線上協同寫作活動對台灣大學學生英語段落寫作學習之成效

The Effectiveness of Online Collaborative Writing Activities on EFL Freshmen's Paragraph Writing Performance and their Perceptions of Online Collaborative Writing Activities

by

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ABSTRACT

Research on second language writing has underscored the positive influence of collaboration on L2 learning and writing abilities. Earlier studies have found several benefits of computer-supported collaboration on writing performance, but much less work has been done to find out whether online collaboration contributes to the improvement of academic writing in an EFL context. The present study sets out to examine the effectiveness of web-based collaborative writing activity on students' paragraph writing skills. An online word processor – Google Docs, provides advantageous features for collaborative writing such as synchronous group editing, discussion and retrieval of revision history. Therefore, Google Docs is adopted in this study for learners to experience real-time collaboration. The researcher recruited 41 freshmen who are EFL majors in a university in Taiwan. To fulfill the research purpose, individual writing performances before and after the collaborative writing activities were examined. Additionally, to explore learners' perceptions as well as their approaches in writing, two sets of questionnaires, containing both Likert scale items and open-ended questions, were distributed. The results indicated no difference in the students' paragraph writing performance between traditional and web-based collaboration. However, collaborative writing had a positive impact on students' view of

writing, as well as their approaches to writing. The findings imply that compared with traditional individual writing, web-based collaborative writing activities helped raise students' awareness of the writing process more successfully.

Key words: Collaborative Writing, Second Language Writing, Paragraph Writing, Web-based Collaborative Writing, Computer Assisted Language Learning, Process Approach to Writing

線上協同寫作活動對台灣大學學生英語段落寫作教學之成效

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摘要

在第二語言的寫作研究領域中，合作學習對於學生學習第二語言及第二語言寫作能力的提升一直以來都備受重視。早期的研究中發現，電腦輔助的協作學習對於語言能力的提升有正面的成效，然而線上協作學習是否對於第二外語學習者的學術寫作能力有提升的作用，至今尚無多數的研究。本研究計畫將檢視藉由將線上協作學習活動融入英語寫作教學課程後，台灣大學生英語段落寫作能力是否能夠提升。參與本研究的學生將使用 Google 線上文件處理系統作為線上協同寫作活動的媒介。Google 線上文件處理系統包含多種功能有助於協同寫作活動的進行，例如: 學生可使用此系統進行多人即時編輯，並可同時編輯文件及小組討論，另外，文件編輯時，所有的修改過程及討論內容都可以即時儲存於此系統中以供日後瀏覽。本研究招募了 41 位大學外文系一年級生，就讀於台灣中部某大學。為達成研究目的，學生的英語段落寫作能力將藉由紙筆測驗方式進行檢測。在學生開始線上協同寫作學習活動之前與之後各舉行一次寫作能力檢測以檢視此協同寫作活動是否對於學生寫作能力產生正面影響。每位參與研究的學生將同時進行個人寫作測驗，測驗結果將顯示個人在參與協同寫作活動之前與之後是否產生差異。除此之外，為了解學生對於線上協同寫作學習活動的看法及學生寫作時所運用的方法，本研究也設計了相關的問卷調查以供學生作答。問卷格式包含李克特量表及開放式問題兩種，問題內容為學生的寫作習慣、對於寫作的認知及過去關於英語寫作的學習背景。本研究結果顯示傳統獨立學習及線上協同學習在學生英語段落寫作的能力提升上沒有不同的成效。另外，本研究結果也呈現出線上協

同寫作學習對學生在英語寫作的看法及認知上產生了正面影響。

關鍵字： 協同寫作, 第二語言寫作, 段落寫作, 線上協同寫作,
電腦輔助語言學習, 過程寫作

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Chapter 1

INTRODUCTION

Web 2.0 technology's importance rests in part on the application of social networks, which has significantly changed the means of communication between people. Living in this digital world today, people spend a large amount of time reading and writing on electronic devices. Computer mediated communication has become prevalent not only in daily-life interactions but also in workplace and academia. Numerous scholars have advocated the use of computer technology in language teaching to support learning outcomes (Chou & Chen, 2008; Lin & Yang, 2011). Early studies on web-based language education aimed at the applicability of distance learning, which has been proven useful for teachers and students to have real-time interactions in non-classroom settings. Such an advantage has contributed to the rise of technology-driven learning and learner-centered teaching.

In recent years, there has been a change in both the theories on learning and the practice of instruction (Romiszowski & Mason, 2001). Due to the shift from a behaviorist to a constructivist view of learning, educators have begun to place importance on interpersonal involvement during the learning process. Constructivist-based pedagogy encourages learners to construct knowledge within a social context where knowledge is fostered and reinforced through meaningful

interactions within a community of learners (Jones & Brader-Araje, 2002). With the advent of networking technology, collaborative learning is no longer confined to traditional classroom settings. Features of computer mediated communication, such as rapid information sharing, interactions among multiple people and immediate feedback, afford the social presence necessary for collaborative learning. Hence, it has been increasingly essential for instructors to perceive the benefits of using technology to form a student-centered learning environment.

Under the view of collaborative learning, student collaboration during the writing process has been advocated by instructors to promote diverse knowledge and active learning (Lin, 2012; Lunsford, 1992). Student writers read, write, review and revise together, thereby learning that writing is actually an interactive process between the writer and reader. Writing in collaboration liberates students from isolated thinking and exposes them to extensive knowledge as well as diverse perspectives. Through the process of reading, writing, talking and thinking, students develop both syntactic and analytic skills, and become active learners (Lunsford, 1992).

Furthermore, writing in collaboration provides learners with a modern view of writing, which refers to viewing writing as a thinking process during which numerous cognitive operations occur, such as planning and revision. When writing together, students read to a real audience and respond to opinions efficiently (Trent, 1996), which

engages students in the process of organizing ideas and attending to reader awareness. In order to maximize the effectiveness of process-driven writing, collaborative writing activity is often adopted in class since it helps students generate ideas and gain a sense of audience (Hedge, 2000). In other words, collaborative writing facilitates process writing, and process writing provides learners with practice in monitoring and reflecting on their thinking.

When it comes to writing pedagogy, the two most often discussed approaches are process writing and product writing. Writing instructors who adopt a process approach focus more on helping learners to set goals in writing, plan how to put their ideas into words, monitor and evaluate their written works, and also become aware of the purpose of writing. However, previous studies indicate that most L2 writing teachers tend to adopt the product approach in the classroom (Sarhady, 2015). Learners' writings are judged as final products and teacher feedback on writing are concerned with learners' accuracy in writing. Such a traditional view of writing emphasizes the surface-level features rather than the meaning-level knowledge in writing. It is argued that product-driven approaches may fail to help students develop their cognitive skills or ability to generate and organize their ideas (Tangkiengsirisin, 2006). The process approach in writing is rarely adopted in the classroom due to a lack of knowledge about its value or faith in its practicality (Sarhady, 2015). For similar reasons, although

collaborative writing tasks are claimed to be beneficial to students' writing proficiency, they are seldom implemented in ESL or EFL contexts (Storch, 2011; Pae, 2011; Khatib & Meihami, 2015). Given that technology advancement has provided a solution to decrease the difficulty of using collaborative writing activities to teach writing, students may have opportunities to perceive the value in process writing and move from conventional writing to natural writing.

Over the past decade, the emergence of a variety of digital tools, such as blogs, chat rooms, forums and wikis, has made collaborative writing a reality. With the use of cloud computing services, collaborators are even able to enjoy real-time editing and interactions. Among the numerous cloud-based word processors, Google Docs provides writers with all kinds of elements necessary for synchronous collaborative writing (Suwantarathip & Wichadee, 2014).

1.1 Google Docs

Google Docs, one of the representative online word processors, has three essential features that make it applicable for collaborative writing: it is easy to access, it enables real-time writing with synchronous discussions, and it allows multiple users to co-construct the same document (McGaugh, 2009; Kittle & Hicks, 2009; Yim, Warschauer, Zheng & Lawrence, 2014; Suwantarathip & Wichadee, 2014). Google Docs is accessible to the general public at any location with an Internet connection; therefore, students' collaboration is not restricted to the classroom. To work on Google Docs, users may first obtain a Google account and then invite other members to create, share, edit and comment on their documents (McGaugh, 2009). During the editing process, one is able to contribute to the written work and see other members revise the work simultaneously. The revision history of documents is automatically stored in the system, so users may review previous versions with ease. Additionally, the system also contains a chat box for members to have further discussions. These features make Google Docs well-suited for students to share authorship, receive immediate feedback and experience a sense of community. It is suggested that Google Docs be incorporated in the writing classroom to help students develop writing skills through collaborative writing (Suwantarathip & Wichadee, 2014) .

1.2 Statement of the Problem

Web-based word processers have been incorporated in the writing classroom to implement collaborative writing activities. It has been found that online collaborative writing leads to extensive learning, higher learning motivation, better audience awareness and greater fluency in writing (Zhou, Simpson & Domozi, 2012; Wichadee, 2013; Chou & Chen, 2008; Elola & Oskoz, 2010; Suwantarathip & Wichadee, 2014). Despite the advantages, some studies have shown inconsistent results regarding learners' writing performance. For example, some studies, claim that students who participated in collaborative writing scored higher because they were more fluent in writing (Pae, 2011) and had better content selection and organization (Strobl, 2014). Suwantarathip & Wichadee (2014) even found a significant difference in students' overall writing performance before and after they experienced collaborative writing online. On the contrary, other studies have found no growth in students' writing performance after the collaborative writing activity **(**Zhou, Simpson, & Domozi, 2012; Coyle, 2007; Wichadee, 2013; Ansarimoghaddam & Tan, 2013; Elola & Oskoz, 2010). The reason why the findings are inconsistent is probably because previous researchers observed different variables in their studies. Some studies compared group writing with individual writing; however, such findings did not indicate individual growth after the collaborative writing activities. Therefore, it is suggested that rather than group writing

performance, individual writing performance should be compared. While the existing literature indicates that collaborative writing activities do not necessarily improve learners' writing skills, in particular accuracy in writing (Pae, 2011; Strobl, 2014), it is also argued that the number of empirical studies that explore the effectiveness of online collaborative writing is scant (Yim, Warschauer, Zheng & Lawrence, 2014). More comparative research should be conducted with pre- and post-tests to measure whether there is a difference in individual writing performance with and without web-based collaborative writing (Zhou, Simpson & Domozi, 2012).

In addition to the effectiveness of online collaborative writing, previous research has also shown mixed results on learners' perceptions of online collaborative writing. A number of studies have reported positive feedback from students on writing in collaboration via social network. For example, some students believe that online tools successfully motivate them to write together because they enjoy collaborating in a virtual environment that supports efficient interaction and is easy to access (Suwantarathip & Wichadee, 2014; Chou & Chen, 2008; Wichadee, 2013; Zhou, Simpson & Domozi, 2012; Elola & Oskoz, 2010; Yim, Warschauer, Zheng & Lawrence, 2014). Conversely, other learners expressed that unfamiliarity with technology and lack of relevant experience made them withdraw from online collaborative writing (Coyle, 2007; Brodahl, Hadjerrouit, & Hansen, 2011). It is therefore necessary to have proper

instructions of the collaborative writing activity prior to the research and ensure that sufficient time is given to familiarize the participants with the procedure. Personality factors also come into play regarding learners' attitude toward online collaborative writing. For instance, learners found it hard to collaborate because of group members' different writing habits and writing styles (Strobl, 2014). Most of the former research probed into the pros and cons of web-based collaborative writing; however, the present study is novel in that it not only explores learners' perceptions of web-based collaborative writing, but also investigates learners' views and approaches in writing before and after the collaboration.

1.3 Purpose of the Study

The present study aimed to investigate the effectiveness of online collaborative writing on EFL learners' paragraph writing performance. In order to determine whether technology-based collaborative writing has a positive impact on learners' writing ability, collaborative writing activities using a computer-mediated tool - Google Docs, was adopted as the prescribed treatment in the study. Web-based collaborative writing is compared with traditional individual writing in terms of their effectiveness on improving learners' writing. Furthermore, the researcher also delved into learners' perceptions about online collaborative writing and their views of writing before and after the intervention. The findings provided some insight into the impact of

collaborative writing on both the writing skills and approaches to writing exhibited by EFL learners. The research questions are as follows.

1. Is there any significant difference in the participants' paragraph writing performance between those who are engaged in individual writing and those who are engaged in a collaborative writing activity using Google Docs?
2. Is there any significant difference of the writing performance in the collaborative writing group after the collaboration?
3. What are the participants' general perceptions of collaborative writing activities using Google Docs?
4. Is there any significant difference of the participants' views on writing after they are engaged in process writing?

1.4 Definition of Terms

1.41 Collaborative Writing

The collaborative writing activity adopted in the present study refers to more than two learners working together to produce a text. Any group member is allowed to take the initiative in the composing process, but each one shares equal authorship throughout the collaboration. Each writer takes part in the whole process of writing, including planning, drafting and revising. Writers in a group all need to contribute their knowledge and ideas in writing toward the completion of the final text. Through the process of exchanging information and negotiation of new knowledge, all the group members jointly come up with a complete piece of writing.

