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Small Group Interactions in Wiki-Based Collaborative Writing in the EAP Context

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by

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DEDICATION

To my parents and grandparents who have influenced my life

morally, intellectually, and professionally

my husband and son for being my greatest inspiration

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A doctoral dissertation is compared to a marathon that involves extensive preparation, considerable challenge and enormous help in the community of practice (Piantanida & Garman, 2009; Tutin, 2008). During my "dissertation marathon," I am blessed to get invaluable support from wonderful coaches, friendly fellow runners, and lovable cheerleaders. I would like to take this opportunity to convey my immense appreciation to all these persons.

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ABSTRACT

Due to recent developments in Web 2.0 technologies, computer-mediated collaborative writing has captured the growing attention of second language researchers and instructors. The affordance of wikis for collaborative writing has been hailed, but few studies have explored the nature of wiki collaboration and interaction during small group writing using wikis. This dissertation investigated dynamic group interactions in wiki-based collaborative writing tasks in an English for Academic Purposes (EAP) course at a southeastern public research university in the U.S. A total of twenty-nine English as a Second Language graduate students collaboratively worked on two writing tasks within small groups in Wikispaces sites. By adopting a multiple-case study approach, I closely examined four small groups that had diverse L1 background composites and presented a comprehensive picture of students' wiki-based collaborative writing.

Informed by sociocultural theory, particularly the notions of scaffolding and zone of proximal development, I explored small group interactions to derive how they negotiated writing tasks, co-constructed writing, and mutually scaffolded wiki writing processes. I also examined what factors mediated the dynamic interactions, and in what ways the interactions influenced wiki writing products and connected with students' reflections about wiki collaborative writing. The triangulated data sources included archived wiki "Discussion," "Comments," "History," and "Page" records, pre-task and post-task questionnaire surveys, post-task and follow-up interviews, students' reflection papers, instructors' assessment of students' wiki group writing, and my

research logs. In terms of the data analysis, I mainly conducted qualitative procedures using constant comparative method and content analysis, supplemented with descriptive analysis.

The results revealed that the four small groups demonstrated four characteristic patterns of interaction. The patterns were not static across two wiki writing tasks. Mixed patterns were found in Group 1 (Collective— Active/withdrawn) and Group 3 (Dominant/defensive— Collaborative). Group dynamics were also evident in Group 2 (Expert/novice) and Group 4 (Cooperating in parallel). These patterns were featured with language functions that small groups performed while negotiating writing tasks, writing change functions that they performed while constructing joint texts, and scaffolding strategies that they applied throughout collaborative writing processes. In addition, multiple factors mediated small groups' wiki interactions: motives/goals, agency and emotion, and prior experiences in such aspects of cultural background, small group work, and technology use. Moreover, the group interactions had influences on joint wiki writing products and also connected with students' reflections about wiki affordances and their learning experiences. This study bridged the gap in computer-mediated collaborative writing research, and also shed new light on the networked writing pedagogy in the EAP context.

CHAPTER ONE: INTRODUCTION

Background of the Study

Small group interaction and collaboration in second language (L2) classes have captured the attention of teachers and researchers over the past decades (Donato, 1994, 2004; Storch, 2002, 2004; Swain & Lapkin, 1998). The interaction within a pair/group writing task environment has become a popular research topic, supported by the work of Vygotsky (1978) who posited learning is a socially situated activity and social interaction is critical to cognitive development. Collaborative writing as an instructional activity encouraging interaction throughout the writing process, has been increasingly implemented in L2 classes. In English for Academic Purposes (EAP) courses in the U.S., group writing project has become an important task activity that facilities English as a Second Language (ESL) international students' adaption to the academic discipline environment where team projects are common practice.

More recently, due to the increasing accessibility and implementation of Computer-Mediated Communication (CMC) technologies, collaborative writing in the online mode becomes a new direction (Kessler, Bikowski, & Boggs, 2012; Storch, 2011, 2013). In particular, the wiki is hailed as a good medium for group writing due to its collaborative nature (Godwin-Jones, 2003). In this study, I incorporated the wiki into a group writing project in an EAP course at a southeastern university in the U.S., and explored student interactions in wiki-based collaborative writing activities. In the following section, I discuss relevant background information about the study, including EAP program, collaborative writing, and wiki technology.

EAP program

EAP education has captured wide attention over the past two decades with the growth of English as a lingua franca, a common means of communication in global academia (e.g., Flowerdew & Peacock, 2001; Hyland, 2006). Countless nonnative English language students learned to acquire conventions of English academic discourses to successfully participate in specific disciplinary and cultural contexts (Hyland & Hamp-Lyon, 2002). In the U.S., EAP programs have been established, which enable ESL international students to receive intensive language study and develop multiple academic language skills necessary to effectively participate and succeed in a U.S. academic environment. In particular, EAP programs have been expanding in recent years due to the continuously increasing enrollment of international students. According to Open Doors (2013), a comprehensive national data resource on American and international individuals studying in the U.S., the number of international students who study at U.S. colleges and universities is 40 percent higher than it was a decade ago. In the 2012/2013 academic year, the seventh consecutive year that witnessed growth, international student enrollment increased by approximately 7 percent. How to develop an increasing number of ESL international students' academic literacy becomes a priority of EAP programs.

Academic writing is one of the core areas in EAP programs. Academic writing is indispensable for students' academic success (Leki & Carson, 1994) and also perceived as a difficult skill to acquire for non-native speakers due to linguistic differences of L1 and L2 and unique generic features (Hinkel, 2003; Hyland, 2004). Apart from the importance attached to academic writing skills, collaborative work is the other essential component in many EAP courses. Collaboration is a key to success in education (Bruffee, 1993) and a group project is what students are frequently required to undertake in their academic disciplines. The

collaborative skills that international students have fostered in EAP courses prepare them to succeed in group work in their discipline courses. As I am interested in examining computer-mediated collaborative writing among university-level ESL learners, the EAP program that reinforces both writing competence and collaboration skills offers me an appropriate research site.

Collaborative writing and technology

Collaborative writing emerges in 1980s, informed by the view of knowledge as social construction and writing as a social process (Ede & Lunsford, 1990). According to Ede and Lunsford (1990), collaborative writing is a *singular texts/plural authors* activity in which interactions and shared decision-making occur in all stages of the writing process, and all writers share the ownership of the texts produced. Storch (2013) expounded on the collaborative process as "one where participants work together and interact throughout the writing process, contributing to the planning, generation of ideas, deliberations about the text structure, editing and revision" (p.2). Storch (2012, 2013) also reiterated that true collaborative writing is not merely jointly produced text, but also collective cognition and collaborative efforts that are not equivalent to the combination of each individual's contribution.

Collaborative writing is supported by a sociocultural perspective of learning (Storch, 2005, 2013). Sociocultural theory considers learning to be a socially situated activity and emphasizes the role of interaction and peer collaboration in L2 development. According to Vygotsky (1978), more capable members can help novices go beyond their current levels towards their potential levels of development by providing them with appropriate levels of assistance, what Vygotsky called the development within Zone of Proximal Development (ZPD). L2 scholars (e.g., Donato, 1994; Ohta, 2000; Swain, 1997) later developed Vygotsky's idea and

posited learners can act as both experts and novices in pair/small group activity. While working together, learners pool their varied resources and provide mutual scaffolding for one another, and attain a level of performance higher than their individual level of competence (Donato, 1994; Ohta, 2000). When applied to writing, collaborative tasks require learners to reflect on their language use, discuss the language they use, and collaboratively solve language problems in the form of Language-Related Episodes (LREs), which consequently help facilitate L2 learning (Swain, 2000).

In the recent decade, collaborative writing in which two or more students jointly produce written texts has been increasingly conducted in L2 classes through both face-to-face modes and online modes (Storch, 2011, 2013). With the development of Web 2.0 tools that afford users' participation and collaboration at an unprecedented level, collaborative writing has gained more and more researchers' attention. In the CMC context, writing occurs in the direction of "a more social construction of the activity and interactivity of writing" (Pennington, 2003, p. 304). CMC tools enable students to practice their writing skills in a nonthreatening environment (Colomb & Simutis, 1996). The technology also benefits collaborative writing in that it increases students' motivation and creativity by allowing more convenient feedback and revision (Lam & Pennington, 1995). Ware and Warschauer (2006) argues that "asynchronous discussion formats, in particular, are believed to combine the interactive aspect of written conversations with the reflective nature of composing" (p.111). The wiki, an asynchronous CMC tool, has been acclaimed as a nice online space for collaborative writing.

Wiki technology

A wiki appeared approximately in 1995 as a major component of Web 2.0 (Cummings & Barton, 2008). It is a collaborative web site that allows users to freely create and edit the contents

of web pages. Leuf and Cunningham (2001) defined a wiki as "freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information - a database, where each page is easily edited by any user with a forms-capable Web browser client" (p. 14). Wikis are acknowledged as collaborative mediums to promote content sharing/development and knowledge co-construction (Kost, 2011; O'Neill, 2005). Various wiki applications (e.g., MediaWiki, PBWorks, Wetpaint, and Wikispaces) have been widely used in education so far.

Wikis are popular in education for the following reasons: 1) wikis are user-friendly and easy to use with little requirement of technical knowledge; 2) wikis are free of charge and available where a computer is connected to the Internet; 3) wikis provide many useful functions for collaborative learning such as tracking of edits, threaded discussion per wiki page, and the hyperlink of multiple types of media (Zorko, 2009). Importantly, all wiki applications have three defining modules: "Edit," "History," and "Discussion." "Edit" enables the users to freely change or revise the page in terms of texts, images, or hyperlinks; "History" reveals all the changes the page has gone through with the color coding of deleted and inserted texts; and "Discussion" allows the users to communicate and negotiate page contents and revisions via asynchronous messaging (Li, 2012a). Due to its distinct functions, the wiki constitutes a powerful artifact in supporting collective production (Lund, 2008) and well evaluating individual contributions to a collaborative learning project (Trentin, 2009).

In L2 learning contexts, pedagogical applications of wikis lie in the areas of academic writing (e.g. Castañeda & Cho, 2013; Elola & Oskoz, 2010; Kuteeva, 2011; Lee, 2010), content knowledge construction (e.g., Miyazoe & Anderson, 2010; Pellet, 2012), and intercultural communication (e.g., Zou, Xiang, & Jeaco, 2012). Specifically, the use of wikis for collaborative writing gains the predominant attention due to wikis' "intensively collaborative" nature

(Godwin-Jones, 2003, p. 15). Each version of the wiki written document is transparent to co-writers and the transparency encourages continual refining of the shared written texts (Lee, 2010). The asynchronous posts also allow co-writers to develop a thoughtful response to one another's contribution (Storch, 2012). Moreover, wikis are normally implemented in a group project over a period of time outside the language classroom, so wiki writing "represents a more authentic collaborative writing activity than dyadic face-to-face writing tasks" (Storch, 2012, p.122). Therefore, empirical examinations on how wikis can afford student interaction and collaboration in academic writing can greatly contribute to the current body of collaborative writing research.

