#: Pro00002582
       Title: Is Blog-Mediated Collaborative Writing Effective?
The Effects of Collaborative Writing via Blogs versus Paper-and-pencil on Writing Performance,
Writing Anxiety and Perceptions of EFL College Students in Taiwan

Dear Hui-Ju Wu:

On 10/20/2011 the Institutional Review Board (IRB) reviewed and **APPROVED** the above
referenced protocol**.** Please note that your approval for this study will expire on 10-20-12.

Approved Items:
Protocol Document(s):

dissertation proposal   8/8/2011 5:32 AM   0.03

Consent/Assent Documents:
Name	Modified	Version
informed consent form (Chinese version).pdf	10/20/2011 1:31 PM	0.01
informed consent form (English version).pdf	10/20/2011 1:31 PM	0.01
The taped interview (Chinese version).pdf	10/20/2011 1:31 PM	0.01
The taped interview (English version).pdf	10/20/2011 1:31 PM	0.01

It was the determination of the IRB that your study qualified for expedited review which
includes activities that (1) present no more than minimal risk to human subjects, and (2) involve
only procedures listed in one or more of the categories outlined below. The IRB may review

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research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note, the informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on the form. Valid consent must be documented on a copy of the most recently IRB-approved consent form.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, PhD, Chairperson
USF Institutional Review Board

Cc: Various Menzel, CCRP
    USF IRB Professional Staff