1.42 Writing Performance

Writing performance in the present study is concerned with students' ability in composing short paragraphs in an academic setting. The participants need to demonstrate their writing skills through responding to writing prompts. Their writing performance is assessed based on an analytic scale designed for rating paragraph writing. Specific criteria such as organization (topic sentence-supporting sentences-concluding sentence), content (development of ideas), style and mechanics are factors used to evaluate the written production.

1.5 Significance of the Study

The present study seeks to provide insights into the impact of online collaborative writing activities on EFL learners' writing ability. By comparing learners' collaborative writing with technology and individual writing, the researcher will explore how real time writing may or may not facilitate learners' writing skills more effectively. It is hoped that the findings can add evidence to the existing body of research and shed some light on L2 writing pedagogy.

Chapter 2

REVIEW OF THE LITERATURE

In an EFL context, writing poses a challenge to learners not only due to the interference of their first language but also their educational background, whereby they learned how to write (Rinnert and Kobayashi, 2009). However, in EFL learning courses and practices, the ability to understand and speak appears to be emphasized over the ability to write. Previous studies have indicated several difficulties in writing encountered by EFL learners, such as not knowing how to generate ideas, lack of coherence in writing, choosing the wrong vocabulary, and awkward writing style because of cultural differences (Seyabi & Tuzlukova, 2014). In pursuit of more effective pedagogical means, collaborative writing strategies have been incorporated in contemporary writing classrooms (Trent, 1996; Chisholm, 1990; Kittle & Hickd, 2009; Mulligan & Garofalo, 2011; Storch, 2011).

Relevant studies are reviewed in two main sections. In the first section, the features and benefits of collaborative learning theory are presented to specify how and why this view of learning could be incorporated in a writing classroom. Furthermore, two approaches to teaching writing (product-oriented versus process-oriented approach) are compared in terms of their differences and pedagogical benefits. The second section reviews the previous studies that probed into the effectiveness of these approaches, as

well as students' perceptions of web-based collaborative writing activities.

2.1 From Collaborative Learning to Collaborative Writing

2.11 Social Constructivism in Learning and Collaborative Learning

Back in the 1950s, when behaviorism was still prevalent in the field of language education, learners were considered as passive recipients of knowledge, and teachers as their only or primary resource of information. It was believed that learning would occur when the correct stimuli were presented. The responsibility of learning was placed on the teachers, who were expected to provide the best reinforcement to form desired student behavior (Jones & Brader-Araje, L, 2002). In contrast to the behavioral view of learning, social constructivists shifted the focus on individual learning to co-constructed knowledge, arguing that learning does not necessarily occur when information is passively received (Wells, 2000). Social constructivists believe that knowledge acquisition is developed through assimilation and appropriation of new and prior knowledge as people interact with others. In light of sociocultural theory proposed by Lev Vygotsky, interaction is viewed as a major force for learning (Sville-Troike, 2008). People construct knowledge through interactions and mediation in the process of being involved in meaningful activities. Vygotsky strongly believes that this interactive nature of learning leads to cognitive development. Unlike behaviorists that regard knowledge as linear and conditioned, social constructivists advocate that the dynamic process of

learning is what matters, and that the product of learning should not be overemphasized (Jones & Brader-Araje, 2002). According to Swain (2000), the essence of sociocultural theory is that meaningful activities in which people participate are the prerequisite for cognitive development in that they provide sources of mental mediation.

Collaborative learning is an instructional strategy that echoes the concept of sociocultural theory. Instructors adopt this teaching technique to maximize students' learning by having them work together in small groups and share the same goal to achieve success. With a collective goal in mind, a group of learners share their prior knowledge, negotiate what has been known and construct what is unknown (Jones & Brader-Araje, 2002; Chang & Simpson, 1997).

Under a collaborative learning condition, people formulate and re-formulate knowledge when involved in a problem-solving situation. During the process of solving a problem, a variety of prior experiences are shared and negotiated; thus, not only is the existing knowledge enhanced but new understanding is also constructed. Through collaboration, a group of learners engage in meaningful dialogues to exchange understanding of a particular problem in order to seek solutions. The meaningful dialogues lead to common understanding of whatever is in question. In order for the collaborative dialogues to proceed, learners activate cognitive functions such as voluntary memory and reasoning, which effectively help to extend and internalize

knowledge (Swain, 2000).

Over the past few decades, collaborative learning has been widely adopted as a pedagogical means, and growing evidence of its positive influence on learning has been found in many disciplines (Inglehart, Narko & Zimmerman, 2003). Foote (2009) points out that teachers' role changes from a presenter or a trainer to a facilitator and an organizer in a collaborative learning environment. Instructors choose or design problem-solving activities based on students' proficiency level and learning objectives to promote collaborative learning. Compared with the traditional teacher-centered classroom, where endless lectures and drills were implemented by teachers to form desired student behaviors and encourage rote learning and passive learning style **(**Jones & Brader-Araje, 2002), collaborative learning benefits students in several ways, including active attention and participation in tasks, increasing motivation in learning, lowering anxiety in learning, and enhancing reflection on, and better retention of, knowledge (Inglehart, Narko & Zimmerman, 2003; Foote, 2009; Liao, 2014). Foote (2009) compiled results from an array of empirical studies that investigated the effectiveness of collaborative learning integrated into various types of courses and concluded that although the learning outcomes might not constantly meet teachers' expectations, it was proved that students improved their critical thinking skills, social skills, and problem-solving skills through collaboration. Learners appreciated this

teaching method because they were more engaged and motivated in learning the subject matter. In another study that implemented collaborative learning in a classroom on legal writing, Inglehart, Narko & Zimmerman (2003) found that the students enhanced their analytical ability, developed a genuine interest in writing, and produced better written work in a collaborative environment. In line with the above two studies, Liao (2014) also found positive effects of collaborative learning on learners' speaking proficiency when comparing its effectiveness with traditional instruction. The results showed that collaborative learning strategy effectively improved students' speaking performance. It was noted that when preparing for speeches collaboratively, students did brainstorming together, received feedback from others, gained opportunities to practice in front of the audience, which isolated learning does not bring about.

Teachers currently take into account the cognitive diversity among students and see the value of peer interactions; therefore, the concept of collaborative learning adopted in teaching is visible in modern classrooms. A number of classrooms in the United States have been arranged for group work or discussions, and spaces such as reading corners and mathematics centers are also designed for learning to occur through collaboration **(**Jones & Brader-Araje, 2002). The positive impact of social constructivism in learning is no longer being neglected. More instructors are introducing collaborative learning in the classroom in order to maximize learning and prepare students for any collaboration

they may encounter as a member of society.

It is noted that language learners in particular benefit from collaborative dialogues because they experience language learning and language use at the same time (Swain, 2000; Lin, 2015). Language input is received when negotiating linguistic knowledge with peers, and language output serves as both an essential element in collaborative dialogues and an accelerator for language development. As proposed in Vygotsky's notion of Zone of Proximal Development, learners' language ability improves through their interactions with instructors or more advanced peers (Saville-Troike, 2006). Nykios & Hashimoto (1997) elaborate that collaborative learning engages language students in meaningful interactions that provoke mutual learning and critical thinking. Less proficient students expand their cognitive development by communicating with more proficient peers, while more capable learners consolidate their learning or discover missing information through helping others. Furthermore, learners also have opportunities to utilize higher order thinking skills in order to analyze or synthesize different points of view gathered during discussions. Therefore, language pedagogy often draws on the importance of collaborative learning.

"Collaborative learning strategies are essential for learning to write well" (Trent, 1996, p. 5). As students collaborate to write, they interact and negotiate meaning. This joint effort of achieving linguistic knowledge goes far beyond individual learning (Elola,

2010). In modern L2 writing classrooms, more teachers and learners are embracing the benefits of collaborative learning. The advantages of collaborative writing are exemplified in the following section.

2.12 Collaborative Writing

Collaborative writing, whose origins is collaborative learning, refers to two or more people jointly producing a document and sharing co-authorship of the text. It can take a variety of forms; according to Haring-Smith (as cited in Kittle & Hicks, 2009), collaborative writing is categorized into three modes: serial writing, compiled writing and co-authored writing. Serial writing involves a group of writers composing their individual sections of a complete paper. In other words, serial writing is more cooperative than collaborative in nature because the writers hardly interact or help one another to compose. Compiled writing literally means a collection of texts that are related to the same theme. This mode of writing requires some extent of collaboration when selecting a theme for the text. Co-authored writing is associated with various writers working toward the same goal in composing a text. Each writer in the group shares equal responsibility for the final text. Collaboration takes place throughout the writing process including planning, drafting and revising; therefore, it might be hard to distinguish one writer’s production from another’s in this type of writing.

From a pedagogical point of view, collaborative writing may have a more positive influence on learners' writing ability compared with isolate writing. Learners have opportunities to exchange experience and expertise during collaboration, which helps to facilitate learning. Through the process of giving ideas and receiving feedback, learners have in-depth discussions about their writing style, content and local aspects of language, and thus can gain extensive knowledge and improvements. Collaborative writing enables learners not only to interact on different point of views but also to receive immediate feedback; this advantage is lacking in individual writing (Storch, 2005). In a study comparing collaborative writing with individual writing, Pae (2011) found that collaboratively produced writing contains more words, fewer errors and more complex grammatical structures.

A growing body of research has shown that learners benefit from collaborative writing in several ways (Storch, 2005), such as better critical thinking and problem-solving skills (Lunsford, 1992), increasing analytical ability and less anxiety in writing (Inglehart & Zimmerman, 2003), exposure to pooled knowledge (Storch, 2005; Siew Fong, 2012; Khatib & Meihami, 2015), higher quality of production (Lunsford, 1992; Storch, 2005; Lin, 2012), excellence in grammar and sentence structure (Mulligan & Garofalo, 2011) and greater awareness of audience (Hedge, 2000; Wai-ching, 2008). Nevertheless, collaborative writing is not without its problems. The four commonly

encountered obstacles during collaboration include: fairness, friction, inexperience and resistance (Chisholm, 1990). Some learners find it frustrating to participate in collaborative writing activities due to unequal contribution in joint work, others may prefer to work alone so that they could avoid conflict with other members, and less proficient writers may feel apprehensive about group writing because they produce little and slowly. To deal with these problems, Chisholm (1990) offers several useful suggestions, as follows. First, instructors may assign an individual grade based on peer assessment in order to encourage genuine collaboration and allow students to evaluate their collaborative process. Second, instructors also need to beware of some psychological factors that may prohibit collaboration, such as fear of critique and apprehension of collaboration due to the lack of prior experience. To diminish potential problems, students should be well-prepared beforehand. For example, instructors may present a guideline that includes detailed steps on how to collaborate and how to offer constructive feedback. Finally, to cope with friction, students may develop some rules or strategies for handling problems they have anticipated at the beginning of collaboration. Collaborative writing however, has been proven beneficial to students' writing competence, and should be executed with clear instructions, fair evaluations and proper support to maximize its effectiveness (Mulligan & Garofalo, 2011).

2.13 *Product versus Process Approach to Writing*

There has been a controversy between two prominent, yet very different approaches to the teaching of writing: the product-oriented approach and the process-oriented approach (Sarhady, 2015). The product approach to writing underscores the final product of composing. This approach largely concerns the form and accuracy in writing, such as grammatical and syntactical structures, rhetorical functions and discourse organizations. Classroom activities regarding product approach include imitating model texts, sentence-level exercises, writing within a certain framework, and analyzing structures of different types of writing. Such an approach may prevent students from developing a personal approach to writing and being creative in writing due to its overemphasis on the correctness of written production (Sarhady, 2015). Furthermore, students who view writing as a product may fail to notice that people write for the purpose of communicating to an audience (Tangkiengsirisin, 2006) because the teacher, who is also an evaluator, may be the only reader they can interact with. On the other hand, process writing focuses on the generative nature of the composing process. Proponents of this approach emphasize that writing requires several phases: idea generating, planning, drafting, reflecting on the produced text, getting feedback from other readers, and redrafting. It is asserted that the writing process is recursive and non-linear. In other words, writers do not go through the writing phases

one after another; instead, they may constantly reflect and revise their writing throughout the composing process until the ideas are clearly expressed and organized. It is through the cognitive process of writing and rewriting that writers discover the way to formulate and convey ideas and thus develop their own writing strategies (Tangkiengsirisin, 2006; Sarhady, 2015).

In a study that observed the writing processes of L2 writers across proficiency levels, Gustilo (2010) found that good writers attach importance to the purpose of writing and awareness of audience while poor writers often struggle over sentence-level accuracy and neglect global aspects of writing. Gustilo (2010) further points out that most L2 writers in the study did not perceive the need to think before they actually compose. Moreover, the participants considered revising to be necessary only at the drafting stage. None of them re-read and refined their writing once it was completed. The researcher revealed that such writing behaviors mirror the learning context of the learners' writing classrooms. Instructors' teaching style and evaluating criteria may determine how students' writing behaviors are formed (Porto, 2001; Gustilo, 2010). The L2 writers experienced timed writing at school, which restrained them from having the chance to practice planning before they began to write. On the other hand, their writing was turned in to the teacher immediately after they finished it, so they had not been allowed to reflect on their ideas or improve the quality of their writing before their

written works were evaluated as final products. Consequently, these L2 writers depreciated the value of pre-writing and revising due to a lack of relevant prior experience in their past learning.