Statement of the Problem

Research on collaboration in L2 writing over the past two decades has focused on peer response in which students provide feedback on each other's writing (e.g. de Guerrero & Villamil, 1994; Lockhart & Ng, 1995; Nelson & Carson, 1998; Zhu, 2001). Collaborative writing in which students share the responsibility of jointly composed written texts has been much less investigated (Storch, 2011). Particularly, the nature of collaborative writing processes has been barely explored (Kessler et al., 2012; Storch, 2005). New technologies such as wikis, however, provide researchers with a window into the L2 collaborative writing process and the affordances of technologies for collaborative writing activity (Kessler et al., 2012; Li, 2013).

Extant literature has revealed many advantages of using wikis in L2 writing. Generally, the affordance of wikis eases collaborative process, facilitates interaction, and supports writing development (Lee, 2010; Li, 2012b; Lundin, 2008). Specifically, wikis allow students to contribute to collaborative writing at their own time and pace (Colomb & Simutis, 1996), thus helping overcome spatial and temporal hurdles to produce joint writing. Wiki-based collaborative writing enables students to gain more perspectives of writing topics (Kost, 2011; Li

& Zhu, 2013; Lund, 2008) and develop better essays in terms of content, structure, and grammar (Chao & Lo, 2011; Lee, 2010; Woo, Chu, Ho, & Li., 2011). Wiki collaborative writing also helps students promote a sense of ownership and autonomy (Kessler, 2009; Kessler & Bikowski, 2010; Pellet, 2012). Wikis are perceived by students to be fun and interesting tools to share knowledge (Chao & Lo, 2011; Ducate, Anderson, & Moreno, 2011; Lee, 2010; Lund, 2008; Zorko, 2009), as well as motivating for learning (Chao & Lo, 2011; Lee, 2010; Woo et al., 2011; Zorko, 2009).

Overall, four main research themes were explored in previous studies on wiki-based collaborative writing: wiki writing processes, writing products, student perceptions, and effects of writing tasks (Li, 2012a). However, much research gap still remains. Regarding the wiki writing process, for instance, previous research (e.g., Arnold, Ducate, & Kost, 2012; Kessler & Bikowski, 2010) discussed students' revision types, taking the small group behavior as a whole, but few studies analyzed each group member's individual contribution to joint writing or described the occurrences of group members' mutual engagement and collective scaffolding throughout the wiki writing process. Also, concerning the writing product, a few studies (e.g., Elola & Oskoz, 2010) discussed the differences in accuracy and fluency between collaborative writing and individual writing, while other studies (e.g., Alyousef & Picard, 2011; Kuteeva, 2011) analyzed the metadiscourse features of writing products that students co-constructed in wikis. Holistic textual quality of joint writing and the relationship between writing products and writing processes await close investigation. Moreover, the examination into factors that influence wiki collaborative writing behaviors focused on writing tasks (e.g., Lee, 2010; Lund & Rasmussen, 2008), and sociocultural factors that mediate wiki interaction are largely unexplored. Furthermore, although much research delved into students' perceptions about wiki collaborative

writing (e.g., Chao & Lo, 2011; Li & Zhu, 2013; Lund, 2008), why students hold those perspectives deserves further examination.

Broadly, the majority of research studies on wiki-based collaborative writing were conducted in a Foreign Language (FL) context, including English as a FL (e.g., Alyousef & Picard, 2011; Bradley, Linstrom, & Rystedt, 2010; Kessler & Bikowski, 2010; Kuteeva, 2011; Li & Zhu, 2013), Spanish as a FL (e.g., Ducate et al., 2011; Elola & Oskoz, 2010; Lee, 2010), and German/French as a FL (e.g., Ducate, Anderson, & Moreno, 2011; Stickler & Hampel, 2010). No research has reported a wiki collaborative writing project with ESL students in an EAP program in the U.S. As noted in the earlier discussion, however, collaborative writing is increasingly implemented in EAP programs.

In the EAP program at the southeastern research university where I conducted this dissertation study, group writing is usually a face-to-face task outside the class. Although instructors carefully assign groups, deliver detailed instructions on how to carry out the group project, and develop specific rubrics for sub-tasks, some problems are still detected, such as difficulty for students in finding meeting/discussing time, inconvenience of collaboration in the face-to-face writing mode, and group members' unequal participation. Motivated by the research gap and pedagogical need, I integrated wikis into a team research project in two class sections of a graduate EAP course. I adopted a multiple-case study approach to reveal a comprehensive picture of ESL graduate students' collaborative writing in small groups using wikis in the EAP context.

Purpose of the Study

The purpose of the study was to explore small group interactions in wiki-based collaborative writing in the EAP context. The participants in this study formed small groups of

three or four, and jointly worked on two collaborative writing tasks, i.e., a research proposal and an annotated bibliography, using the Wikispaces site I created. Each small group was designated into a specific group tab where they discussed and co-constructed both writing tasks by using wiki "Edit," "Discussion," "Comments[1]" and "History" modules. Collaborative writing in this study is specifically defined as "the joint production or the coauthoring of a text" (Storch, 2011, p.275) by three or four writers in relation to two wiki writing tasks within a large team research project. I purposely chose (Patton, 2002) four small groups for close examination, and explored the ways in which students engaged with and co-constructed academic writing using wikis, the factors mediating their small group interactions, the influence of small group interactions on wiki products across two tasks, and the connection of small group interactions to student reflections about wiki-based collaborative writing activity.

Research Questions

The following four main research questions guided the present study.

RQ1. What characteristic patterns of group interaction are visible when small groups of ESL graduate students work on two collaborative writing tasks using wikis?

RQ1.1 How do students in their small groups negotiate writing tasks and engage with each other's ideas via wikis?

RQ1.2 How do students in their small groups co-construct written texts via wikis?

RQ 1.3 How do students scaffold each other during wiki-based collaborative writing?

RQ2. What factors may mediate small group interactions in ESL wiki-based collaborative writing?

RQ3. In what ways do group interactions influence the quality of small groups' wiki writing products in relation to two writing tasks?

RQ4. What are ESL graduate students' reflections on wiki-based collaborative writing? In what ways do these reflections connect to small group interactions?

The above research questions reflect four dimensions of this study, which is displayed in Figure 1. I view the four dimensions of the research problem from a sociocultural theory perspective. Such key constructs of sociocultural theory as Zone of Proximal Development (Vygotsky, 1978), Scaffolding (Bruner, 1978, 1983; Wood, Bruner, & Ross, 1976) and Collective Scaffolding (Donato, 1988, 1994) guided my analyses and interpretation of small group interaction and writing product. Leont'ev's (1978, 1981) Activity Theory and allied constructs such as agency (Lantolf & Thorne, 2006) and emotion (Imai, 2010; Swain, Kinnear, & Steinman, 2011) informed my exploration of mediating factors and student reflections/perceptions. I will discuss theoretical frameworks in detail in Chapter 2.

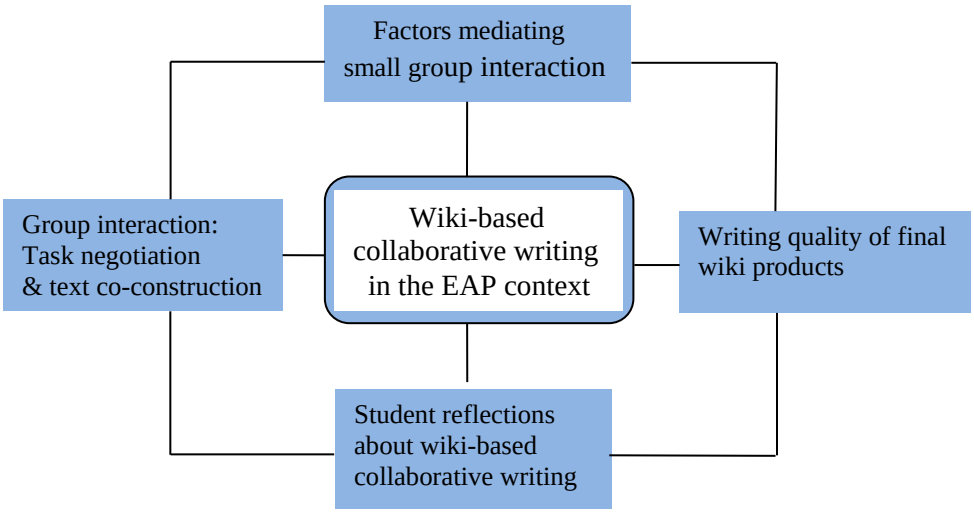


Figure 1. Four Dimensions of the Study

Personal Perspective

I fostered my interest in academic writing while I taught College English, an obligatory integrated English course for non-English majors in China. I found academic writing was a great

challenge to students in English as a Foreign Language (EFL) learning, so I endeavored to explore an effective writing pedagogy by facilitating student interaction via peer review activity. As a result, I completed my empirical thesis about peer review in EFL writing. My interest in second language writing persisted after I was admitted to the Ph.D. program in Second Language Acquisition/Instructional Technology. Doctoral studies in this interdisciplinary program offered me opportunities to view writing from a sociocultural perspective and also to explore the connection between writing and technology. I developed a strong research interest in computer-mediated collaborative writing. The Web 2.0 tool wiki particularly captured my attention because of its affordance of collaboration, continual revision, and communal knowledge formation (Purdy, 2009).

Driven by this research interest, I conducted a wiki-mediated collaborative writing project at the Chinese university with which I was affiliated in 2010. This project produced important findings on small groups' computer-mediated interactions during collaborative writing (Li, 2012b, 2013; Li & Zhu, 2013). To continue with this line of inquiry, I endeavored to pursue an in-depth inquiry of small group interactions in wiki-based collaborative writing in the EAP context.

Significance of the Study

The significance of the study encompasses both theoretical and pedagogical dimensions. This study bridged the gap in current body of computer-based collaborative writing literature, especially in emerging wiki-based collaborative writing. Specifically, it delved into the nature of small group interaction and group dynamics, and initially captured small groups' diverse approaches to both task negotiation and text co-construction when working on collaborative academic writing tasks using wikis. This study was also an initial endeavor to examine factors

that mediate wiki interactions from a sociocultural theory perspective, and the influence of interactional patterns on joint writing products across writing tasks. Moreover, this study further investigated the link between interactional patterns and student reflections about wiki affordances and their learning experience. Worthy of note, this study continued to develop new coding schemes initially reported in Li (2013) to analyze wiki-based discussion and text co-construction behaviors in wiki group writing. The coding schemes can shed light on the analysis of wiki collaboration process in future studies. Also, different from previous studies, three main data sources (i.e., questionnaire, interview, and reflection papers) were triangulated to explore mediating factors and student reflections.