Research has found that learners who adopt a process approach to writing outperform those who adopt a product approach to writing in both higher level skills of generating and arranging ideas and lower level skills of grammar, wording and text structures **(**Sarhady, 2015). These findings indicate that students who view writing as a process are more concerned with the flow of ideas in the text and being understood; therefore, they place a high value on feedback from the teacher or other sources and develop personal approaches to create meaning, which is likely to result in natural writing. In fact, teacher feedback plays a crucial role in process writing. Feedback on writing contributes to students' improved writing skills in that it helps students to become conscious of their language problems by either providing new linguistic knowledge or consolidating existing knowledge (Porto, 2001). In the process-oriented approach, teachers provide feedback on both content and form with more focus on the discovery of meaning, which is different from the product-oriented approach that pursues error-free texts (Tangkiengsirisin, 2006). To increase the effectiveness of feedback on writing proficiency, peer feedback is often implemented in the writing classroom. When responding to a piece of writing in groups, members act as readers

who raise questions, give opinions and offer constructive commentaries that urge each writer to pinpoint ambiguities and consider reader needs (Porto, 2001). Feedback from a number of peers exposes learners to different readers' perspectives and writing strategies so that learners may apply what they gain from peers to revision as well as future writing (Becker, 2006). Regarding the benefit of peer feedback, group writing (i.e. collaborative writing), is often adopted as a technique to encourage process writing (Hedge, 2000). Through collaborating with others to generate ideas, plan, write and revise, novice writers may move beyond a writer-oriented view of writing to a reader-based, process-oriented view of writing.

It is suggested that the product-oriented approach and process-oriented approach are better when appropriately combined so as to manifest different aspects in writing and meet different needs of students (Hedge, 2000; Tangkiengsirisin, 2006; Sarhady, 2015). To help students understand the complexity of writing, teachers may synthesize the process and product approach by having students first focus on meaning and content before dealing with surface-level writing (Porto, 2001). However, the product-oriented approach currently still dominates the writing classrooms (Tangkiengsirisin, 2006; Gustilo, 2010; Sarhady, 2015). Process-driven writing is rarely adopted by instructors due to several implementation difficulties. For example, incorporating group activity into the writing curriculum might be challenging because it is time-consuming to

engage students in collaborative tasks within limited class time (Sarhady, 2015). Additionally, process writing calls for multiple drafts, feedback and revision, which is likely to lead to exhaustion and fatigue for teachers especially when classes are large (Hedge, 2000; Sarhady, 2015).

In recent years, a wide range of research on writing pedagogy has sought for more effective tools to help teachers promote awareness of the writing process without being obstructed by in-class limitations. It was found that online communication tools may serve as a novel medium that allows out-of-class collaboration. What is more, learners no longer rely entirely on teacher feedback since new technologies facilitate peer feedback that helps maximize their learning **(**Suwantarathip & Wichadee, 2014). It is assumed that computer mediated communication (CMC) tools provide a collaborative environment that enables students not only to perceive the value of writing but also to hone their writing skills. The effectiveness of CMC tools on students' writing ability is reviewed in the following section.

2.2 Empirical Studies on Collaborative Writing Activities Using CMC Tools

Computer mediated communication was defined as “any communication patterns mediated through the computer” (Metz, 1992). Recent definitions are based on the social aspects of communication (Romiszowski & Mason, 2001) that highlight the interactions fostered through network technology. Types of CMC include synchronous and asynchronous communication (Romiszowski & Mason, 2001). Synchronous applications of CMC support real-time discussions in a one-to-one or one-to-many setting (i.e. video conferencing, instant messaging, etc.), whereas immediate response is not expected in asynchronous communications (i.e. e-mail, text messages, etc.). Research on writing instruction via CMC tools has become increasingly popular in recent years. Contemporary researchers have shifted their interest in asynchronous communication to synchronous communication due to its advantageous features for collaboration. Web 2.0 technologies allow teachers to enact various types of writing projects and increase the practicality of collaborative pedagogy (Kittle & Hicks, 2009). Consequently, practitioners have been seeking answers to questions about social web technology such as whether it supports teaching effectiveness and positive learning outcomes, how learners perceive it in terms of its usefulness, and the difference between learning with and without it.

2.21 Individual Writing versus CMC-Based Collaborative Writing

Previous studies relevant to the effects of collaborative writing via CMC tools on learners' writing ability have reported several positive results. For example, Kessler, Bikowski, and Boggs (2012) explored the collaborative writing process using Google Docs with thirty-eight Fulbright scholars who were all L2 learners in a pre-academic orientation program at a university. Nine of the participants were randomly chosen and their collaborative texts produced on Google Docs were analyzed in terms of types of contributions. The researchers identified the two types of contribution as Language Related Contributions (LRCs) and Non-Language Related Contributions (NLRCs). LRCs refer to revision activity attending to form, meaning or other language aspects in writing. NLRCs are discussions or changes in formatting or writing style. According to the results, more LRCs were found than NLRCs. In addition, more contributions to meaning than form are made. The researchers pointed out that due to the recursive nature of process-oriented writing, better audience-awareness was raised, which impelled the learners to focus more on text meaning. Although the participants in this study seemed to consider meaning to be more important than language errors, it was found that more accurate changes than inaccurate changes in form were contributed by the writers in collaborative writing throughout the whole writing process. This indicated that collaborative writing might lead to improved accuracy. By observing the NLRCs,

the researchers also found that the learners assisted one another in the planning and revising, which demonstrated the students' attention to the writing process. It suggests that using web-based word-processing tools to implement collaborative writing activity may help learners become autonomous writers.

In order to examine the effectiveness of web-based collaborative writing, other studies compared the difference between individual and collaborative writing performance. For instance, Elola & Oskoz (2010) investigated the effectiveness of using wikis for collaborative writing to enhance L2 learners' writing skills by comparing the differences of students' essay writing performance between their individual work and collaborative work in terms of fluency, complexity and accuracy. The participants, who were eight Spanish majors at a university in the U.S., were asked to write two argumentative essays (one composed individually and the other in pairs).The findings showed that the differences of the learners' writing performance in terms of accuracy, fluency and complexity were not significantly evident between the individual work and collaborative work. However, the study pointed out that the learners tended to take care of global aspects of writing on top of grammar or vocabulary when writing collaboratively. This was possibly because more knowledge sharing and shaping took place during the process of collaborative writing and thus exerted a positive influence on the structure and organization of their writing. However, in two other studies that

employed Google Docs for collaborative writing activities, mixed results were found. Pae (2011), recruited 24 Korean EFL college students, who were asked to perform on essay writing tests both individually and collaboratively. The participants were divided into twelve groups. Half of the groups were assigned to write individually first and collaboratively later, and the other half did the writing activities in the reversed order. They were asked to produce three individual essays and three collaborative essays during a 16-week semester. When writing collaboratively, the participants were asked to write and discuss together on Google Docs. After the writing activities, all the essays were collected for analysis. They indicated no significant difference of the overall writing performance between the individual works and the collaborative works. Nevertheless, the collaborative writing group scored significantly higher in terms of fluency and lexical complexity in their writing due to the pooled knowledge and peer feedback shared during the collaboration. The collaboratively written works contained more words, and therefore more errors were found, which was why they were not significantly more accurate than individually produced works. Similarly, Strobl (2014), showed that there was a significant difference between collaboratively written works and individually written works in terms of fluency and content selection, but not in accuracy, cohesion and coherence. This study was carried out with forty-eight university students who were learning German as a second language. All the participants were

required to do two pieces of synthesis writing (one individually and the other collaboratively) in a counter balanced condition within two weeks. The researcher then compared the text quality of the two types of written works in terms of their fluency, accuracy, complexity, cohesion and coherence. Regarding the content selection and organization, the collaborative works scored significantly higher, which suggested that the in-depth discussions and diverse ideas during the planning stage were beneficial to learners' higher-level thinking and thus resulted in better organized writing (Strobl, 2014). Students appear to instinctively focus on content when involved in a collaborative writing environment (Kessler, 2009), which prevents students from merely attending to the form of writing. The following table shows the differences of the aforementioned studies concerning their research design and findings.

Table 1. *Differences of Research Designs and Findings in Previous Studies*

	Elola & Oskoz (2010)	Pae (2011)	Strobl (2014)
Types of writing	Argumentative essay	Argumentative essay	Synthesis writing
Fluency	Ratio measures	Ratio measures and frequency measures	Total number of words
Accuracy	Ratio measures	Ratio measures and frequency measures	Ratio measures
Complexity	Ratio measures	Ratio measures	Ratio measures
Content selection	X	X	Missing propositions in the text were counted
Cohesion & coherence	X	X	Holistic scoring rubric (scale of 1-5)
Overall writing	X	Analytic scoring guide(100 points total)	Holistic scoring rubric (scale of 1-20)
Comparisons	Individual works vs. collaborative works using Wikis	Individual works vs. collaborative works using Google Docs	Individual works vs. collaborative works using Google Docs
Significant differences found	Fluency Accuracy Complexity	✓ Fluency ✓ Accuracy ✓ Complexity Overall writing	✓ Fluency Accuracy Complexity ✓ Content selection Cohesion & coherence

✓ Significant differences found

Although we may conclude that students are prone to produce higher quality of work regarding the content in writing when collaborating with peers, little is still known about the extent students had improved themselves after participating in collaborative writing activities. In other words, rather than comparing individual written works with collaboratively written works to measure individual gains, more studies that examine students' individual writing performance before and after CMC-based collaboration should be conducted.

2.22 CMC-based Collaborative Writing versus Face-to-Face Collaborative Writing

Among the various types of CMC tools, Wikis and Google Docs are two frequently used web-based tools for collaborative writing (Kittle & Hicks, 2009). They both have features that support shared-authorship, which allows multi-editing, saving and reviewing of the history of revisions, as well as discussions. Google Docs even enables synchronous composing. With the help of web 2.0 technology, collaborative writing is no longer confined to the traditional classroom environment. Owing to the convenience and accessibility of CMC tools, writing instructors may apply online platforms and applications to promote collaboration beyond conventional classroom settings. Meanwhile, this new technique for teaching writing has tackled a question: how is CMC-based collaboration different from face-to-face collaboration? Can the latter one be replaced by the former one or are they complementary to each other?

Relevant studies have been conducted to compare the effectiveness of the two types of collaboration on learners' writing performance (face-to-face versus CMC-based). Previous research has found no significant difference between wiki-based and face-to-face collaborative writing, although most of the findings have indicated a positive impact on the development of students' writing skills (Coyle, 2007; Wichadee, 2013; Ansarimoghaddam & Tan, 2013). Coyle (2007) compared the differences of collaborative learning between a Wiki-based group and a face-to-face group by evaluating the learning outcomes of fifteen university Communication Arts majors. During the study, the participants were randomly assigned to one of the two groups and were required to work together with their members to complete two assignments in which they had to provide a comprehensive document related to their expertise. The results showed no significant difference on the quality of the final products between the two groups; the participants' individual gain remained unexplored.

To understand the extent of each individual's improvement after participating in Wiki-based and face-to-face collaborative writing, other researchers who examined individual performance rather than group performance still found no significant difference between the two types of collaboration. Wichadee (2013) recruited forty undergraduate students who were enrolled in a course targeting English reading and writing skills. The participants were divided into two groups and were asked to

collaboratively finish two pieces of summary writing in different learning settings. One group shared information, wrote and edited their writing via Wiki, and the other group collaborated face-to-face during class time. Pretests and posttests were distributed to measure the summary writing performance between the two groups before and after the collaborative writing activities. The results indicated that although the wiki-based group performed better and also improved more compared to the face-to-face group on summary writing, the writing scores were not significantly different. In line with this study, Ansarimoghaddam (2013) examined ESL learners' essay writing performance after being engaged in Wiki-based and face-to-face collaborative writing activities. All the participants were divided into two groups and received two treatments in a counterbalanced manner. The face-to-face group collaborated during class time while the Wiki-based group continued their collaboration outside class. The results of the pre- and post-experiment essays showed that the Wiki-based group had a higher mean score compared to the face-to-face group, but it was not significantly different. Nevertheless, the researcher specified that students gained more after experiencing Wiki-based group writing.

Compared with Wiki-based collaborative writing studies, research on the comparison of face-to-face and Google Docs-based collaborative writing is relatively sparse (Zhou, Simpson, & Domozi, 2012). Google Docs is an online word processor

that provides a group of writers with a space to write in collaboration. It allows writers to work on the same document synchronously, and see changes emerging as they are being made by different editors, which differs from working on the Wiki interface where two users may overwrite each other's changes when editing at the same time (Kittle & Hicks, 2009). It is believed that Google Docs possesses the collaborative features that help students expand and develop their ideas in writing through numerous revisions (Yim, Warschauer, Zheng & Lawrence, 2014).

Despite the fact that Google Docs provides support in collaborative writing, previous studies on its effectiveness of promoting writing skills have yielded inconsistent findings. For instance, Zhou, Simpson & Domozi (2012) investigated how collaborative writing activities using Google Docs affect students' learning experiences and their writing assignment grades, by dividing the participants into two groups (face-to-face discussion group versus Google Docs discussion group). The participants were required to collaboratively complete two writing assignments, one through face-to-face discussion, and the other through discussion on Google Docs. Although the researcher concluded by suggesting instructors to introduce Google Docs in the writing classroom because it promotes collaborations and maximizes students' learning, the results showed no significant difference in the students' assignment grades between the two groups.

On the contrary, different findings were obtained by Suwantarathip & Wichadee (2014) looking into the effects of two types of collaborative writing activities (Google Docs-based versus face-to-face) on EFL learners' abilities in writing. To examine the effectiveness of online collaboration on the learners' writing proficiency, a pre-test and a post-test were implemented before and after the treatments. The participants were divided into two groups to engage in two different types of collaborative writing activities. One group's members worked together to compose in a face-to-face classroom; another group wrote collaboratively using Google Docs. The results pointed out that the Google Docs-based group exhibited significant difference on their writing performance compared to the conventional group after the activities.

The contrary findings of the aforementioned research indicate that whether collaborative writing via Google Docs leads to better writing proficiency is still a question that remains unanswered.

2.23 Learner Perception of Collaborative Writing via CMC tools

Researchers on learners' perception of CMC-based collaborative writing have reported mixed results. While a growing body of evidence indicates that learners acknowledge the usefulness of CMC tools for fostering collaboration (Suwantarathip & Wichadee, 2014; Chou & Chen, 2008; Wichadee, 2013; Zhou, Simpson & Domozi, 2012; Elola & Oskoz, 2010; Yim, Warschauer, Zheng & Lawrence, 2014), some studies reveal learners' dissatisfaction with the tools (Coyle, 2007; Strobl, 2014; Brodahl, Hadjerrouit, & Hansen, 2011). Suwantarathip & Wichadee (2014) discovered that learners agreed that Google Docs was a useful tool which promotes collaborative learning and helped them improve their writing skills. The participants in the study expressed that Google Docs makes it easier to share and collaborate with their peers regardless of location. The accessibility of the online tool also affords students the ability to efficiently exchange feedback and improve their linguistic errors (Yim, Warschauer, Zheng & Lawrence, 2014). In correspondence with the above studies, Chou & Chen (2008) also found learners believe that the meaningful communication occurred when collaborating on Wiki, resulting in their increased motivation and better learning outcomes. Apart from higher motivation and language improvement, learners also consider that CMC-based collaborative writing helps to polish their content in writing **(**Elola & Oskoz, 2010) and enhance their critical thinking skills **(**Wichadee,

2013; Yim, Warschauer, Zheng & Lawrence, 2014) due to the constant exchanges and negotiating of ideas.

On the other hand, when it comes to a comparison between two types of collaboration (i.e. face-to-face versus CMC-based) or learner preference between writing alone or in collaboration, learners may have different opinions. For example, Strobl (2014) found that most of the participants preferred to write individually partly because of their personal writing habit and partly because different writing styles and working pace of members might decrease the effectiveness of collaboration. As for collaborating with or without CMC-tools, Coyle (2007) found that more learners preferred face-to-face collaboration over the Wiki-based type. Based on the participants' viewpoints, there are both advantages and disadvantages to each type of collaboration. Some participants expressed their preference over the Wiki-based type for its ease of use, and no time and space constraints but they disliked waiting for slow responses when they did not discuss synchronously. Others enjoyed collaborating face-to-face because it was easier to exchange and clarify the ideas than communicating via texts, but sometimes the absence of members or uneven sharing of the work troubled them.

According to Brodahl, Hadjerrouit, & Hansen (2011), factors that influence learners' perception of web-based collaborative writing include gender, age, educational settings, digital competence, and CMC tools. As reported by the investigation, learners

who had higher digital competence or who had experienced similar collaborative conditions, were more positive about using CMC tools for collaborative writing. It is also specified that despite the collaborative elements embedded in the CMC tools, only a small number of the participants were satisfied with the collaboration. Most of the students were demotivated during the collaborative process because of technical problems, and some even claimed that the quality of collaboration was low due to ineffective teamwork. Seemingly, only when issues of technology, pedagogy and learning motivation are taken into account can learners benefit from true collaborative writing (Hadjerrouit, 2012).

Chapter 3

METHODOLOGY

3.1 Participants and the Setting

The present study adopted a quasi-experimental design, recruiting two intact classes of 41 freshmen English majors in a university in Taiwan. The students enrolled in a composition course, which aims to enhance students' skills in paragraph writing, in the first semester of the 2017 academic year. Common rhetorical structures in English composition were demonstrated in class, and students were expected to involve themselves in writing activities and exercises both in and out of class. During the 18-week semester, the class met once a week for two hours. Throughout the semester, the participants learned five different genres of paragraph writing: narrative paragraph, descriptive paragraph (place and people), expository paragraph with examples and expository paragraph with enumerations. Relevant writing conventions were illustrated by the instructor. The participants, who were from two different sections of the same composition course, were randomly assigned to each section. In order to examine the potential differences between traditional writing context (i.e. students learn and practice writing individually without collaboration with peers) and collaborative writing, all the participants are separated into two groups. One section was prepared for a web-based collaborative writing group, and the other for an individual writing group. In the

beginning of the semester, all the participants were required to take a paragraph writing test, which was used as the pre-test in the present study to make sure all the students were at about the same level of English writing proficiency. On the test, the participants had to write two types of paragraphs (a narrative paragraph and an expository paragraph) within 30 minutes. The results from the pre-test in Table 2 show that there was no significant difference between the two classes.

Table 2. *Results of Independent Samples T-test from Pre-test*

Group	**N**	**Mean**	**SD**	**df**	**t**	**p**
Individual Writing Group	21	28.000	5.9833	39	-.572	.571
Collaborative Writing Group	20	29.250	7.9265	35.332		

3.2 Measurements and Variables

In this study, the participants' paragraph writing performance was measured by evaluating their individual writing assignments. An analytic scoring scale was adopted to assess the students' writing. The independent variables were individual writing activities and Google Docs-based collaborative writing activities. The dependent variables were the participants' writing performance as well as their perceptions of the collaborative writing activities using Google Docs. Furthermore, the participants' views of and approaches to writing were also investigated in order to discover whether there was a difference before and after they engaged in online collaborative writing activities.

3.3 Treatment

The experimental group participated in online collaborative writing activities (OCWA) while the control group was engaged in traditional writing contexts, in which the participants went through planning, drafting, and revising individually without collaborating with their peers in the writing process. The OCWA group would used Google Docs as a platform to interact with one another in real time and collaborate with their peers to produce a text. There were twenty participants in the experimental group, and all of them were randomly divided into six groups (four 3-member groups and three 4-member groups). According to the course syllabus, the students would learn to write five types of paragraph throughout the semester. For each type of paragraph, the OCWA group would write on two topics, one collaboratively, and the other individually. The individual writing group would also write on two topics for each type of paragraph, but the two pieces of writing were both written individually. Furthermore, in order to implement process writing in class, both groups needed to do multi-draft writing. After the students turned in their first draft, either collaboratively or individually, the instructor provided feedback on the drafts for the students to revise and turn in draft 2 again. The following table shows the instruction procedures for the CWA groups as well as the individual writing groups.

Table 3. *Instruction Procedures for Google Docs-Based Collaborative Writing Versus Individual Writing*

Collaborative Writing	**Individual Writing**
In-class 1. Lectures on paragraph writing from the instructor 2. Activities & exercises on the textbook 3. 30-minute collaboration for Topic 1 paragraph (Draft 1) (Brainstorming →planning→drafting→editing)	*In-class* 1. Lectures on paragraph writing from the instructor 2. Activities & exercises on the textbook 3. 30-minute individual work for Topic 1 paragraph (Draft 1) (Brainstorming →planning→drafting→editing)
Outside class 1. Collaboration for Topic 1 paragraph (Draft 1+ Draft 2 after receiving feedback) 2. Individual writing assignment for Topic 2 (Draft 1 + Draft 2 after receiving feedback)	*Outside class* 1. Individual work for Topic 1 paragraph (Draft 1 + Draft 2 after receiving feedback) 2. Individual writing assignment for Topic 2 (Draft 1 + Draft 2 after receiving feedback)

In order to familiarize the participants with the operation of Google Docs, the researcher provided some instructions before the participants received the treatment. The students were first introduced to the online word processer, Google Docs, regarding its features. Then the researcher presented a step-by-step tutorial on how to use it as a collaborative platform, including registering a Google account, inviting members to an editing group, saving documents, and using a chat box to interact with members. After the tutoring, extra time was offered for students to practice the usage and ask questions if needed. In addition, the researcher also provided guidelines (see Appendix E) for the OCWA group to assist the students to do collaborative writing.

3.4 Instruments

To answer the research questions, the following instruments were used to collect data: Paragraph Writing Sheet, Perceptions of and Approaches to Writing Questionnaires and Attitudes toward Google Docs-based Writing Activities Questionnaires.

3.41 Paragraph Writing Sheet

All the participants were asked to do two paragraph writing tests on the Paragraph Writing Sheet (see Appendix C) before and after the treatment. On each writing test, they were given thirty minutes to produce two 80-word paragraphs: one was a narrative paragraph and the other was an expository paragraph. The Paragraph Writing Sheet was used as both the pre-test and the post-test. The participants' performance was evaluated based on a 40-point scale scoring rubric (see Appendix D) used for grading paragraphs by the instructor of the composition course. The grading criteria included several essential elements in paragraph writing: a good topic sentence, clear and coherent supporting sentence, appropriate transitions as well as correct mechanics of writing. The researcher evaluated the writing performance based on the criteria because they matched the course objectives: being able to recognize and produce writing that has a main idea and supporting details. In order to increase the inter-rater reliability, two raters evaluated the writing performance. The mean score of the two raters was used as

the final score on the writing sheet.

3.42 Perceptions of and Approaches to Writing Questionnaire (PAWQ)

To determine the learners' perceptions and approaches to writing, a questionnaire (see Appendix A) was delivered before and after the treatment. This survey comprises twenty-eight 4-point Likert-Scale (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree) items and three open-ended questions. There are three sections on the questionnaire. The first section contains seventeen questions, which are designed according to features of product writing and process writing. For example, students who have a process-oriented view of writing may tend to value the process of composing (i.e. brainstorming →planning→drafting→getting feedback→revising.) while those who have a product-oriented view of writing may focus more on the mechanics in writing. The second section, which was filled out only in the pretest, contains eleven questions related to the students' prior learning experiences of writing. For example, students were asked whether their previous writing teachers valued correctness over idea development in their writing and whether they experienced single-draft or multi-draft writing. The results from these questions might indicate how EFL learners in Taiwan are taught to write in secondary schools and to what extent the learning experience in university might affect their perceptions of writing. Finally, the last section contains two

open-ended questions and one ranking question. The participants needed to elaborate on their opinions about the importance of grammatical correctness and the writing process. As for the ranking question, the participants were required to rank the importance of several features in writing, such as content, fluency, logic, drafts and so on. The questionnaire was piloted with 15 non-participant students to test for proper reliability value by using Cronbach's Coefficient Alpha. The reliability value for the items related to product writing was .77 , and the reliability value for items that are related to process writing was .74, which implies that the items have high internal consistency and therefore the questionnaire is reliable.

3.43 Attitudes toward Google Docs-based Writing Activities Questionnaire (AGWAQ)

This questionnaire (see Appendix B) contains twelve 5-point Likert-Scale (1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree) items and one open-ended question. It was adapted from Suwantarathip & Wichadee (2014) because it was designed based on Vygotsky's theory of social constructivism with an emphasis on the role of social interaction in learning and how it may benefit learners. Three of the twelve items were added by the researcher in order to ask the participants more specifically about whether they think that using Google Docs to do collaborative writing helps improve their grammar, content and structure in

writing. In addition, one open-ended question was also added for the participants to express more of their likes and dislikes about using Google Docs to write collaboratively. According to Suwantarathip & Wichadee (2014), the questionnaire was calculated by using Cronbach's Coefficient Alpha. The reliability value was .85, which indicates that the questionnaire is reliable. In order to find out how the participants perceive Google Docs as a tool for collaborative writing, it was distributed only to the Google-Docs based group after the treatment.

3.5 Data Collection Procedures

To collect the desired data, the experiment lasted for 18 weeks. At the beginning stage, all the participants had to fill out the PAWQ before they began their individual writing or collaborative writing. Clear instructions on how to answer the questionnaire were given in case they had any problems with the questions. The whole process took about 15 minutes (five minutes of greetings and instructions on how to fill out the questionnaire, and ten minutes for the participants to respond to the questionnaires.) Then Paragraph Writing Sheet was distributed as the pretest to all the participants. The researcher then collected all the written works and gave a grade (1-40 points) on every writing sheet. Throughout the semester, the participants were separated into two groups. One group worked on all the class assignments and exercises individually, and the other

group utilized Google Docs to write collaboratively. The Google Docs-based group did collaborative writing activities every week and handed in one coconstructed text. At the final stage, the PAWQ was distributed to all the participants again at the end of the semester. For the Google Docs-based group, AGWAQ as well as PAWQ were distributed.

The following table shows how the data were collected during each stage of the experiment.

Table 4. *Data Collection Procedures*

Week	**Event (s)**
1	a. Do Paragraph Writing Sheet in 30 minutes. b. Have all the participants fill out the PAWQ in 15 minutes.
2	Tutorial on using Google Docs to do collaborative writing.
3 -17	*Collaborative group*: a. Do collaborative writing on 5 topics for 5 types of paragraphs using Google Docs. b. Do individual writing on the other 5 topics for 5 types of paragraphs. *Individual group*: a. Do individual writing on 10 topics for 5 types of paragraphs.
18	a. Do Paragraph Writing Sheet in 30 minutes. b. Have the experimental group fill out the AGWAQ in 10 minutes. c. Have all the participants fill out the PAWQ in 15 minutes.