This study added to the growing body of literature on wiki-based collaborative writing by integrating wikis into a team research project in an EAP course in the U.S. It explored students' co-learning of genre knowledge and academic writing over the course of wiki-based collaborative writing activity. The results of the study implied how the wiki technology may open up great possibilities for small group academic writing in the U.S. EAP context. Moreover, the study contributed to networked writing pedagogy and had significant pedagogical implications on how to implement wiki-based collaborative writing in second or foreign language classes, including wiki site design, wiki training, group structures, and assessment of wiki writing.

Furthermore, this study has valuable theoretical implications. By drawing on such constructs as ZPD and collective scaffolding to interpret students' interaction and collaboration via wikis, and activity theory and allied constructs to explain motives and other mediating factors underlying in collaborative writing tasks, this study reinforced the value of sociocultural theory in informing computer-mediated collaborative learning, and offered new insights into

exploration of computer-based collaborative writing from a sociocultural theory perspective in future studies.

Definition of Terms

I provide the definitions of key terms pertinent to the study in this section.

Collaborative writing— Writing involving multiple writers co-producing written texts, termed as a singular text/plural authors approach (Ede & Lunsford, 1990). In this study, collaborative writing refers to "the joint production or the coauthoring of a text" (Storch, 2011, p.275) by three or four writers in relation to two wiki writing tasks within a large team research project.

EAP— An abbreviation of English for Academic Purposes. It is generally defined as "teaching English with the aim of facilitating learners' study or research in that language" (Flowerdew & Peacock, 2001, p.8). EAP in this study specifically refers to teaching English to non-native speakers of English who need specialized skills in the language so as to pursue graduate degrees in the U.S.

ESL— An abbreviation of English as a Second Language. It commonly refers to the study of English by non-native speakers in an English-speaking environment.

L1— An abbreviation of first language, which is defined as a person's native language or the language acquired first. L1 used in this study refers to English as a First Language.

L2— An abbreviation of second language, which is defined as any language learned after first language (L1). L2 in this study widely refers to any language as a second language or a foreign language.

Computer-mediated communication (CMC) — The communication or interaction that occurs through the use of two or more networked computers. CMC can take place in two modes:

synchronous mode, in which communication develops in real time simultaneously, and asynchronous mode, in which communication occurs with delay (Warschauer, 1999). This study focused on asynchronous CMC via the wiki tool.

Wiki— "Freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information - a database, where each page is easily edited by any user with a forms-capable Web browser client" (Leuf & Cunningham, 2001, p. 14). Simply, it is a collaborative web site that allows users to freely create and edit the contents of web pages. The wiki used for this study is the Wikispaces site with a private setting, in which only members of the wiki can view and edit pages.

Equality & Mutuality— two indexes proposed by Damon and Phelp (1989) to examine peer interaction. The two indexes were used for the analysis and interpretation of the variation in group interactions (Li & Zhu, 2013; Storch, 2002). In this study, "Equality" refers to the level of contribution to group writing and degree of control over the direction of writing (Li & Zhu, 2013). "Mutuality" refers to the degree of engagement with each other's contribution, namely the extent of reciprocal response in task negotiation and involvement with others' texts in producing joint writing.

Writing engagements— Students' participation and interaction in collaborative writing. In this study, writing engagements specifically refer to group members' communication in wiki "Discussion"/ "Comments" modules and their text co-construction behaviors revealed from wiki "History" module under their designated group tabs.

Language functions— Broadly referring to the purposes in which we use language to communicate. The language functions in this study refers to the mediating functions of the language in the process of task negotiation occurring in the discussion discourse, namely, wiki

"Discussion" and "Comments" posts in the Wikispaces. Stating, acknowledging, elaborating and encouraging are some examples of language functions in this study.

Writing change functions — This term, proposed in Mak and Coniam (2008), refers to the ways of students' co-producing joint texts in wikis, such as adding, expanding, reorganizing, and correcting. The writing change functions in this study refer to adding, rephrasing, reordering, deleting, and correcting.

Annotated bibliography— An organized list of citations to articles, books, and documents addressing a specific research topic. Each citation is followed by a brief summary and evaluation of the cited source.

Research proposal— A presentation of an idea that one plans to pursue regarding a research topic. In this study, students are taught to include background of the topic, research questions, methods, and goal of the research in their research proposals. The research proposal is only a pedagogical genre and thus different from what Swales (1990) described.

Sociocultural theory— Drawing heavily on the work of Vygotsky (1987), Leont'ev (1978) and Wertsch (1985), sociocultural theory posits that human mental functioning is fundamentally a mediated process that is organized by cultural artifacts, activities and concepts (Ratner, 2002). It is "a holistic theory informed by a number of interlocking constructs" (Ellis, 2008, p.523). This theory advances our understanding about how social context and interaction mediate language learning. It served as an overarching theoretical framework for this study.

Multiple-case study— A type of case study that examines multiple bounded systems (cases). A multiple case study explores similarities and differences both within and between cases (Yin, 2009). Multiple case studies can be utilized to either predict similar results across cases or predict contrasting results and for predictable reasons (Yin, 2009). In this study, the

cases were four wiki writing groups in a graduate EAP course at a southeastern research university.

Summary

This chapter provides an overall description of this study. It introduces the background of the study, statement of the problem, purpose of the study and research questions. In this chapter, I also describe theoretical and personal perspectives, define key terms, and discuss the importance of the study.

In the following chapter, I will review the theory and relevant literature that inform this study. Specifically, I will review theoretical perspectives of interaction and focus on the sociocultural theory perspective, in which this study was undergirded. I will also examine previous research on small group interactions in both face-to-face collaborative writing and computer-based writing. In particular, I will review empirical studies on student interaction in the wiki-based collaborative writing environment, and identify gaps that this study aimed to bridge.

Endnotes:

[1.] Wiki "Comments" is a newly established feature of Wikispaces, which is embedded in the editor toolbar. Users can provide feedback/comments or raise questions regarding specific texts, by clicking on the "Comments" icon to post in pop-up boxes.

CHAPTER TWO: REVIEW OF LITERATURE

This chapter begins with the background of collaborative writing, and then presents theoretical perspectives on interaction, particularly the lens of sociocultural theory that underpins this study. I specifically discuss the theoretical constructs that inform this study: zone of proximal development (Vygotsky, 1978), allied with scaffolding (Bruner, 1985; Wood, Bruner, & Ross, 1976) and collective scaffolding (Donato, 1994), and activity theory (Leont'ev, 1978, 1981), allied with agency (Lantolf & Thorne, 2006) and emotion (Imai, 2010; Swain et al., 2011). Afterwards, I examine previous research on interactions in the L2 writing context, including face-to-face collaborative writing and computer-based collaborative writing task environments. Via a focused review of literature on interactions in wiki-based collaborative writing in the L2 context, I identify large research gaps that need to be filled, which result in the design of the current study.

Collaborative Learning and Collaborative Writing

Collaborative learning

Small group collaboration in language classrooms has been implemented with the popularization of collaborative learning since 1980s. "Collaborative learning" is defined as "an instruction method in which students at various performance levels work together in small groups toward a common goal" (Gokhale, 1995, http://scholar.lib.vt.edu/ejournals/JTE/jte-v7n1/gokhale.jte-v7n1.html). In response to such problems of fragmentation of the curriculum, student passivity, high rates of student attrition occurring in the U.S. undergraduate education in

the 1980s, collaborative learning strategies were widely adopted in higher education across disciplines (Smith & MacGregor, 1992).

Collaborative learning takes various forms, such as peer writing, peer teaching, discussion groups, and interdisciplinary seminars (Smith & MacGregor, 1992). These forms of collaborative learning have "harnessed the powerful educative force of peer influence" (Bruffee, 1984, p. 638) and witnessed many advantages. Challenging the traditional basis of teachers as the authority and regarding knowledge as socially justified belief (Bruffee, 1984), collaborative learning "reforms classroom learning by changing students from passive recipients of information by an expert teacher to active agents in the construction of knowledge" (Goodsell, Maher, & Tinto,1992, p.7). In collaborative learning, students are involved in a process of social and intellectual negotiation and share responsibility for one another's learning (Trimbur, 1989). Collaborative learning is found to enhance students' critical thinking skills, problem-solving skills, and group process skills (Gokhale, 1995; Warmoth, 1998). Also, through collaborative learning, "students learn the 'skill and partnership' of externalized conversation in both the academic community and the professional community that students will eventually write for" (Bruffee, 1984, p.642). As Warmoth (1998) pointed out, collaborative learning provides students reflective insights into the learning process, and serves as a laboratory for "real life" knowledge work.

Collaborative writing

To echo the trend of collaborative learning, writing has witnessed a "social turn" (Trimbur, 1994) in the past two decades. In the 1980s, writing instruction and research shifted from product-oriented approach to process-oriented approach, with the cognitive model of the writing process playing a dominant role (e.g., Flower & Hayes, 1981). The cognitive approach

viewed writing as a recursive and dynamic process, but meanwhile regarded writing as individual and solitary activity. Since the 1990s, writing process has been regarded as more of a social nature: writing is an inherently social and contextualized activity (Grabe & Kaplan, 1996), where interaction comes into play.

Under this paradigm, small group collaboration has received wide attention from L2 writing teachers and researchers. Peer response has been a common group/pair activity in L2 classes, in which students review and provide suggestions on each other's writing (e.g. de Guerrero & Villamil, 1994; Mendonca & Johnson, 1994; Nelson & Carson,1998; Zhu, 2001). A number of researchers (e.g., Ferris, 2003; Hedgcock & Lefkowitz, 1992; Lockhart & Ng, 1995) have noted the cognitive, social and linguistic benefits of peer review. Peer review benefits students' overall second language acquisition (Ferris, 2003), raises students' sense of audience (Leki, 1993; Lockhart & Ng, 1995), and meanwhile helps students develop critical reading and writing skills (Nystrand & Brandt, 1989). Through peer response, students produce higher-quality writing in terms of vocabulary, contents, and organization (Hedgcock & Lefkowitz, 1992).

However, peer response is only one form of collaborative learning in L2 writing, which occurs merely at the final stage of writing. Ede and Lunsford (1990) proposed a *singular texts/plural authors* approach to writing, i.e., writing involving multiple writers co-producing written texts. Scholars in both L1 writing (e.g., Wells, Chang, & Maher, 1990) and L2 writing (e.g., Storch, 2005) support such kind of collaboration throughout the writing process. The L1 composition scholar Bruffee (1993) posited that collaborative writing benefits students by providing certain resources that are not accessible to students performing individual writing; for example, collaborative writing enables students to assume multiple roles that are unavailable

during solitary writing: that of tutor, sounding board, and critical reader. Seeing writing as an emergent and social process, Keys (1994) stated that collaborative writing is a way to foster reflective thinking, especially if L1 learners are engaged in the act of explaining and defending their ideas to their peers.