3.6 Data Analysis Procedures

3.61 Independent Samples T-test

This procedure is used to analyze the difference in performance on the Writing Sheet between those engaged in individual writing and those participating in Google Docs-based collaborative writing activities. The data were compared to see whether any significant difference resulted in the writing performance between the two groups. The alpha decision level was set at $\alpha<.05$.

3.62 Paired Samples T-test

To examine whether there are significant differences after the treatment, a paired sample t-test was adopted to examine the data collected from the pretest and the post test. The alpha value is expected to be less than .05.

3.63 Frequency Analysis

To analyze the results of the Likert-scale items on the questionnaires, a frequency analysis was used. As for the results of the open-ended questions, a thematic analysis was performed on the responses so that the results might be presented in a more explicit and organized manner.

The following table shows the research questions of the present study along with the data collection procedures and data analysis procedures.

Table 5. *Research Questions, Data Collection Procedures and Data Analysis Procedures*

Research Questions	**Data Collection**	**Data Analysis**
1. Is there any significant difference in EFL learners' paragraph writing performance between those who are engaged in individual writing and those who are engaged in a collaborative writing activity using Google Docs?	Pre- and Pose-test scores on Paragraph Writing Sheet. The Evaluation is based on an analytic scoring rubric for paragraph writing.	Independent Samples T-test
2. Is there any significant difference of the writing performance before and after the intervention?	Pre- and Pose-test scores on Paragraph Writing Sheet. The Evaluation is based on an analytic scoring rubric for paragraph writing.	Paired Sample T-test
3. What are the EFL learners' general perceptions of collaborative writing activities using Google Docs?	A survey concerning the participants' attitudes toward using Google Docs for collaborative writing (for the experimental group only).	Frequency analysis
4. Is there any significant difference of the EFL learners' view of writing before and after they are engaged in process writing?	A survey concerning the participants' approaches to writing and perceptions of writing.	Paired Sample T-test

Chapter 4

RESULTS AND DISCUSSION

The present study investigated the participants' paragraph writing proficiency by examining their individual paragraphs. Before and after the intervention, the participants were asked to demonstrate their writing ability with two types of paragraph writing: narrative and expository. All the paragraphs were graded by two raters based on an analytical scoring rubric (see Appendix D). The individual paragraphs were evaluated in terms of their topic sentences, the supporting sentences, signals, and grammar. The scores of the four components totaled 40 points. Before analyzing the data from the writing scores, inter-rater reliability was measured by using Intra-class Correlation Coefficient (ICC) to ensure the consistency and extent of agreement between the two raters. The inter-rater reliability results indicated perfect agreement between the two raters on all the scores (ICC= .82; .97; .93; .94). The results of the two raters of the narrative and the expository paragraphs on the pre-test were .82 and .97, respectively. The results of the two raters of the narrative and the expository paragraphs on the post-test were .93 and .94, respectively.

In order to ascertain the homogeneity between the experimental and control groups of participants, the pre-test scores of both groups were compared by using an independent samples t-test. The mean score of the Collaborative Writing class was

higher than that of the Individual Writing Class (29.25; 28.00); however, the result showed t= -.57, df= 39, and p= .57, which indicated that the two classes did not significantly differ (see Table 2). Thus, it can be concluded that the two groups shared the same level of baseline knowledge.

4.1 Results of Research Question 1

The first research question of the present study delves into whether there is a difference in the participants' writing proficiency between the two writing groups after the one-semester writing course. The writing scores from the post-test of the two groups were compared by using an independent samples t-test; the significance level was set at $\alpha < .05$. It is noted that two students from the individual writing group dropped out of the course before the semester ended, and therefore only nineteen participants in the group completed the post-test.

Table 6. *Results of Independent Samples T-test from Post-test*

Group	**N**	**Mean**	**SD**	**df**	**t**	**p**
Narrative Writing						
Individual Writing Class	19	16.47	3.62	37	.40	.69
Collaborative Writing Class	20	16.00	3.70			
Expository Writing						
Individual Writing Class	19	19.66	2.93	37	1.68	.10
Collaborative Writing Class	20	17.80	3.88			

As shown in Table 6, for narrative writing, no significant difference was indicated between the individual writing group (M=16.47, SD=3.62) and the collaborative writing group (M=16.00, SD=3.70); t(37)=.40, p= .69. As for expository writing, although the difference was not statistically significant between the individual writing group (M=19.66, SD=2.93) and the collaborative writing group (M=17.80, SD=3.88); t(37)=1.68, p= .10, the individual writing group surprisingly outperformed the collaborative writing group (M=19.66; 17.80). These results imply that the writing performance of the collaborative writing group did not significantly differ from that of the individual writing group. This finding is consistent with previous research (Zhou, Simpson & Domozi, 2012), showing that Google Docs-based collaborative writing had no significant effect on students' writing ability. It is noted that the previous study examined the participants' learning outcomes by assessing their grades on group assignments, rather than the individual writing performance. Consequently, the results might not have manifested the individual improvement. However, similar results were obtained in the present study, although the individual writing performance was examined. It is assumed that the problems encountered by the participants when interacting on Google Docs for collaborative writing may be one of the factors that contributed to this result. The problems encountered by the participants, which may have led to the negative influence on the effectiveness of the students' learning, are

discussed in the results relevant to the third research question. On the other hand, both groups scored higher on expository paragraphs, and the individual writing group even performed better than the collaborative writing group did. This indicated that for some reason, the participants seemed to be better at expository writing. Further studies might be conducted in the future to explore why and how EFL learners in Taiwan tend to be more proficient (or incompetent) in certain types of writing.

4.2 Results of Research Question 2

In order to answer the second research question, concerning the difference of writing performance in the collaborative writing group after the intervention, a paired sample t-test was conducted to compare the pre- and post-test scores of the collaborative writing group.

Table 7. *Results from Paired-Samples T-test of Two Writing Groups*

Group		**Pre-test (n=39)**	**Post-test (n=39)**	**t**	**p**	**df**
Narrative Writing						
Individual Writing Class	Mean	11.45	16.47	-6.153	.000*	18
	SD	2.13	3.62			
Collaborative Writing Class	Mean	12.43	16.00	-3.20	.005*	19
	SD	3.27	3.70			
Expository Writing						
Individual Writing Class	Mean	11.45	19.92	-11.38	.000*	18
	SD	4.19	2.99			
Collaborative Writing Class	Mean	13.75	17.80	-5.33	.000*	19
	SD	3.93	3.88			

*A significant difference was found.

Table 7 shows the comparison of the pre- and post-test mean scores between the individual writing group and the collaborative writing group. For the collaborative writing group, there was a significant difference between their pre- and post-test scores of both narrative paragraphs (M= 12.43, SD= 3.27; M=16.00, SD=3.70); t(19)= -3.20, p= .005, and expository paragraphs (M=13.75, SD= 3.93; M=17.80, SD= 3.88); t(19)= -5.33, p= .000. For the individual writing group, a significant difference was also found between their pre- and post-test scores of both narrative paragraphs (M=11.45, SD-2.13; M=16.47, SD= 3.62); t(18)= -6.153, p= .000 and expository paragraphs (M=11.45, SD= 4.19; M=19.92, SD=2.99); t(18)= -11.38, p= .000. These results indicated that with or without collaborative writing activities, the participants improved significantly on their paragraph writing proficiency after taking the writing course for one semester. It is suggested that both individual writing and collaborative writing were helpful to the students in regard to the effectiveness of enhancing their writing ability.

4.3 Results of Research Question 3

The third research question investigates the collaborative writing group's perceptions of Google-Docs based collaborative writing, and the results showed that despite some difficulties enountered during the collaboraive process, most of the participants affirmed the advantages of using this online tool to write in collaboration and were satisfied with the learning outcomes.

Table 8. *Results from Attitudes toward Google Docs-Based Collaborative Writing Questionnaire*

Statement	**Mean**	**Percent**
1. I liked to see my peers interact with the content I posted on Google Docs.	3.45	60.00
2. I felt comfortable to see other students edit the content I had posted.	4.25	85.00
3. My group was able to come to a consensus by using Google Docs.	3.85	70.00
4. I learned to exchange information with other students via Google Docs.	4.00	80.00
5. The feedback and editing from peers were useful in improving my writing skill.	4.25	80.00
6. The use of Google Docs promoted knowledge information.	4.00	70.00
7. The use of Google Docs increased interaction with other students.	4.25	80.00
8. The use of Google Docs increased my motivation to study this course.	3.50	50.00
9. The use of Google Docs promoted collaborative learning environment.	4.05	70.00
10. Using Google Docs to write collaboratively improved my grammar in writing.	3.85	65.00
11. Using Google Docs to write collaboratively improved the content of my writing.	4.15	70.00
12. Using Google Docs to write collaboratively improved the structure of my writing.	4.10	75.00
Total	3.98	71.25

Percent: The total percentages of the participants who rated this item as "strongly agree" and "agree".

According to Table 8, the mean score of the participants' general perceptions of collaborative writing via Google Docs shows that their overall attitudes were positive (M= 3.98). About 71% of the students perceived Google Docs as a useful collaborative

writing tool. This finding is similar to those of previous studies (Brodahl, Hadjerrouit & Hansen, 2011; Zhou, Simpson & Domozi, 2012; Suwantarathip & Wichadee, 2014). The most positively rated statement was "I felt comfortable to see other students edit the content I had posted" (M= 4.25), which may imply that the participants accepted the online collaborative writing style. However, when asked whether they liked to see their peers interacting with the content posted on Google Docs in statement number 1, only 60% of the participants responded positively (M= 3.45), which suggests that the interactions among group members did not meet their expectations. On the other hand, statement number 7, "The use of Google Docs increased interaction with other students", was also positively rated by the participants. In order to avoid potential confusion, it is necessary to specify the differentiation between the aforementioned two statements. In statement number 1, the *interaction* with the content posted on Google Docs refers to students' responding and editing to the content posted on Google Docs, while the *interaction* in statement number 7 means the interaction among the students. These results may further indicate that the participants believed that collaborative writing via Google Docs facilitated their relationship with classmates. In other words, the online collaborative writing activities successfully helped connect members in a group and increase their communication; nevertheless, the participants still felt that their collaboration was not as effective as expected.

In fact, according to the results from the open-ended questions, the participants pointed out several problems they encountered when interacting on Google Docs. There were five negative responses and three neutral responses given to statement number 1, which is one of the lower rated statements. Among the five students who did not enjoy the interaction on Google Docs, four expressed that the interaction among members in their groups was weak for the following reasons: they had difficulty meeting online outside class; members were not at the same level of writing ability, and therefore it was hard to increase their interaction; the contribution of each member was not equal; discussing online was sometimes much harder than talking face-to-face when they needed to negotiate or clarify ideas. These findings are partially in line with previous findings (Chisholm, 1990), in which the common obstacles encountered in collaborative writing such as fairness and friction were pointed out. According to the previous finding, the unfair contribution was mainly due to the problem of lack of commitment in collaborative writing projects. This problem might also be one of the reasons for the uneven contribution of the participants in the present study. However, it is discovered in the current study that another reason causing the uneven contribution might be the different level of writing ability among group members. Based on the reports from the minority of the participants, they believed that the collaboration would have been more effective if it the members in a group were at the same level of writing proficiency. As a

result, it can be inferred that frustration may occur when students who are more competent always provide help but fail to receive or mutually exchange knowledge. To successfully implement collaborative writing, instructors must take the students' level of proficiency into consideration when grouping so as to achieve the goal of maximized learning. Future studies may tap into the effect of different ways of grouping for collaborative writing on students' writing performance. As for dealing with uneven participation, explicit rules might be necessary. Although simple guidelines were provided for the collaborative writing activities in the present study (see Appendix E), more rules should have been built for ensuring an effective group process. For instance, assigning roles to each group member may avoid burdening particular members in the group. Possible roles in a collaborative writing group could include drafters, reviewers and editors. A drafter synthesizes the ideas and composes in the first draft, a reviewer checks the idea organization and development, and an editor focuses on the mechanics in writing and formatting. All the members could brainstorm the topic and outline the draft together, and rotate the roles for different drafts or texts. In this way, both individual and group goals are clearly defined and each member is more equally engaged in the writing task. In addition, to ensure effective collaboration, monitoring and evaluating the collaborative process is also vital (Lunsford, 1991). Technology can be very useful as a tool not only for collaborative writing, but also for monitoring the

writing process. Instructors could intervene in the collaborative process in the initial planning stage to keep conversations going or encourage students to provide constructive feedback rather than simple responses (Kittle, & Hicks, 2009). With an online word processor like Google Docs, instructors may monitor the students' interactions simply by joining the "Discussion" page online, and it only takes a click on the computer screen to switch from one group to another. Apart from the monitoring system, peer evaluation could also be included to promote individual accountability in a group. When students know that individual comments and participation will be assessed by their peers, they would probably be more active in demonstrating their abilities and contributing to the group. Further research on the impact of collaborative writing with and without the monitoring and evaluating system on students' learning outcome might also be investigated.

Despite the above challenges, the advantages of Google Docs-based collaborative writing are still evident. As shown in Table 8, the other high mean scores concerned statements 4, 5 and 7 (M=4.00, 4.25, 4.25), indicating that 80% of the participants enjoyed using Google Docs to write in collaboration because of benefits such as exchanging information with peers, receiving peer feedback which helped improve their writing skills, and increased interactions among peers. This result corresponded to the results from the open-ended questions. Seven out of twenty students believed that

Google Docs provided them with an effective way to share opinions and knowledge. Many of them expressed that compared with individual writing experiences, they became more confident in writing with the help of idea sharing and checking with group members. Another seven out of twenty students were positive about peer discussions on Google Docs. Some of them indicated that through discussing and editing the same piece of writing with peers, they learned from each other about the structures and mechanics in writing. They enjoyed collaborating to find and immediately fix problems on Google Docs. In addition to the benefits of learning, the participants also revealed that Google Docs helped facilitate the relationships among classmates and promote collaboration. Six out of twenty students expressed that they became more familiar with their classmates through the writing activities on Google Docs, and had a pleasant time during the problem-solving process.

The statement with the lowest positive rating was “The use of Google Docs increased my motivation to study this course” (M= 3.50). Half of the participants felt that Google Docs did not motivate them to learn in the course despite the advantages of using Google Docs for collaborative writing. Obviously, although the convenience and usefulness of Google Docs were affirmed by the majority of participants, the use of Google Docs did not always result in higher learning motivation. This finding contradicts previous studies which suggest that social technology tools might result in

higher learning motivation (Chou & Chen, 2008; Zhou, Simpson & Domozi, 2012; Suwantarathip & Wichadee, 2014). Course difficulty and challenges of collaborating on Google Docs are probably two of the potential reasons for this result. As mentioned earlier, some of the participants met problems of using Google Docs for collaborative writing, which may have more or less resulted in the decreased motivation in learning this course, since the collaborative writing activities were part of the course curriculum. In addition, course difficulty may also have contributed to the lower learning motivation. The results from the pre- and post-test indicated that although both writing groups improved significantly on their paragraph writing performance after the one-semester writing course, most of the writing scores did not reach an expected standard. On the basis of this situation, it is inferred that the writing course might be challenging to the participants, which may have made them less motivated in learning.

4.4 Results of Research Question 4

In order to discover whether the process approach in teaching writing leads to a difference in the participants' perceptions and approaches in writing, a questionnaire was administered to the participants in both groups before and after the one-semester course. A paired samples t-test was conducted to compare the mean scores of the pre- and post-questionnaire. The results from the individual writing group and collaborative

writing group are shown in Tables 9 and 10, respectively. It is noted that the questionnaire was designed based on the features of the product and process approaches in writing. To investigate whether the participants were prone to adopting the product approach or process approach in writing, the questionnaire items were divided into two groups. Items number one to six and eight described the behavior of a writer who preferred product-oriented approach in writing, whereas items number nine to sixteen described the behavior of a writer who preferred the process-oriented approach in writing. Responses to items number seven and seventeen were simply indicative of the participants' writing preferences, i.e. whether they liked to write alone or with the help of their peers. By comparing the mean scores of each group of items, we would be able to determine whether the process writing course had a significant influence on the students' perceptions and writing behaviors. Furthermore, by observing the results of the questionnaire from the two writing groups (i.e. individual writing group versus collaborative writing group), we would be able to know to what extent the collaborative writing activities affected the students' writing approaches and views.

Table 9. *Comparison of Individual Writing Group's Perceptions and Approaches to Writing Before and After the Process Writing Course*

Statement	***Mean***		***SD***	***t***	***df***	***p***
	Pre	***post***				
1. I am used to reading a model text before I write my own text.	2.83	3.22	.850	-1.941	17	.069
2. Before I hand in my writing assignment, I pay more attention to my grammatical errors than my ideas in writing.	2.67	2.78	1.023	-.461	17	.651
3. I revise my writing only when the teacher asks me to.	2.33	2.50	.985	-.718	17	.483
4. When I read a model text, I will manage to learn the form of writing.	2.94	3.33	.778	-2.122	17	.049*
5. I would like to learn the grammatical form from my teacher before I do my writing assignment.	3.50	3.28	.808	1.166	17	.260
6. I would like to learn cohesive devices from my teacher before I do my writing assignment.	3.44	3.56	.758	-.622	17	.542
7. I like to think and compose by myself.	3.22	2.94	.826	1.426	17	.172
8. I compose right after the ideas appear on my mind.	2.89	2.89	1.283	.000	17	1.000
Total	2.98	3.06				
▲9. I begin my writing with generating my ideas.	2.67	2.94	.958	-1.230	17	.236
▲10. I generate my ideas in writing by drawing a mind map.	1.89	1.89	1.237	.000	17	1.000
▲11. I generate my ideas in writing by writing an outline.	2.50	2.61	1.079	-.437	17	.668
▲12. I need to write several drafts before I hand in my writing assignment.	1.89	1.89	1.188	.000	17	1.000
▲13. I spend more time checking my idea development than my writing errors.	2.50	2.72	.879	-1.074	17	.298
▲14. I prefer multiple-draft writing.	2.00	1.72	1.074	1.097	17	.288
▲15. I think the process of composing helps me develop my ideas in writing.	3.06	3.22	.618	-1.144	17	.269
▲16. I think the process of composing helps me improve my logical thinking.	3.22	3.50	1.018	-1.158	17	.263
▲17. I like to work with peers when composing.	2.56	3.17	1.037	-2.500	17	.023*
Total	2.48	2.63				

**p<.05;* ▲process-oriented writing behavior

According to Table 9, the overall mean scores of items number nine to seventeen from the pre-survey were higher than those from the post-survey, which may indicate that after taking the process-writing course for one semester, the individual writing group's perceptions toward process writing changed slightly. They became more positive about the process approach in writing than they were at the beginning of the semester, although the change was not statistically significant. On the other hand, the mean scores of items number one to eight were higher than those of the process-related items in both pre- and post-survey (M= 2.98 vs. M= 2.48; M= 3.06 vs. M= 2.63), which showed that most of the participants in the individual writing group preferred the product-oriented approach in writing before the course, and that their perceptions had not been significantly influenced after the course. Moreover, the only product-related item that reached a statistical significance was item number four: "When I learn a model text, I manage to learn the form of writing". The results showed that the mean score from the post-test (M= 3.33) was even higher than that of the pre-test (M=2.94); t(17)= -2.122, p=.049, indicating that the students attached great importance to the form of writing. Therefore, we may conclude that to some extent, the participants acknowledged the advantages of the process writing approach; however, most of them would still resort to the product approach when it comes to writing.

Another item that showed a significant difference before and after the course was item number seventeen: “I like to work with peers when composing” (M=2.56; 3.17); t(17)= -2.500, p=.023. This was consistent with the result from item number seven: “I like to think and compose by myself” (M=3.22; 2.94). The results from these two items revealed that the participants in the individual writing group enjoyed working with peers more than writing alone. Although the individual writing group did not participate in collaborative writing, they were engaged in some group writing tasks as in-class activities throughout the semester, such as group discussions for paragraph development and how to adjust a particular text. Apparently, the students found the in-class group activities enjoyable and beneficial. This also imply that the in-class activities used as part of process approach to teaching writing were successful.

Table 10. *Comparison of Collaborative Writing Group's Perceptions and Approaches to Writing Before and After the Process Writing Course*

Statement	***Mean***		***SD***	***t***	***df***	***p***
	Pre	***post***				
1. I am used to reading a model text before I write my own text.	2.90	3.35	1.191	-1.690	19	.107
2. Before I hand in my writing assignment, I pay more attention to my grammatical errors than my ideas in writing.	2.70	2.80	.968	-.462	19	.649
3. I revise my writing only when the teacher asks me to.	2.10	2.95	1.387	-2.741	19	.013*
4. When I read a model text, I will manage to learn the form of writing.	2.85	2.40	1.191	1.690	19	.107
5. I would like to learn the grammatical form from my teacher before I do my writing assignment.	3.40	3.00	.754	2.373	19	.028*
6. I would like to learn cohesive devices from my teacher before I do my writing assignment.	3.40	2.65	.716	4.682	19	.000*
7. I like to think and compose by myself.	2.95	2.05	.788	5.107	19	.000*
8. I compose right after the ideas appear on my mind.	3.05	3.20	.745	-.900	19	.379
Total	2.92	2.80				
▲9. I begin my writing with generating my ideas.	2.80	3.20	.681	-2.629	19	.017*
▲10. I generate my ideas in writing by drawing a mind map.	2.05	2.90	1.226	-3.101	19	.006*
▲11. I generate my ideas in writing by writing an outline.	2.50	2.95	1.099	-1.831	19	.083
▲12. I need to write several drafts before I hand in my writing assignment.	1.60	2.70	.968	-5.082	19	.000*
▲13. I spend more time checking my idea development than my writing errors.	2.85	1.75	1.021	4.819	19	.000*
▲14. I prefer multiple-draft writing.	1.75	2.70	.999	-4.254	19	.000*
▲15. I think the process of composing helps me develop my ideas in writing.	3.20	1.75	.999	6.493	19	.000*
▲16. I think the process of composing helps me improve my logical thinking.	3.20	2.85	1.089	1.437	19	.167
▲17. I like to work with peers when composing.	2.75	2.95	.523	-1.710	19	.104
Total	2.52	2.64				

*p<.05; ▲process-oriented writing behavior

Table 10 shows the collaborative writing group's perceptions and approaches to writing before and after the process writing course. Compared with the results from the individual writing group, more statistically different responses were found in the post-survey. Firstly, after the one-semester process writing course, the overall mean score of product-related items decreased (M=2.92 vs. M=2.80), while the overall mean score of process-related items increased (M=2.52 vs. M=2.64). This result may imply that the participants' perceptions and approaches to writing changed to a certain extent under the influence of the collaborative writing activities using Google Docs.

At the beginning of the writing course, the students seemed to place a higher value on grammatical correctness in writing, which was shown in the results of items number five and six (M=3.40; 3.40). However, the mean scores of these two items in the post-survey decreased (M=3.00; 2.65), and a significant difference was found in items five and six; t(19)= 2.373, p= .028; t(19)= 4.682, p= .000. These results indicate that the participants began to perceive grammatical correctness as a less vital component in writing, perhaps due to the collaborative writing experiences.

Secondly, not only did the participants in the collaborative writing group change their views of writing, but they also began to make adjustments to their prior writing approaches. The pre-survey mean scores of items nine (M= 2.80), ten (M= 2.05), twelve (M= 1.60), and fourteen (M= 1.75) all increased in the post-test (M=3.20;

2.90; 2.70; 2.70), and the differences were all statistically significant; t(19)= -2.629, p= .017; t(19)= -3.101, p= .006; t(19)= -5.082, p= .000; t(19)= -4.254, p= .000. These results indicate that collaborative writing activities may help change the participants' writing habits. For instance, after participating in Google Docs-based collaborative writing, more participants began their writing with idea generating. This was probably influenced by their collaborative writing experiences because the students always began their collaborative writing activities with discussions on idea development. Moreover, the increased mean scores of items ten, eleven and twelve all indicated that after the collaborative writing activities, the participants began to develop process-oriented writing strategies such as generating ideas by drawing a mind map or writing an outline and writing multiple drafts. A similar result was found in item seven: "I like to think and compose by myself". The mean score of this item significantly decreased in the post-survey (M=2.95 vs. M=2.05); t(19)= 5.107, p= .000, which may prove that due to Google-Docs-based collaborative writing, the students began to move away from traditional product-writing approach to a more process-oriented approach in writing.

In addition, there was also a significant difference in the mean scores of item fourteen between the pre-survey (M= 1.75) and post-survey (M- 2.70); t(19)= -4.254, p= .000. This result indicates that multi-draft writing became preferable for the participants after the collaborative writing activities. In contrast, the individual writing

group did not find multi-draft writing enjoyable despite the fact that both groups were required to produce multiple drafts. Even though the same teaching method was adopted in both groups, the mean score of item fourteen from the collaborative writing group significantly increased, whereas the mean score from the individual writing group decreased (see Table 9). It could be assumed that the collaborative writing group appreciated the collaborative writing process, whereby they helped each other review, revise and refine their written works, and thus they found it enjoyable to do multi-draft writing.

Lastly, the other responses that showed significant difference between the pre-survey and post-survey were elicited by items thirteen and fifteen. Interestingly, the mean score of item thirteen decreased significantly in the post-survey ($M= 2.85; 1.75$), $t(19)= 4.819$, $p= .000$. This result shows that the students did not spend more time checking idea development than the writing errors, which means that most students still put more emphasis on their grammatical correctness than their ideas in writing even though they were involved in process writing and collaborative writing activities for one semester. This finding is not consistent with the previous study which indicated that students tended to focus more on meaning than on form after experiencing collaborative writing (Kessler, Bikowski, & Boggs, 2012). A possible explanation for this result is that the participants in the current study tended to devote particular care to correctness

in language. In fact, according to the responses from the open-ended questions, most participants regarded grammatical correctness in writing as an essential element. This view did not change at all after becoming familiar with process-writing approach (see Table 11). Most students in both groups believed that a clearly-written text is based on a high level of grammatical accuracy, and very few of them considered accurate grammar to be less important than process in writing. The following are some excerpts from the participants' responses to the open-ended question that asked whether they think grammatical correctness is important.