In L2 contexts, according to Storch (2011), collaborative writing tasks in pairs/groups emerged following Swain's (1993, 1995) seminal work on the importance of output for L2 learning, which claimed that the need to produce written output encourages learners to process language deeply and reflect on language use. Swain (2000) argued that collaborative writing pushes students to negotiate the language use and collaborate in the solution of linguistic problems. Learners have joint responsibility over the production of texts, which promotes a sense of co-ownership and hence encourages students to contribute to decision making on various aspects of writing (Storch, 2005). Many L2 research studies (e.g., DiCamilla & Anton, 1997; Storch, 2002; Swain & Lapkin, 1998) reinforced the positive effect of collaborative writing, by asserting that in the process of co-authoring, learners take into account not only grammatical accuracy and lexis but also writing discourse. Further, research (e.g., Hirvela, 1999) discovered L2 students' linguistic gains because collaborative writing tasks provided them with more opportunities to review and effectively apply what they had learned. More recently, Storch's (2001b, 2002, 2004, 2005, 2011, 2013) extensive work captured L2 researchers' growing attention to collaborative writing, particularly the interactions in L2 collaborative writing tasks.

Interaction has been a significant topic in second language acquisition (SLA). Role of interaction is considered as essential in the development of learners' language proficiency. Interaction can be viewed from multiple theoretical lenses. Below I briefly review interaction

hypothesis that pair/small group work is based on, and then discuss interaction from the sociocultural theory perspective that undergirds the current study.

Theoretical Perspectives on Interaction

Interaction hypothesis

With the social turn in SLA, more L2 research studies endeavored to make sense of learners' engagement with their social and linguistic environment, with a focus on second language input received by the language learner, and interaction between the learner and other conversation partners (Mitchell & Myles, 2004). When Stephen Krashen's input hypothesis (1985) was prominent, Michael Long called for more attention to interaction and proposed *interaction hypothesis*. Long claimed that interaction cannot be simply considered "as a one-directional source of target language input, feeding into the learner's presumed internal acquisition device" (Long, 1981, as cited in Mitchell & Myles, 2004, p.160). Instead, when learners engaged with their interlocutors in negotiations of/about meaning, the nature of the input might be quantitatively changed to ensure comprehensibility. In Long's viewpoint, engaging in interpersonal interaction in which communication problems are negotiated facilitates L2 acquisition. Long (1983) examined communications occurring in numerous native speaker-non-native speaker (NS-NNS) pairs and identified such conversational tactics as repetitions, confirmation checks, comprehension checks and clarification requests to solve ongoing communication difficulties. Interaction hypothesis highlights the role of face-to-face interaction in SLA and leads to a new research direction toward the nature of conversational interaction.

Interaction hypothesis, however, encountered quite a few criticisms. First, critique was from researchers (e.g., Swain, 1985, 1993, 1995) who posited that exposing learners to comprehensible input was not sufficient for successful L2 acquisition. By proposing *output*

hypothesis, Swain (1985) argued that aside from comprehensible input, learners need to be pushed to produce comprehensible and grammatically accurate output so as to stretch their linguistic resources. The other line of criticism was toward "negotiation." Donato (1988, 1994) argued that negotiation studies based on interaction hypothesis had a reductionist view of language and communication. He reasoned that communication discussed in these studies was restricted to message transmission and decoding process; the discussions should also have pointed to how learners interacted vis-à-vis other learners and the given tasks. Learners used language not just to communicate topics and make input more comprehensible, but also to negotiate social relationships. It is important to note that many critics of negotiation studies using interaction hypothesis drew on Vygotsky's (1978) sociocultural theory and looked at interaction from the perspectives of the nature of group/pair relationships and the social context in which activity takes place (Donato & McCormick, 1994).

Interaction from a sociocultural theory perspective

Sociocultural theory originates from Russian psychologist Lev Vygotsky's (1978) work, and also draws on the work of Leont'ev (1978, 1981) and Wertsch (1985). Sociocultural theory posits that human mental functioning is fundamentally a mediated process that is organized by cultural artifacts, activities and concepts (Ratner, 2002). Focusing on the roles of language and interaction, sociocultural theory informs much research on collaborative writing (e.g., Donato, 1994, 2004; Storch, 2005, 2013). Donato (2004) claimed that "sociocultural theory provides this conceptual framework for description and explanation of collaboration and the learning and development it simultaneously effects" (p.295). Below I discuss two main concepts of sociocultural theory: ZPD and activity theory and their respective allied constructs, which informed the research design of this study and guided my data analysis and interpretation.

ZPD, scaffolding, and collective scaffolding

According to Vygotsky (1978), human cognitive development is inherently a socially situated activity. Language learning is a mediated process that involves mediation by artifacts, by self, and by others in social interactions (Lantolf, 2000). Language learners interact via a system of symbols such as language (Vygotsky, 1978). Language is a form of social communication that allows the novice and the expert to plan, coordinate, and reflect on their actions (Wells, 1999). In collaborative writing activity, language, serving as a mediating tool, assists learners to co-construct knowledge and solve problems through interaction.

To interpret the social interaction, Vygotsky (1978) proposed the notion of ZPD, namely "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers'' (Vygotsky, 1978, p. 86). ZPD looks at individual's potential development, in Vygotsky's own metaphor, the "bud" rather than the "fruit" of development. "Buds" of learning grow during social interaction, and "when the functions acquired through assistance become autonomous, they develop into 'flowers'" (Ellis, 2008, p.532). In Ortega's (2009) interpretation, ZPD is a distance between what a student can do in joint activity that is other-regulated, and what he or she can accomplish alone in independent activity that is self-regulated. ZPD "constitutes a potential for learning that is created in the interaction between participants in particular settings" (Wells, 1999, p.249). Warchauer (1997), based on Vygotsky's idea, asserted that "collaborative learning, either among students or between students and a teacher, is essential for assisting each student in advancing through his or her own zone of proximal development" (p. 471).

A construct associated with ZPD that is widely cited in the collaborative writing literature is scaffolding (e.g., Donato, 1994; Lee, 2010, Li & Zhu, 2013; Storch, 2005), which is built on the Vygotskian premise that learning is a socially constructed process. Similar to Vygotskian ZPD, Wood, Bruner, & Ross (1976) defined scaffolding as "a kind of process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts" (p.90). Scaffolding was later popularized by Bruner (1978) as a metaphor for a mother's verbal efforts to maintain conversation with a child and indirectly to promote language acquisition. Scaffolding, therefore, is commonly regarded as a kind of assistance that leads to the completion of a given task and supports children's learning and development. Despite the original use of scaffolding to describe the interaction between adults and children, much L2 research (Anton & DiCamilla, 1998; Donato, 1994; Ohta, 2000; Swain & Lapkin, 1998) has demonstrated that scaffolding can occur among peers, as well, when they collaborate via group/pair work.

One prominent application of the notion of scaffolding to SLA is the studies by Donato (1988, 1994), in which he identified mutual scaffolding among L2 learners. He argued that collaboration with the ‘‘collective orientation to jointly constructed activity" (Donato, 2004, p. 287) enables students to accomplish higher levels of performance than they might achieve by working on their own. Donato (1988, 1994) proposed ‘‘collective scaffolding’’ in his studies to illustrate how learning took place via peer interaction. In the occurrence of collective scaffolding, ‘‘the speakers are at the same time individually novices and collectively experts, sources of new orientations for each other and guides through this complex linguistic problem solving’’(Donato, 1994, p. 46). Donato (2004) later reinforced the characteristics of collaboration in small groups:

setting “jointly constructed goals for the common endeavor” (p.287) and acknowledging the individual contributions to serve the larger goal.

ZPD, scaffolding, and collective scaffolding provide a theoretical support for small group writing. These constructs theoretically guide this study and enable me to examine the nature of peer interaction within wiki writing groups and the influence of interactions on writing products, and the link between interactions and student reflections.

Activity theory, agency and emotion

The other concept that particularly sheds light on my data interpretation is activity theory (Leont’ev, 1978, 1981). Activity theory posits that human purposeful activity is driven by needs or motives. Needs, either biological or culturally constructed, become motives when they get directed at a specific object, and motives are then realized in specific goal-directed actions (Lantolf, 2000). In L2 research on pair/group work, activity theory helped to elucidate the role of motive/goal for understanding interactional processes. Donato (1988) originally discussed the variability in small groups’ interactional behaviors from the perspective of activity theory. He claimed that differences in the nature of small group interaction partly attributed to the participants’ underlying goals: the goal of a loosely-knit group is simply to complete the task while the collective group shares the goal of completing the task together. In the present study, activity theory provides a window into understanding reasons for students’ participation in wiki-based collaborative writing, and explaining possible variations in group/individual writing behaviors.

Associated with motives/goals are agency and emotion. Ford (1992) proposed three psychological functions that “serve to direct, energize, and regulate goal-directed activity: personal goals, emotional arousal process, and personal agency beliefs” (p.3). Agency is “not

simply an individual character trait or activity, but a contextually enacted way of being in the world" (van Lier, 2008, p.163). Duff (2012) described agency as "people's ability to make choices, take control, self-regulate" while pursuing their goals (p.414). She posited that "a sense of agency enables people to imagine, take up, and perform new roles or identities …and to take concrete actions in pursuit of their goals" (p. 414). Therefore, in this study, the examination into participants' agency helps me understand how the students performed wiki collaborative writing tasks in a specific context, and why they performed in the way they do. The other important concept related to motives that mediate human behaviors is emotion. van Lier (1996) described emotion as an emergent source of motivation, including "here-and-now interest in the tasks, the joy of exploration or working together, natural curiosity" (p.105). Vygotsky (1978) proposed the interrelatedness of cognition and emotion in language development: emotion and cognition co-mediate learning. Imai (2010) further argued that emotion mediates one's thinking, behavior, and goals. Departing from the traditional view of emotion as private and inner reactions of an individual, Swain (2013) asserted that "emotions are interpersonal," "socially and culturally derived," and "may be co-constructed as an event progresses" (p.196). Taken together, the concepts of activity theory, agency, and emotion assisted my inquiry about what mediates wiki group interaction and also enabled me to interpret the influence of interactions on writing products and connection between group interactions and student reflections.

In brief, the theoretical concepts in relation to the constructs examined in this study are displayed in Figure 2.

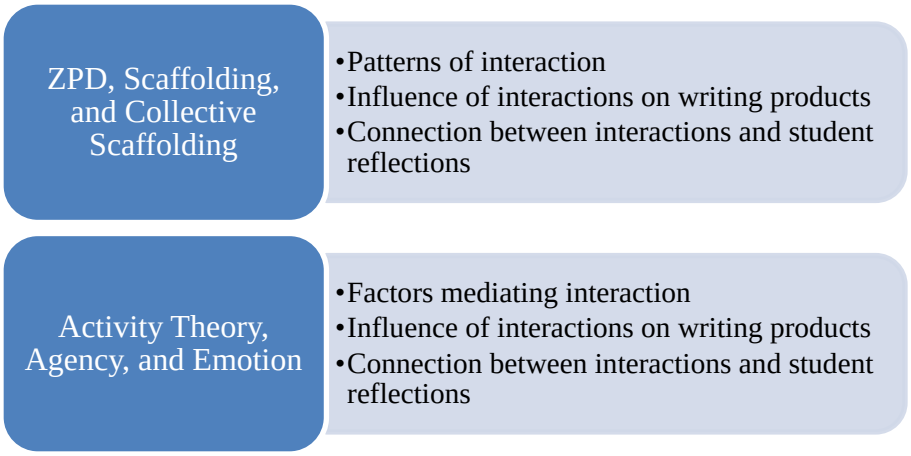


Figure 2. Theoretical Framework of the Study

Student Interactions in Face-to-Face L2 Writing Context

Previous research in L2 learning has explored student interactions in face-to-face and computer-based writing contexts. I first discuss how students interacted in face-to-face writing contexts, including peer response occurring at the final stage of writing and collaborative writing involving entire writing processes. There are three main strands of research on interactions in L2 face-to-face collaborative writing tasks: student attention to language, patterns of interaction, and mediating factors.

Attention to language

One line of inquiry examined students' attention to language by analyzing Language Related Episodes (LREs) during collaborative writing. One seminal work (Swain & Lapkin, 1998) examined the peer interaction between French as a Foreign Language students when conducting a jigsaw task. Examining instances of collaborative dialogue in which students are engaged in problem solving and knowledge construction, Swain and Lapkin (1998) found two types of LREs: lexis-focus LRE in which learners seek vocabulary, discuss the meaning of words or phrases, and consider alternative expressions, and form-focus LRE in which learners

deliberate on grammatical forms such as word forms, syntax, and spellings. Their study derived that LRE provides evidence of language use and of the occasion for language learning. In a genre-based EAP writing class, Loewen and Basturkmen (2005) reported the processes in which small groups of students co-constructed written texts when engaged in small group writing tasks. Their study suggested that students attended to both language forms (e.g., grammar, vocabulary, and spelling) and written discourse (e.g., text organization and genre conventions) reflected in LREs. In a more recent study, Storch and Wiggleworth (2007) required advanced ESL learners to work on two writing tasks: a data commentary report and an argumentative essay. Results showed that students elicited many LREs during collaborative writing, and resolved most of the LREs correctly in both writing tasks. Also, this study found that the students paid more attention to lexical choices than grammatical accuracy due to their fairly advanced English proficiency level.

Research concerning students' attention to language was sometimes involved with the discussion of the influence of L2 proficiency level on the writing process, and/or the collaborative writing product. For example, Leeser (2004) explored the impact of proficiency pairing on the production of LREs. Ten Spanish as a FL learners worked in pairs of either similar proficiency or mixed proficiency to jointly complete a writing task. After analyzing the number and type of LREs and their resolution, Leeser concluded that the high-high pairs elicited the greatest number of LREs, followed by high-low pairs. The low-low pairs produced the least number of LREs. Also, low-low pairs had high proportion of unresolved LREs compared to high-high pairs and high-low pairs. Therefore, Leeser asserted that proficiency pairing had impact on students' attention to language use.

Larger-scale studies (Storch &Wigglesworth, 2007; Wigglesworth & Storch, 2009) compared the writing product completed by pairs and completed individually. Both studies concluded that although there were no statistically significant differences in fluency and complexity of the texts, pair writings were significantly more accurate than individual writings. Wigglesworth and Storch (2009) attributed more accurate texts to the fact that students in pair writing focused on the language use and provided collective scaffolding and mutual feedback throughout the collaborative writing process. More recently, Dobao (2012) compared students' written texts in terms of fluency, complexity, and accuracy among groups of four learners, pairs, and individual learners in Spanish as a FL classes. The data revealed that writings conducted in small groups were more accurate than writings done either individually or in pairs, because small groups pooled more language resources and more frequently discussed language points, and thus produced most LREs and a highest percentage of correctly resolved LREs. Additionally, Shehadeh (2011) explored EFL students' perceptions about collaborative writing via an open-ended question survey in an empirical study with college students in United Arab Emirates. Most students reported that the collaborative writing activity enabled them to generate ideas and pool language resources together and thus produced texts of higher quality.

Nature of peer interaction

The other line of research focused on the nature of peer interaction, including patterns of interaction, group dynamics, and participant stances. As to students' interaction during peer response tasks, Lockhart and Ng (1995) examined ESL students' interaction by analyzing transcripts of response dyads. They identified four reader stances, with regards to how students approached peers and their texts: authoritative stance in which the reader played a dominant role in evaluating the peer text, interpretative stance in which the reader controlled the talk by

conveying his/her feedback on peer text and allows the writer to respond, probing stance in which the reader offered the writer equal opportunity to talk about the text, and collaborative stance in which the reader gave the writer an opportunity to explain his/her intentions and express what and how to revise. The latter two collaboration-oriented stances allowed the students to have a deeper understanding of the writing process. Furthermore, Zhu (2001) investigated interaction in mixed peer response groups composed of one non-native speaker and two or three native speakers each, and discussed the dynamics of interaction by comparing turn-taking behaviors, language functions and written feedback that the native speakers and non-native speakers performed. The findings suggested that the non-native speakers took fewer turns and produced fewer language functions during oral discussion of writing, particularly when they were performing the writer role, but they were comparable to the native speakers in terms of global comments provided.

Storch (2002) conducted a collaborative writing project with ESL college students and identified four patterns of interaction in ESL pair writing processes: collaborative, dominant/dominant, dominant/passive, and expert/novice. She reported that the students in the pairs displaying a collaborative pattern learned more than the pairs displaying other three patterns. The students in the expert/novice pattern showing a collaborative orientation also performed well compared with dominant/dominant pattern and dominant/passive pattern. This study, thus, indicated that patterns of peer interaction influence students' writing performance, which was echoed by Watanabe (2008). Focusing on the interactions of the same ESL student with a higher-proficiency peer and a lower-proficiency peer sequentially during pair writing, Watanabe (2008) investigated ESL learners' collaborative writing with both a peer of lower language proficiency level and one of a higher proficiency level. Individual interviews revealed

that the students believed both the higher- and lower-proficiency peers could provide opportunities for learning if they displayed a collaborative manner through sharing many ideas and making equal contributions to writing. Watanabe (2008) thus claimed that the pattern of interaction may exert more influence on writing performance than the L2 proficiency level does. Storch (2008) echoed the argument, examining the depth of engagement within multiple pairs of different language proficiency grouping, including elaborate engagement where learners deliberated on language items, and limited engagement in which one learner made a suggestion and the other repeated or acknowledged the suggestion. Storch (2008) posited that the depth of peer attention and engagement was a great contributor to subsequent L2 learning than L2 proficiency level. All these studies confirmed the positive impact of a collaborative orientation and deep mutual engagement on students' learning/writing experience.

Mediating factors

Previous studies discussed factors mediating pair/group interaction, such as L2 proficiency (e.g., Kim & McDonough, 2008), culture (e.g., Nelson & Carson, 1998), and learners' goals of participating in the writing activity (e.g., Storch, 2004). For instance, as discussed in the former section, Leeser (2004) examined Spanish as a FL students' attention to language when they worked in pairs of either similar proficiency or mixed proficiency, and reported that proficiency pairing had impact on writing process: high-high pairs elicited the most LREs with the highest proportion of resolved LREs, while low-low pairs produced the fewest LREs with the lowest proportion of resolved LREs. In another study with Korean as FL students, Kim and McDonough (2008) compared LREs produced by pairs of similar language proficiency and pairs of different proficiency in the dictogloss tasks. The intermediate–advanced pairs were found to produce more LREs and a greater proportion of correctly resolved LREs than intermediate–

intermediate pairs. Also, Kim and McDonough (2008) noted that the proficiency level influenced the relationships the pairs formed. Interestingly, the intermediate learners who displayed a collaborative stance when working with an intermediate interlocutor tended to be more passive when they worked with a more advanced interlocutor, while those who displayed a dominant stance when working with an intermediate interlocutor became more collaborative when working with an advanced interlocutor.

One renowned research addressing the influence of culture in peer interaction is Carson and Nelson (1996)'s study on peer response. The researchers delved into the interaction styles of three Chinese-speaking students compared with two Spanish-speaking students in peer response groups in an ESL composition class. They discovered differences in task orientations and interaction behaviors between the two groups of students, and posited the influences of students' cultural backgrounds on peer interaction. In their study, Chinese students' primary goal in peer response to maintain group harmony accounted for the observation that they were reluctant to disagree with peers or to offer critical feedback. This study captured researchers' attention to cultural background as a possible mediating factor in peer interaction. More recently, Nguyen (2008) examined different proficiency levels of Vietnamese EFL students' language use compared with native Australian English speakers during a peer response task, and detected differences in their use of modifier, lexical and syntactic devices while critiquing peer writing. The observed differences, in Nguyen's opinion, were related to such factors as L2 linguistic competence, L2 pragmatic knowledge, and cultural background.

With more influence of sociocultural theory in analyzing learning processes, learner motive/object as a mediating factor has captured our increasing attention. From the perspective of Leont'ev's (1978, 1981) activity theory, learner motives/objects influence learner orientations

and approaches to second language learning tasks. Storch (2005) identified four distinct patterns of dyadic interactions in pair writing and explained the interactional variations in relation to participants' goals and whether the goals of the dyads were shared. Specifically, both the collaborative and expert/novice pair shared the goal of focusing on learning process. However, the motive for the dominant/dominant pair was to display his or her expertise, and the domineering participate in the dominant/passive pair emphasized the completion of tasks rather than learning as the goal of their group work.

Zhu and Mitchell (2013) innovatively examined students' peer response stance from the lens of activity theory, and highlighted the role of motives/goals in peer interaction. In the case study with two Spanish ESL learners in an EAP course, the researchers explained how the two students who had a similar culture background adopted different stances when playing as a writer and a reader in peer response activity, due to different motives. Specifically, one participant's goal of writing clarity resulted in her *reader-centered, active,* and *eliciting* stance in the writer role, and *text-based, reacting* as reader stance in the reader role. The other participant's *responding* and *cooperative* stance as a writer and *analyzing* and *instructing* stance as a reader were guided by her motive/object to improve her own learning process through applying newly-learned concepts to the analysis of peer writing (Zhu & Mitchell, 2013).