> *"Yes, because of the wrong grammar, the reader would misunderstand my real ideas."*
>
> *"Yes, I think it's important to have clear grammatical concept since it can make my readers totally understand what I mentioned."*
>
> *"Yes, if we make some grammatical mistakes, readers may misunderstand what we want to express."*
>
> *"Yes. Or maybe the readers cannot understand what I want to say and it, to some extent, shows that the writer is serious about his or her writing, showing his or her respects to readers."*
>
> *"Yes, I think it's important because it helps readers read fluently."*

Table 11. *Comparisons of Two Writing Groups' Perceptions of Grammar and Process in Writing between Pre- and Post-Survey (Responses to Open-Ended Questions)*

	Pre-Survey (N=39)		***Post-Survey (N=39)***	
	IW	CW	IW	CW
Grammar in Writing				
Important	19	20	19	20
Not Important	0	0	0	0
Process in Writing				
Important	18	18	17	19
Not Important	1	2	2	1

IW: individual writing group CW: collaborative writing group

Evidently, for the students, being proficient at mechanics in writing never ceased to be their goal. However, although the participants held that grammatical accuracy is a gatekeeper to successful writing, they also attached importance to the writing process. As can be seen in Table 11, eighteen out of nineteen participants in the individual writing group considered the writing process to be important in the pre-survey, while in the post-survey, the number dropped to seventeen. As for the collaborative writing group, eighteen out of twenty participants considered the writing process to be important in the pre-survey, and the number rose to nineteen in the post-survey. Despite the little difference in the number of participants who changed their perceptions between the two writing groups, it could be inferred that collaborative writing activities using Google Docs might have helped promote the students' awareness of the process approach in writing.

Table 12. *Comparisons of Two Writing Groups' Perceptions of Process in Writing between Pre- and Post-Survey (Responses to Open-Ended Questions)*

Reasons why process in writing is important		
	Individual Writing Group	***Collaborative Writing Group***
Pre-Survey Responses	● Process in writing helps me think logically. ● Process in writing helps me organize ideas. ● Process in writing is a basic need.	● Process in writing helps me think logically. ● Process in writing enhances my critical thinking ability. ● Process in writing helps increase fluency in writing. ● Process in writing helps increase coherence in writing.
Post-Survey Responses	● Process in writing helps clarify my ideas ● Process in writing helps me write better. ● Process in writing helps me generate ideas. ● Process in writing helps increase coherence in writing.	● Process in writing helps me think logically. ● Process in writing enhances my critical thinking ability. ● Process in writing enables me to improve my writing by receiving feedback from peers. ● Process in writing helps me clarify my ideas. ● Process in writing helps me organize ideas. ● Process in writing helps me write better.

After the one-semester process writing course, the participants in both groups appeared to have gained a deeper understanding of the process writing approach, which was shown in the results from the second open-ended question. Table 12 presents the themes of the participants' responses to the question that asked whether they considered the process in writing to be important. The majority of the participants agreed that the process in writing was important and provided reasons as well. In order to show the differences between pre- and post-survey, the reasons listed by the participants were categorized according to various themes. According to Table 12, compared with the responses in pre-survey, more reasons for the importance of the process in writing were listed in the post-survey. Both writing groups shared similar results. Furthermore, the participants from both writing groups provided more detailed and concrete examples to show why they regarded the process in writing as essential. This result indicates that the participants might have had a vague impression of the process in writing at the beginning of the semester, and thus they were unable to provide clear explanations to support their opinions. Nevertheless, in the post-survey, they provided more examples to manifest the value or usefulness of the writing process. Consequently, it may be concluded that after experiencing process writing, they became more certain about the writing process and might have strengthened their belief in the process approach in writing.

Chapter 5

CONCLUSION

5.1 Summary of the Study

The present study was conducted to investigate the effectiveness of on-line collaborative writing activities via Google-Docs on EFL freshmen's paragraph writing proficiency. A quasi-experimental design was adopted to observe the possible benefits or pitfalls of web-based collaborative writing, compared with an individual writing condition.

5.2 Summary of Findings

Several findings and implications were obtained after the results from pre- and post-tests and surveys were compared. First, the increased writing scores in the post-test indicate that both the individual writing group and the collaborative writing group improved significantly after experiencing the process approach to writing for one semester. Nonetheless, the comparison between the two groups shows that there were no significantly difference in terms of their writing proficiency.

Although the effect of using Google Docs on students' paragraph writing performance was not significant, the students' satisfaction with Google Docs-based collaborative writing was evident. According to the results from the survey pertaining to the participants' attitudes toward Google Docs, the majority of them were positive about

the use of this on-line tool. Some positive feedback from the students was received. For example, the students reported that Google Docs helps to promote collaboration, offers immediate help with language problems, offers a better way to share and exchange ideas, facilitates group cohesion, and helps learn how to cooperate and negotiate with people.

However, the results from the survey reveal that Google Docs-based collaborative writing may not greatly increase the students' learning motivation (see Table 11, Question 8). Only half of the students agreed that they felt more motivated to learn the course because of the use of Google Docs. As a matter of fact, the challenges encountered while using Google Docs might have contributed to the above finding. According to the reports from the participants, they complained about the heterogeneity of group members as well as uneven participation. Hence it can be seen that grouping plays a crucial role in collaborative writing or learning.

Another finding that is worth taking into account is that a significant difference was found in the participants' viewpoints and writing habits after they received process-writing instruction for one semester. In particular the collaborative writing group was found to be more aware of the process in writing. The results from the Perceptions of and Approaches to Writing Survey proved that several of the participants' writing habits changed at the end of the course. For example, more participants began their writing with generating ideas, more participants were able to make good use of

brainstorming strategies, and more participants preferred to work with their peers and write multiple drafts. In contrast, the changes in the individual writing group are not significantly evident. This finding is supported by the participants' responses to the open-ended questions that asked for their opinions about the writing process. Before being involved in process writing, most of the participants regarded the writing process as essential, without specifically explaining why. However, after the writing course, they listed more reasons to show their awareness of the writing process and its importance. Compared with the individual writing group, the collaborative writing group was able to provide more explanations to depict the importance of the writing process. It is assumed that the difference might have resulted from the collaborative writing activities. The students in the collaborative writing group demonstrated the actual practices of the recursive process in writing because they had to aid each other from the primary writing stage to the completion of the text. Through collaboration, it might be easier for the students to perceive the value of the writing process. Consequently, we may conclude that web-based collaborative writing is ideally-suited for the implementation of process writing because it enables students to grasp the essence of the writing process.

Last but not least, it was positive to discover that the participants in the present study did not neglect grammatical correctness in writing just because they placed high

value on the writing process. It is noted that the purpose of adopting a process approach to teach writing is to underscore the recursive process in writing, instead of downgrading any of the components in writing. In fact, promoting the process approach in the writing classroom does not mean the conventional product approach should be disregarded. On the contrary, it is proposed that the process approach and product approach may as well be adopted in combination for better educational outcomes (Hedge, 2000; Tangkiengsirisin, 2006; Sarhady, 2015). It is therefore good to realize that the students in the present study still maintained their focus on grammar in writing, while their awareness of the process in writing was also raised.

5.3 Pedagogical Implications

The pedagogical implications drawn from the present study are as follows. First, process writing effectively improved students' paragraph writing ability. Knowing the recursive nature in writing is beneficial for students to move beyond surface-level writing. In order to develop higher order thinking skills, such as problem solving and critical thinking ability, the process-driven approach in writing should be adopted in modern writing classrooms. Second, compared with individual writing, Google Docs mediated collaborative writing did not have a significant impact on students' writing performance. However, it is proved that web-based collaborative writing is helpful to

students, regarding the practice of process writing. Therefore, instructors may embrace technology to increase students' awareness of the recursive process in writing. Third, the findings of the present study provide new insight into some potential problems of online collaborative writing, such as ineffective collaboration due to unequal contribution of members in a group. To overcome this difficulty, instructors may need to take students' level of proficiency into account when grouping. Moreover, advanced online word processors like Google Docs are useful not only for students to collaborate but also for teachers to monitor and evaluate. Most importantly, instructors need to bear in mind that effective collaboration might call for good monitoring and evaluation.

5.4 Limitations of the Study and Suggestions for Future Research

There were some limitations in the present study. First, all the participants were recruited from the same department in one university. The sample size might not be sufficient enough for the results to be generalized to EFL learners in Taiwan. Future research with a larger sample size from different universities or departments could be conducted in order to confirm the findings in the present study. Second, due to time constraints, the present study investigated the impact of one semester (eighteen weeks) of process writing and collaborative writing on students' paragraph writing performance. A longitudinal study could be carried out in the future to examine whether different

findings would be obtained when students participate in collaborative writing for an academic year or even longer. Third, the participants enrolled in this writing course were also required to take other English courses to develop skills such as reading and speaking. Therefore, the exposure to other types of language inputs may also have affected the development of their writing skills, which is something that needs to be considered. Finally, the results of the present study revealed that the students' learning motivation was not greatly increased by Google Docs-based collaborative writing. However, this conclusion was drawn from responses to one single question in the survey, which might not be rigorous enough for precise measurement. For future studies that delve into the impact of online collaborative writing on learning motivation, an instrument that is particularly designed to measure motivational factors in learning would be necessary.

To summarize, the present study yields positive results. It is shown that after the one-semester process writing instruction, the students became more aware of the writing process and began to attach more importance on meaning in writing. Moreover, based on the findings in the present study, the students who participated in collaborative writing made more significant adjustments to their perceptions of writing as well as their approaches in writing. Apparently, to introduce process writing in the classroom, web-based collaborative writing activities are regarded as more helpful than traditional

individual writing. Most important of all, the benefits of using Google Docs for collaborative writing were demonstrated in the present study. In spite of some challenges encountered, the participants still acknowledged that they enjoyed collaborating on Google Docs because all the members could simultaneously discuss, write, and edit the same document together. Through collaboration, immediate feedback on either mechanics or content in writing was received, which allowed the students to see their own weaknesses and learn from the strength of others. Seemingly, the merits of web-based collaborative writing cannot be denied. Most important of all, practitioners who would like to introduce a process writing approach to students via online collaborative writing may need to observe and assess the students' participation to ensure its effectiveness. It is necessary to know that technology is beneficial to students only when it is incorporated with carefully designed instruction.

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Appendices

Appendix A

Perceptions of and Approaches to Writing Questionnaire

親愛的同學們，非常感謝你們協助回答此問卷。此問卷僅做為學術研究之用，並非測驗，**答案並無對錯之分**，請放心***依照您個人實際學習狀況來作答***。任何與本問卷相關的內容與調查結果完全不會影響你的英文成績，而且所有填寫的資料都將嚴加保密。**煩請務必回答問卷中每一個問題**，以求資料之完整性及可用性。再次感謝你們的參與及協助。

Instructions:

This questionnaire contains THREE parts. For the first and second part of the questionas, please read carefully the following information and then circle the number of each statement which corresponds most closely to your desired response. After finishing the two parts, please answer the open-ended questions in the third part.

Part I. ***Your behaviors and point of views in English writing.***

No.	*Questions*	*strongly disagree*	*disagree*	*agree*	*strongly agree*
1	I am used to reading a model text before I write my own text. 我習慣在寫作之前先閱讀範文	**1**	**2**	**3**	**4**
2	Before I hand in my writing assignment, I pay more attention to my grammatical errors than my ideas in writing. 我交完成的作文之前，比起注意文章中的想法，我會比較注意我的文法錯誤。	**1**	**2**	**3**	**4**
3	I revise my writing only when the teacher asks me to. 只有在老師要求下，我會修正我的作文。	**1**	**2**	**3**	**4**
4	When I read a model text, I will manage to learn the form of writing. 當我讀範文時，我試圖學習文章的格式。	**1**	**2**	**3**	**4**
5	I would like to learn grammatical forms (e.g., sentence patterns and rules) from my teacher before I do my writing assignment. 我希望在寫作文之前，老師能教導我文法的規則及句型。	**1**	**2**	**3**	**4**
6	I would like to learn cohesive devices (e.g., however, furthermore, in conclusion, therefore) from my teacher before I do my writing assignment. 我希望在寫作之前，我能向老師學習轉折語或連接詞的用法。	**1**	**2**	**3**	**4**
7	I like to think and compose by myself. 我喜歡獨自思考與寫作。	**1**	**2**	**3**	**4**

8	I compose right after the ideas appear on my mind. 當我腦中有想法時，我會立刻開始寫作。	**1**	**2**	**3**	**4**
9	I begin my writing with generating my ideas. 當我開始寫作之前，我習慣先列出我的想法。	**1**	**2**	**3**	**4**
10	I generate my ideas of writing by drawing a mind map. 我會藉由畫出心智圖來列出我的想法。 (心智圖: 把想法寫出後，用記號連結在一起表示我想在文章中寫的順序。)	**1**	**2**	**3**	**4**
11	I generate my ideas of writing by writing an outline. 我會藉由寫大綱來列出我的想法。	**1**	**2**	**3**	**4**
12	I need to write several drafts before I hand in my writing assignment. 在我交出作文之前，我習慣寫很多次草稿。	**1**	**2**	**3**	**4**
13	I spend more time checking my idea development than my writing errors. 比起檢查我的文法錯誤，我花比較多的時間檢查我的文章結構及想法鋪陳。	**1**	**2**	**3**	**4**
14	I prefer multiple-draft writing. 我較喜歡寫多次的草稿。	**1**	**2**	**3**	**4**
15	I think the process of composing (i.e. brainstorming→planning→getting feedback from my readers →revision and rewriting) helps me develop my ideas in writing. 我認為寫作的過程幫助我在文章中鋪陳我的想法。(寫作過程: 醞釀想法→計畫→取得讀者的建議→修改文章)	**1**	**2**	**3**	**4**
16	I think the process of composing (i.e. brainstorming→planning→getting feedback from my readers →revision and rewriting) helps me improve my logical thinking. 我認為寫作的過程幫助我寫出有邏輯的文章。	**1**	**2**	**3**	**4**
17	I like to work with my peers when composing. 我喜歡寫作時能有同學的建議。	**1**	**2**	**3**	**4**