Student Interaction in Computer-Based L2 Writing Context

During recent decades, development of computer technologies especially the Web 2.0 tools, including blogs, wikis, and social networks, have greatly facilitated collaborative activities (Warschauer & Grimes, 2007). As Kessler and Bikowski (2010) stated, ''the evolution of collaborative writing may be intrinsically connected with the iterations of technology since new developments provide new opportunities for collaboration'' (p. 43). Technology has exerted

influence on the writing process and practices in many ways and has brought about the transition from pen to word processing, and then from word processing to the networked writing environment (Kessler et al., 2012). As noted in an earlier discussion, CMC tools lead to more equal communication than face-to-face discussion (Ware & Warschauer, 2006; Warschauer, 1997). Also, CMC allows students to practice their writing skills in a nonthreatening environment and to contribute at their own time and pace (Colomb & Simutis, 1996). In L2 classrooms, learners collaboratively write in CMC environment by using either synchronous tools (e.g., online chats, Google Docs) or asynchronous tools (e.g., discussion boards, email, and wikis). Increasing research studies (e.g., Bradley et al, 2010; Hirvela, 2006; Kessler et al., 2012; Kost, 2011; Li, 2013) have examined peer interaction in computer-based collaborative writing tasks.

In past decades, research in CMC writing context mostly addressed student discussion about course topics, not in the task of collaborative writing per se. For instance, Sengupta (2001) examined the nature of peer interaction in two network-based Contemporary English Language classes in Hong Kong. The students discussed central issues/concepts arising from the course such as nature of multimodal texts and persuasive devices using the bulletin board of Web class. The results showed that because of the public nature of posted information and sense of accountability, students engaged in online collaborative activities more actively. To take another example, Hirvela (2006) used a course listserv to facilitate student interaction as they negotiated their understanding of grammar points in a graduate TESOL seminar. The students were asked to participate in online discussion about the topics of pedagogical grammar, by posting and commenting via email. Hirvela found that students actively constructed knowledge and understanding in the community of practice through the listserv.

More recently, Kessler, Bikowski, and Boggs (2012) conducted a collaborative writing project using Google docs in an EAP class at a university level. The students in small groups of three collaboratively worked on three writing tasks. Results revealed that students attended more to meaning than form when they worked on joint writing tasks. The study also highlighted the occurrence of collective scaffolding during simultaneous editing in Google docs, where users can see their collaborators' text appear as it is being written. They argued that such interaction in Google Docs ensured timely feedback, allowed for opportunities for simultaneous language elaboration, and increased textual production. This study made us aware of the distinct affordances of Google Docs for collaborative writing in the EAP context.

In current L2 classrooms, however, the predominant tool integrated into collaborative writing projects is the wiki because of the wide acknowledgment of its collaborative nature. Below I discuss in detail the research strands regarding student interactions in wiki-based collaborative writing in the current body of literature.

Research on Interaction in Wiki Collaborative Writing Tasks

Wikis have been increasingly implemented in L2 learning settings. Three main research themes have been explored concerning interactions in wiki-based collaborative writing: writing/revising behaviors, patterns of interaction, and mediating factors.

Writing/revising behaviors

The primary line of research in this area discussed writing/revising behaviors in wikis. Some studies (e.g., Mak & Coniam, 2008) examined students' revision types in general, some (e.g., Kessler & Bikowski, 2010) focused on students' meaning changes, some (i.e., Arnold et al, 2012; Kost, 2011) investigated revisions on both forms and contents, while others (i.e., Kuteeva, 2011) discussed students' awareness of genre knowledge. I discuss these sub-strands below.

Writing change functions

In Mak and Coniam's (2008) study, ESL secondary school students formed wiki writing groups and jointly produced a school brochure to be distributed to their parents. The study revealed four main types of writing change functions that small groups were engaged in: adding ideas, expanding ideas, reorganizing ideas, and correcting errors. Kessler and Bikowski (2010) specifically discussed a class of pre-service EFL teachers' attention to meaning while creating a course wiki. They identified different types of meaning changes that pre-service teachers made via wikis, including adding information, clarifying/elaborating information, synthesizing information, and adding web links. Differently, in a study on German as a FL college students' collaborative writing in pairs, Kost (2011) discerned both meaning changes (e.g., additions, deletions, and substitutions) and form changes (e.g., edits on spelling, punctuation, verbs, nominal and adjectival endings). Students' revision behaviors, discussed in above studies, partly showed their joint writing process.

More recently, Li (2013) elaborated on five categories of writing change functions: addition, deletion, rephrasing, reordering and correction when a small group of Chinese EFL students co-constructed the joint writing. These types of functions were also sub-categorized according to different linguistic units, including global level (i.e., sentence, and paragraph) and local level (i.e., clause, phrase, and word). Also, to explicate group members' mutual engagement with each other's texts, the study distinguished writing changes made to the texts constructed by the member himself/herself and those made to the texts composed by other members.

Focus on forms or meaning

The other line of inquiry relating to revision behaviors is students' focus on forms vs. meaning during collaborative writing processes. Previous studies yielded mixed results. Lee (2010) reported that the Spanish as a FL students provided linguistic scaffolding for each other in their small groups by correcting errors at both sentence and word levels in addition to engagement with writing contents while working on collaborative writing tasks. Elola and Oskoz (2010) reported that Spanish-major college students collaboratively worked on different writing components: content, organization, grammar, editing, structure, and vocabulary. The students not only jointly generated and refined contents, but also focused on forms and revised local aspects to achieve language accuracy.

Nevertheless, other studies (e.g., Kessler, 2009; Woo et al., 2011) revealed that students focused on meaning rather than forms in the collaborative writing activity. In Kessler (2009), the pre-service EFL students provided many content-based feedbacks, and overlooked grammatical errors that did not affect the understanding of the text meaning. The interview data suggested that the students paid low attention to errors because they believed that a wiki was an informal platform for writing. Similarly, Woo et al. (2011) found that Hong Kong ESL primary students were much more involved in content changes during collaborative writing projects. They partly attributed the students' lower rate of form changes to the feature of automatic spell checks in the wiki application PBWorks used in their study.

Attention to genre knowledge

Moreover, L2 writing researchers (e.g., Alyousef & Picard, 2011; Kuteeva, 2011) also examined students' use of genre knowledge in wiki writing tasks. Kuteeva (2011) launched a wiki-based collaborative writing project in an EAP course at a Swedish university. Kuteeva

analyzed the interactional metadiscourse resources of student writings in light of Hyland and Tse (2004)'s taxonomy. This study suggested that writing in the wiki made students raise awareness of audience and thus increased the use of interpersonal metadiscourse, such as engagement markers, hedges, self-mentioning, attitude marker, and booster. Similarly, Alyousef and Picard (2011) designed wiki-based writing tasks pertaining to students' discipline in an ESP course in Australia. They analyzed students' written texts, including discussion of five academic questions, and a business report, drawing on both Hyland and Tse's (2004) and Hyland's (2010) metadiscourse models. The results revealed that the students used most spoken-like interactional metadiscourse markers such as engagement markers and self-mentions in wiki discussion pages, while they highly employed hedges and attitude markers, the distinct features of academic writing, in the business report. Therefore, the researchers believed that the use of wikis enhanced students' awareness of audience, and wiki-based collaborative writing bolstered students' learning of academic genre. The above two studies suggested a great potential for using the wiki as a learning tool in EAP/ESP courses.

Patterns of interaction

The other approach to examining wiki writing process is to focus on group dynamics and patterns of interaction. Bradley, Linstrom, & Rystedt (2010) conducted a wiki-based collaborative writing project in an ESP course in an engineering program. Through qualitative analyses of the archived wiki "History" pages, Bradley et al. (2010) identified three distinct patterns of interaction during the course of text co-construction. One pattern was a lack of visible interaction, where only one individual posted a full piece of text; the second pattern was cooperation, where individuals worked in a parallel fashion; the third pattern was collaboration, where individuals engaged with each other's ideas and jointly wrote the essay. In Arnold, Ducate,

& Kost (2012)'s study with German as a FL college students, both cooperation and collaboration patterns occurred, especially when students made formal revisions, whereas more cooperation patterns emerged when they made content changes. That is, students were more willing to engage with revisions of the forms than the contents of others' writing. Further, Arnold et al. (2012) analyzed three task roles that group members assumed according to their contribution to group task completion: "team player" who completed their fair share, "leader" who contributed more than was expected, "social loafer" whose contribution was less than their fair share, and "free rider" who contributed nothing. To decrease occurrences of "free rider" and "social loafer," the researchers proposed some pedagogical suggestions such as grouping students based on their topic preference, and explicit discussion of the distribution of workload.

Different from the above-mentioned studies that discussed student interaction merely through the analysis of written texts, Li and Zhu (2013) brought forth the ways of small groups' joint problem solving regarding writing, i.e., "ways in which students negotiated the writing tasks as well as ways in which students acted upon their negotiated meaning through text construction" (p. 67), by drawing on the primary data of wiki "Discussion" records and the secondary data of wiki "Page" and "History" records. Three distinct patterns of wiki-based interactions emerged: collectively contributing/mutually supportive, authoritative/responsive, and dominant/withdrawn. From the students' perspectives, the first two patterns afforded more opportunity for learning than the third pattern. This study thus highlighted the influences of the nature of computer-mediated interaction on students' perceived learning experiences.

Factors mediating wiki interaction

The wiki per se was "not enough to create the interactional accomplishment needed for collective production" (Lund & Rasmussen, 2008, p. 406). Various factors may mediate wiki-

based collaborative writing activities, but only a few studies addressed this topic. Writing task is found to be one factor. Mak and Coniam (2008) stressed a social context for a real audience and an authentic writing task. Lee (2010) also reiterated the importance of writing tasks, maintaining that topic/task choice affected the degree to which students engaged in collaborative writing. Specifically, Lee (2010) created different types of meaning-focused tasks with an emphasis on certain linguistic structures, such as using two distinct aspects of the past tense in Spanish to narrating a story beginning with "once upon a time..." The results showed that these engaging wiki topics allowed students to be creative and meanwhile to attend to certain vocabulary and grammatical structures. Students not only produced a great amount of writing, but also embedded multimedia sources to support writing contents. The findings echoed Lund's (2008) observation that it is the task, not the technology itself, which may promote the high degree of collaborative exchange in the wiki environment.

Apart from the discussion of writing tasks, Zorko (2009), via an open-ended questionnaire survey and semi-structured interviews, examined the factors that affected the way ESL students interacted in the wiki environment from four respects: interaction with peers, interaction with teacher, interaction with resources, and interaction with the wiki technology. Zorko identified such factors that bolstered collaboration as teacher's prompt response, accessibility of resources and scaffolding, and user-friendliness of the wiki, and the factors that discouraged collaboration, including technical glitches, frequent face-to-face meetings, and preference for publishing merely the finished product. Lee & Wang (2013) recently added to such conversation on the factors facilitating and hindering student engagements. They found via follow-up interviews that three factors facilitated student involvement in the wiki project: an even share of workload, appreciation of different opinions, and constant communication. The

factors that hindered student engagement lied in the challenges arising from asynchronous communication, time pressure, insufficiency of individual's task-related skills, and group members' lack of recognition of other individuals' contribution.

Gaps in the literature

Although research studies on wiki-based collaborative writing have been increasingly conducted in a variety of L2 learning settings, no study has examined the use of wikis for collaborative writing in the U.S. university-level EAP context. Therefore, I implemented the wiki project in a graduate EAP course at a university in the U.S. As to the research topic of small group interactions in wiki-based collaborative writing, large gaps still remain. Below I address these gaps, and explain how I bridged the gaps in this study.

Previous research addressed students' writing/revising behaviors in wikis within small groups, but few studies (Li, 2013) have discussed small groups' collaborative writing processes reflected in both task negotiation and text co-construction. At most occasions, language teachers and researchers instructed students to use wiki "Edit" function in the wiki writing project, but ignored the pedagogical use of the wiki "Discussion"/ "Comments" functions. Accordingly, wiki interaction behaviors examined were limited to students' text constructing behaviors. To bridge this gap, I trained students to use wiki "Discussion," "Edit," and "Comments" modules in the Wikispaces site. I aimed to capture a comprehensive picture of small group interactions including task negotiation mirrored in wiki "Discussion" /"Comments" records and text co-construction revealed from wiki "History" records.

Also, in terms of writing interaction, little research (Li, 2013; Mak & Coniam, 2008) so far has analyzed group member's individual contribution to the group writing or has delved into the process of how students built on one another's contribution to develop the joint writing

product. As Ducate et al. (2011) argued, research involving revisions via wikis "has just begun to scratch the surface" (p. 515). Storch (2011) added "there is still a lack of clarity of the nature of wiki collaboration" (p.285). Thus, I drew on the constructs of ZPD, scaffolding and collective scaffolding and explored the occurrences of mutual engagement and scaffolding while students interacted in wiki-based collaborative writing tasks within their small groups. Specifically, I adapted scaffolding mechanisms reported in previous studies (e.g., Liz, 1991; Villamil & Guerrero, 1996; Wood et al., 1976;), and also constructed coding schemes of task discussion and text construction based on the emerging data to investigate wiki-based small group writing interaction from a sociocultural theory perspective.

Moreover, previous research studies (Li & Zhu, 2013; Storch, 2002) identified distinct patterns of interaction in collaborative writing, and argued that different interactional patterns influenced student's learning outcome or perceived learning experiences. However, what has yet to be further explored is the influence of group interactions on joint writing products, and the link between group interactions and student reflections about using wikis for collaborative writing. Although much research has examined students' perceptions about wiki-based collaborative writing, it is far from complete and conclusive. The previous research studies applied only one or two data sources, mostly interviews (e.g., Chao & Lo, 2011; Lund, 2008; Zorko, 2009), to explore students' perceptions. I believe that triangulation of data sources would help contribute to a broader understanding of the issue under review. Thus, I utilized Likert-scale questionnaire survey, semi-structured interviews, and reflection papers to uncover students' emic perspectives and delved into the possible connection between student reflections and patterns of interaction.

In addition, only a few research studies (Lee & Wang, 2013; Zorko, 2009) have examined the factors that mediated small group interaction in wiki-based collaborative writing. No study has investigated why students in small groups interacted in the way they did during wiki collaborative writing activities from the lens of sociocultural theory, as those studies in peer response (Jin & Zhu, 2010; Zhu & Mitchelle, 2013) and face-to-face collaborative writing (Storch, 2004). Therefore, I explored the mediating factors from a sociocultural theory perspective, taking into account students' motives and goals in performing wiki collaborative writing tasks, their agency and emotion, and their prior cultural and learning experiences.

Summary

In this chapter, I discussed the background of collaborative writing and theoretical frameworks that guided this study. The constructs of sociocultural theory, such as ZPD, (collective) scaffolding, activity theory, agency, and emotion provide valuable lens to understand and interpret the nature of interaction and collaboration in wiki-based collaborative writing. Afterwards, I reviewed the current body of literature on interactions in peer response and collaborative writing, both in face-to-face and computer-based writing modes. I continued to discuss wiki-based collaborative writing, which has been increasingly implemented in L2 classes, due to the development of computer technologies. After I synthesized the research on interactions in wiki collaborative writing, I identified research gaps that I aimed to fill. In this dissertation study, I explored small group interactions in wiki-based collaborative writing within a team research project in an EAP course at a large public research university in the U.S. I will present details of the study methodology in the following chapter.

CHAPTER THREE: RESEARCH METHODOLOGY

In this chapter, I describe the methodological approach I employed in this study. I present the research design, the setting, participants, research instruments, data collection methods and data analysis procedures. The purpose of the study was to examine small group interactions when ESL students jointly worked on wiki-based collaborative writing tasks within a team research project in an EAP course at a large public research university in the southeastern U.S. In this study, I seek the answers to the following research questions:

RQ1. What characteristic patterns of group interaction are visible when small groups of ESL graduate students work on two collaborative writing tasks using wikis?

RQ1.1 How do students in their small groups negotiate writing tasks and engage with each other's ideas via wikis?

RQ1.2 How do students in their small groups co-construct written texts via wikis?

RQ 1.3 How do students scaffold each other during wiki-based collaborative writing?

RQ2. What factors may mediate small group interactions in ESL wiki-based collaborative writing?

RQ3. In what ways do group interactions influence the quality of small groups' wiki writing products in relation to two writing tasks?

RQ4. What are ESL graduate students' reflections on wiki-based collaborative writing? In what ways do these reflections connect to small group interactions?

Research Design

In this inquiry, I employed a multiple-case study design to explore wiki-based collaborative writing through multiple small groups (cases), with each group as a bounded system (Stake, 1995, 2006; Yin, 2009). That is, the study consisted of multiple bounded systems of wiki small group writing, and the study as a whole was bounded by parameters of time and place with the course of EAP 1851: English for International Students II. According to Yin (2009), a multiple-case study explores similarities and differences both within and between cases; it is utilized to either predict similar results across cases or predict contrasting results and for predictable reasons. Investigation of multiple cases in this study enabled me to portray different perspectives on wiki-based collaborative writing activity. Also, multiple cases add "confidence to findings" (Miles & Humberman, 1994, p.29) and "the evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust" (Herriott & Firestone, 1983, as cited in Yin, 2009, p.53).

This case study was "exploratory," (Merriam, 1998; Yin, 2009) which allowed me to observe the wiki-based collaborative writing activity in its naturally occurring context and understand the complexity of wiki small group interactions in relation to various sociocultural influencing factors. Meanwhile, the research design of this study corresponded with Creswell's (2007) description of case study research as "a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information…, and reports a case description and case-based themes" (p. 73). Specifically, this study drew on multiple data sources (i.e., questionnaires, interviews, reflection papers, and instructor assessment) and explored four cases of wiki-based small group writing in the EAP context over a span of nine weeks.

Academic Setting: The EAP Course

I conducted the study in the EAP program located at a southeastern public research university in the U.S. This program prepares English language learners for a successful transition to a degree program at the university and for active participation in the U.S. academic environment. The students with whom I worked were from two sections of an EAP course "English for International Students II" (EAP1851) offered to graduate students. I chose the course EAP1851 as my research site for two main reasons. First, my study involving collaborative writing fit into the team research project in this course. Second, as noted in the earlier discussion, some problems occurred during the implementation of the team research project in previous classes, such as inconvenience of collaboration, difficulty in scheduling face-to-face meeting time suitable for everyone, and group members' unequal contribution. Since previous research (Lee, 2010; Li, 2012b; Lundin, 2008) posited that the affordance of wikis eases collaborative process, facilitates interaction, and supports students' writing development, the integration of wikis into the team research project was expected to help facilitate students' collaboration and writing process, and bring innovation to the academic writing class.

The two sections of the EAP1851 course were taught by the same instructor in the Spring of 2013. The instructor believed in a positive role of technologies in EAP instruction, so she volunteered to cooperate with me in this wiki group writing project. She taught EAP courses for the fourth semester at this university when I conducted this study. According to the course guide (Appendix 1), this course aimed to develop international graduate students' academic English skills, with an emphasis on researching and producing academic papers and presentations in different academic genres. This course consisted of three major assignments: two individual tasks and one collaborative task. The first individual task was a position paper in which each

student wrote a 4- or 5- page argumentative paper on a topic of immigration. The next task was a team research project in which students worked collaboratively in small groups to produce a research proposal, an annotated bibliography and an academic oral presentation regarding the topic of globalization. Since my study focused on using wikis for collaborative academic writing, I integrated wikis into two writing tasks, namely Research Proposal and Annotated Bibliography. I will discuss the details of the two tasks in the subsequent section of the chapter. In the final individual project, students self-identified a research topic, wrote a research proposal, constructed annotated bibliography, produced 8- to-10-page research paper and conducted an oral presentation. This individual task, sharing some identical components of the team research project, would allow students to draw on the knowledge and skills that they learned in the collaborative wiki writing project, so it afforded an opportunity for me to further elicit students' perceptions about the influence of the wiki project on their learning.

In the next section, I briefly discuss the basic information about the participants and the course instruction, accessed via student pre-task questionnaires and an email message with the instructor.

Participants

Participants in the study were twenty-nine ESL graduate students enrolled in two sections of EAP1851 in the Spring of 2013. Twenty-three were males, and six were females. Fourteen came from one section and fifteen came from the other section. Twenty-five students originated from China, and the other four came from Iraq, Saudi Arabia, Turkey, and Russia, respectively. The participants majored in diverse academic disciplines such as finance, marketing, and engineering. They were aged at the average of 25. Their English proficiency levels were generally intermediate, as suggested by the course curriculum.

Course materials and instruction

The textbook for this course was *Envision in depth: Reading, Writing, and Researching Arguments, 2nd edition* (Alfano & O'Brien, 2011). It covered contents in analyzing and composing arguments, designing and conducting research projects, and producing persuasive visual and oral presentations. It also included a unit of representative readings with the theme of contemporary culture, including social media and culture, environmentalism/sustainability, and globalization issues. Moreover, the textbook had a well-developed companion website http://wps.ablongman.com/long_alfano_envision_3/, which offered a wide range of valuable resources for students**.** The classroom teaching materials were composed of the textbook, the instructor's PowerPoint tutorials, and the course guide (Appendix 1) co-designed by the course coordinator and course instructors.

The class met every other day for a two-hour session from Monday to Friday weekly. For the team research project into which I incorporated the wiki, students were required to choose a research topic similar to the "McDonaldization" idea in the textbook, but involving other companies such as Wal-Mart, Starbucks, Disney, or Coca-Cola. Regarding Task 1 (Research Proposal), in addition to the textbook and instructors' PowerPoint tutorials basically introducing rhetorical structures of research proposals, the instructor guided the students to study a detailed proposal guideline, and discussed a few sample research proposals selected from the companion website of their textbook in class. Regarding Task 2 (Annotated Bibliography), the instructor guided the students to work through relevant instructions in the textbook and in the copy of the team research project guide (see Appendix 2). The instructor also selected a few YouTube tutorials on how to write an annotated bibliography to view and discuss in class.