Part II. ***Please think about your experience in English writing in your high school and answer the following questions.***

No.	*Questions*	*strongly disagree*	*disagree*	*agree*	*strongly agree*
1	My teacher focuses on the grammatical correctness of my writing. 我的老師重視我寫作的文法是否正確。	**1**	**2**	**3**	**4**
2	My teacher asks me to follow some patterns in writing before I did my writing assignments. 我的老師會要求我在寫作時要有一定的句型。	**1**	**2**	**3**	**4**
3	My teacher calls my attention to good sentences and word use when reading model texts. 我的老師會希望我在閱讀範文時注意佳句及重要的單字。	**1**	**2**	**3**	**4**
4	My teacher gives me corrective feedback on my writing. 我的老師會修改我文章中的文法錯誤。	**1**	**2**	**3**	**4**
6	My teacher teaches me some techniques of ideas generating before I did my writing assignment. 我的老師會教我一些醞釀想法的技巧在我寫作之前。	**1**	**2**	**3**	**4**
7	My teacher leads group discussions for the writing assignments. 我的老師會在我們寫作之前舉行小組討論。	**1**	**2**	**3**	**4**
8	My teacher has us do peer reviews on our writing. 我的老師會請我們互相批改同學的作文。	**1**	**2**	**3**	**4**
9	My teacher asks me to do multiple drafts before I handed in my final version of writing. 我的老師會要求我們寫多次的草稿在正式交出文章之前。	**1**	**2**	**3**	**4**
10	My teacher gives me feedback on my logical thinking and idea development in writing. 我的老師會針對我的邏輯思考及想法的鋪陳給我建議。	**1**	**2**	**3**	**4**
11	My teacher deals with the content in my writing before he/she checks my grammatical errors. 我的老師會先針對我文章的內容給出建議，然後再修改我的文法錯誤。	**1**	**2**	**3**	**4**

Part III.

1. **Do you think grammatical correctness in writing is important? Why or why not?**
   （你認為寫作的文法正確與否重要嗎？為什麼?）

_____

_____

2. **Do you value the process of writing? Why or why not?**
   （你認為寫作的過程重要嗎？為什麼?）

_____

_____

3. **Please fill in numbers to rank the following features in writing based on their importance. (9 = the most important; 1 = the least important)**
   （請幫下列寫作的評分重點排出你心目中的順序，你認為最重要的填入 9 ，最不重要的填入 1。）

☐ **punctuations （標點符號）**
☐ **logic（邏輯）**
☐ **drafts（草稿）**
☐ **fluency（流暢度）（文章是否通順）**
☐ **final product（完成的作品）**
☐ **idea generating before writing（寫作前的想法醞釀）**
☐ **grammatical correctness（文法正確度）**
☐ **spelling（拼字）**
☐ **content（內容）**

-The end of the questionnaire-

Appendix B

Attitudes toward Google Docs-based Writing Activities Questionnaire

親愛的同學們，非常感謝你們協助回答此問卷。此問卷僅做為學術研究之用，並非測驗，**答案並無對錯之分**，請放心***依照您個人實際學習狀況來作答***。任何與本問卷相關的內容與調查結果完全不會影響你的英文成績，而且所有填寫的資料都將嚴加保密。**煩請務必回答問卷中每一個問題**，以求資料之完整性及可用性。再次感謝你們的參與及協助。

Instructions:

I. ***Please circle the number of each statement which corresponds most closely to your desired response.***

No.	*Questions*	*strongly disagree*	*disagree*	*neither agree nor disagree*	*agree*	*strongly agree*
1	I liked to see my peers interact with the content I had posted on Google Docs. 我喜歡同學們討論我放在 GD 上面的文章。	**1**	**2**	**3**	**4**	**5**
2	I felt comfortable to see other students edit the content I had posted. 我可以接受同學編輯我寫的文章。	**1**	**2**	**3**	**4**	**5**
3	My group was able to come to a consensus by using Google Docs. 我的組員能夠藉由使用 GD 達成共識。	**1**	**2**	**3**	**4**	**5**
4	I learn to exchange information with other students via Google Docs. 我學會使用 GD 來跟同學交換資訊。	**1**	**2**	**3**	**4**	**5**
5	The feedback and editing from peers were useful in improving my writing skill. 同學的修改及建議可以增進我的寫作技巧。	**1**	**2**	**3**	**4**	**5**
6	The use of Google Docs promoted knowledge information. 藉由使用 GD 討論，我學到各種寫作知識。	**1**	**2**	**3**	**4**	**5**
7	The use of Google Docs increased interaction with other students. 藉由使用 GD，同學間的互動有變多。	**1**	**2**	**3**	**4**	**5**
8	The use of Google Docs increased my motivation to study this course. 藉由使用 GD，我對這門科目有學習的興趣。	**1**	**2**	**3**	**4**	**5**

9	The use of Google Docs promoted collaborative learning environment. 藉由使用 GD，我們較願意合作學習。	**1**	**2**	**3**	**4**	**5**
10	Using Google Docs to write collaboratively improved my grammar in writing. 藉由使用 GD 與同學合作，我的文法有進步。	**1**	**2**	**3**	**4**	**5**
11	Using Google Docs to write collaboratively improved the content of my writing. 藉由使用 GD 與同學合作，我的文章內容有較豐富。	**1**	**2**	**3**	**4**	**5**
12	Using Google Docs to write collaboratively improved the structure of my writing. 藉由使用 GD 與同學合作，我寫的文章架構有較清楚。	**1**	**2**	**3**	**4**	**5**

II. ***Please write down your opinions of using Google Docs to do collaborative writing. Do you like using it to write together with your members? Why or Why not?***
(請寫出你對使用 Google Docs 與同學合作寫作的感想及意見。你喜歡使用它來和同學合作嗎? 請寫出你喜歡或不喜歡的原因。)

_____
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-The end of the questionnaire-

Appendix C

Paragraph Writing Sheet

Paragraph Writing Sheet ***Name: _____***

Class Day: _____

*Please read the following **2 prompts** and write **2 short paragraphs** containing **80-120 words**.*

1. Your family celebrates special events such as birthdays, holidays, or other special times. Choose one family event and write a story about it.

2. There is a strong parent-led campaign in your city to curb down on homework assignments given to students. As a student, however, you feel homework is essential to promoting learning. Write a paragraph arguing your stand by giving specific examples or statistics to show the benefits of homework.

Appendix D

Scoring Rubric for Evaluation of the Paragraphs

Criteria	Comments & Score
Topic Sentence: 0-4: Incoherent, irrelevant, unclear, inappropriate content 5-6: Fairly ordinary, not very vivid or specific; not very original 7-8: Well-focused, somewhat original, specific, perhaps a little confusing or unclear in the way it is expressed 9-10: Attractive, well-focused, original, very clear	
Support: 0-2: No support of topic sentence. A lot of irrelevancy and basically incoherent. 3-4: Some support of topic sentence but not complete; becomes irrelevant sometimes; not clearly organized; some details but not related. 5-6: Basic support of topic sentence, with occasional detail and example, but not much. Organized clearly. 7-8: Support overall proves the topic sentence, with vivid details and examples most of the time. Some parts may not be so vivid or supportive of topic sentence. Organized clearly. 9-10: Supporting sentences are very vivid, interesting, and relevant to topic sentence. Support proves the topic sentence very strongly. Many vivid details and examples make the meaning crystal-clear. Organized very clearly.	
Signals: 0-2: No signals 3-4: Signals are incorrectly used, so paragraph is unclear. 5-6: Simple signals are used, but not very much. It's basically clear, though. 7-8: Some appropriate and grammatical use of a variety of signals, etc. to make the paragraph coherent and united, although perhaps not always. 9-10: Consistent and correct use of a variety of signals to make the paragraph very coherent and united ("very tight").	
Grammar, punctuation, spelling 0-2: Many simple errors that make meaning unclear 3-4: May simple errors that do not confuse meaning particularly 5-6: Overall correct; not so complex grammar; small errors 7-8: Accurate overall with minor mistakes in complex structure. 9-10: Very few errors of any kind	

Score out of 40	Equivalent out of 100	Score out of 40	Equivalent out of 100
34	85	26	65
32	80	24	60
30	75	22	55
28	70	20	50

Appendix E

Guidelines for Collaborative Writing Activities

★For each collaborative writing activity in each group, a group leader will be assigned.

1. Brainstorming:

Before the writing begins, the group leader should lead the group to do brainstorming on the topic. To discuss ideas for writing, you may use the chat box on Google Docs. The leader may begin by asking: what are your ideas for the topic?

Example topic: My First Day at a New School
Sample brainstorming discussion in the chat box:

Group leader: hi, what are your ideas for the topic?
Member 2: I want to write about friends I meet at school.
Member 3: it sounds good. We can also write about teachers at school.
Group leader: Environment at school is good, too.
Member 2: Great!
Member 3: Or we can write about some happy or interesting moments on the first day at school.
Group leader: Now let's decide what to write
Member 3: How about describing how we met friends at school on the first day?
Member 2: okay!
Group leader: What friends do you want to write about?
Member 2: We can write about classmates
Member 3: We can write about roommate as well.
Group leader: Good! Let's start!

After the brainstorming, the members need to discuss and choose several ideas for writing.

2. Topic Sentence:

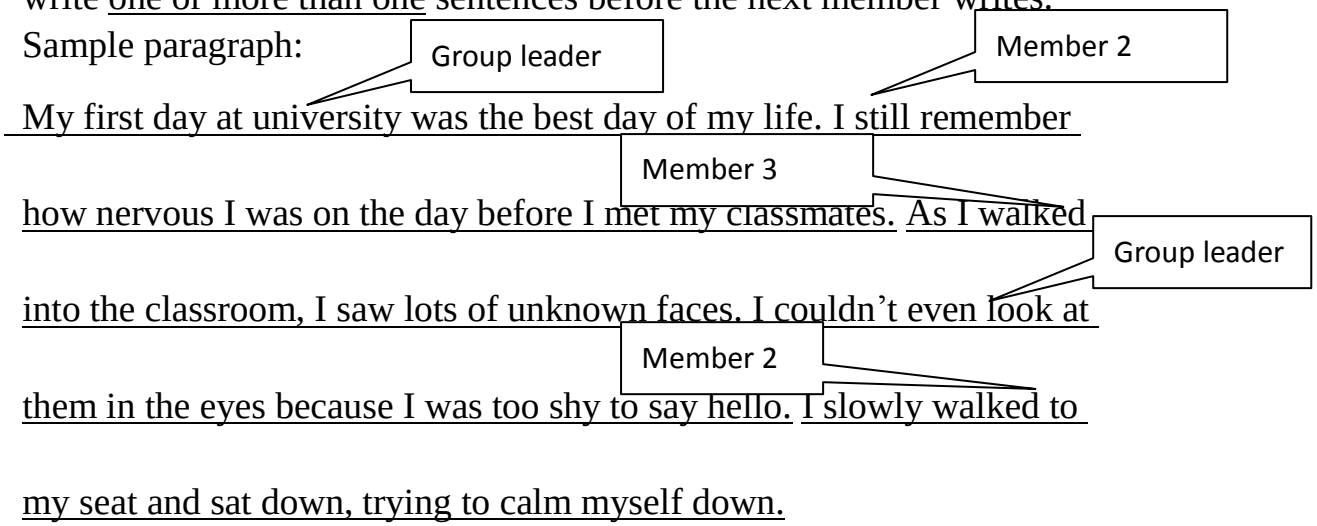
The group leader should type the topic sentence on the Google Document.

Example: My first day at university was the best day of my life.

3. Take turns to continue writing:

The other members should take turns to compose. One member may write one or more than one sentences before the next member writes.

Sample paragraph:



My first day at university was the best day of my life. I still remember how nervous I was on the day before I met my classmates. As I walked into the classroom, I saw lots of unknown faces. I couldn't even look at them in the eyes because I was too shy to say hello. I slowly walked to my seat and sat down, trying to calm myself down.

4. Editing:

Be sure to edit the paragraph together. Every group member is responsible for the quality of the paragraph. You may check the writing according to the following criteria:

Grammar: Is there any grammatical error in the writing?
Content: Does the paragraph address the topic well?
Topic sentence: Is the topic sentence good enough?
Supporting sentences: Are the supporting details related to the topic?
Signals: Are there any transitions used? Are they used appropriately?

5. Final check:

All the members need to make sure the ideas in the paragraph are consistent and coherent. The paragraph is supposed to look like it is written by a single person. If all the members think the writing is good enough, then the editing is done. The document will be automatically saved online.