Wikispaces Site

A variety of wiki tools have been used in language classes so far, such as Wikispaces, PBWorks, MediaWiki, and Wetpaint. I selected Wikispaces (http://www.wikispaces.com/) as a platform for students' collaborative writing in this study, mainly because of its great popularity in higher education, particularly in L2 learning settings, as well as my previous research experience using Wikispaces as a collaborative writing site for EFL college students in China.

I set up two Wikispaces sites for the two class sections. The students in the same class section shared a Wikispaces site. I set the private permission mode for each wiki site so that only the students, the course instructor and I could view and edit wiki pages. The Wikispaces site included the navigation modules of writing tutorials, writing tasks, writing groups, and writing resources, as seen in the right side of the screen in Figure 3. These nagivation tabs were visible to the students in the class section, the instructor and me.

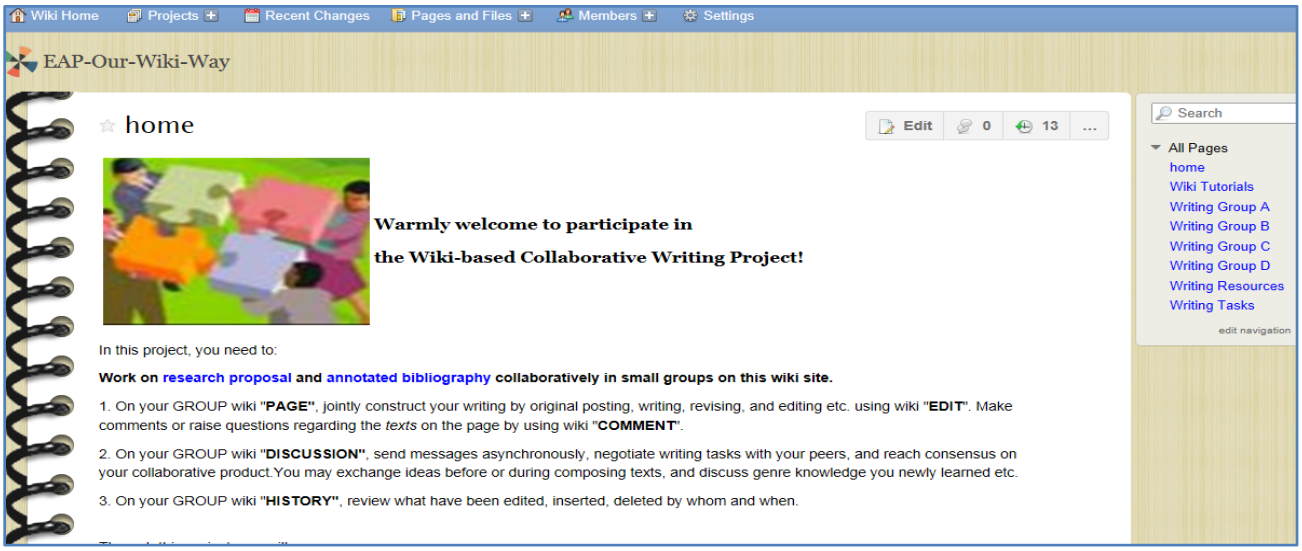


Figure 3: Screenshot of the Home Page of Sample Wikispaces Site

In particular, per the instructor's request that students could not see writings from other small groups at the writing stage, I created small group tabs with a private mode under wiki

"Projects" for the students to co-construct their writing within small groups. Specifically, the students joined the designated Wikispaces site using a pseudo name, entered their respective writing group tabs (i.e., Writing Group A, Writing Group B, Writing Group C, Group D) under Annotated Bibliography and Research Proposal, and work on the two writing tasks by using wiki "Edit," "Discussion," "Comments," and "History" modules. Figure 4 is illustrative.

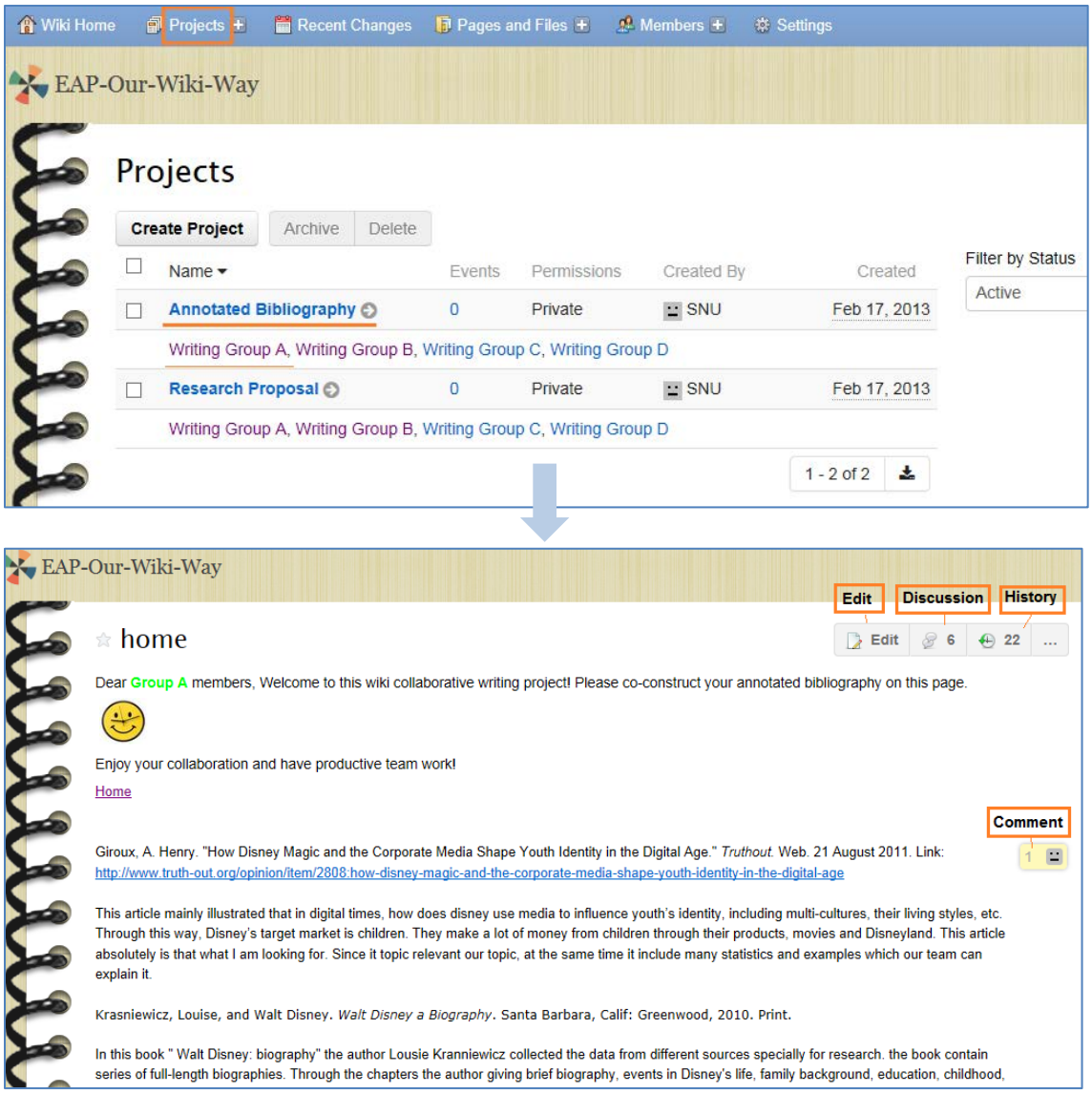


Figure 4. Screenshot of sample "Projects" in Wikispaces

Wiki Writing Tasks

Wiki writing tasks were part of a large team research project that required students to work within their assigned small groups to research on a specific topic, write academic papers, and do an oral presentation. This team research project consisted of seven sub-tasks: research proposal, annotated bibliography, presentation plan outline, final draft of the team's slides, a presentation handout for class, discussion questions, and oral presentation. Since my study aimed to examine the nature of students' collaborative academic writing processes on wikis, I incorporated the first two sub-tasks, i.e., Research Proposal and Annotated Bibliography, into the wiki project. I provide the detailed information concerning the two wiki tasks below.

Research proposal

Task 1 required students to write a two- or three-page research proposal, including the research background, research questions, methods, and significance. The rhetorical moves that the students were instructed to cover were different from those of a commonly recognized research proposal illustrated by Swales (1990). The guidance and requirements for this task are displayed in Appendix 2: Team Research Project Guide.

Students collaboratively worked on this task in small groups using the Wikispaces site throughout writing processes. Under designated group tabs in the wiki Home Page (shown in Figure 3), group members brainstormed specific ideas regarding the research topic they would select. The small groups discussed the focused aspects of a specific topic that they planned to analyze using a Research Sketch (see Appendix 2 for details). Afterwards, each small group co-constructed a research proposal using their group tab under the wiki "Projects" (displayed in Figure 4). The students were asked to make use of the wiki "Discussion," "Comments," and "History" modules to discuss and compose their joint writing. The students were also encouraged

to check and contribute to their group wiki frequently and make revisions on their joint writing in contents, style, and form. Moreover, they were invited to consult instructional materials, and revisit writing rubrics that could be accessed via Wiki "Resources" on the Home Page of the Wikispaces site.

Annotated bibliography

Task 2 was Annotated Bibliography. Regarding the topic that each small group had discussed in the research proposal, the small group collectively selected nine or twelve sources (three sources per person) and jointly wrote annotated bibliographies of these sources in the wiki small group space under "Projects." For each source, they were required to include complete citation, the purpose of the work, a summary of the content, its relevance to the research topic, and special features of the source (see Appendix 2 for more details of requirements for this task).

Students were asked to engage with discussion and writing about the sources that their group partners selected in addition to constructing bibliographies of the three sources they selected themselves. Students were expected to contribute to their group wiki frequently and revise their joint writing collectively in contents, style, and form. Also, they were invited to consult instructional materials, writing samples, and writing rubrics during their writing processes.

Data Collection Procedures

This study spanned a total of nine weeks. Table 1 displays data collection procedures. In Week 1, when the Institute Review Board of the study had been approved, I recruited students from two class sections of EAP1851 taught by the cooperating instructor. I introduced the wiki and the wiki project to the classes via a thirty-minute PowerPoint presentation. I demonstrated the Wikispaces site using which they were to work on two collaborative writing tasks. I lectured

and demonstrated on how to join the Wikispaces site, how to use a variety of tabs and functions in the wiki, and particularly how to use the "Edit," "Discussion," "Comments," and "History" modules under their group tabs for collaborative writing activities. I administered a brief wiki small group writing practice to enhance their understanding of how to work on collaborative writing using wikis. The students had one week to decide whether they would like to participate in this study so that I could collect data related to their wiki writing.

Table 1

Data Collection Timeline

Week 1	Week 2	Week 3	Week 4	Week 5	Weeks 6 &7	Weeks 8& 9
Orientation & wiki training	Informed-consent form	Team research project: Task 1 Research proposal	Team research project: Task 2 Annotated bibliography	Team research project: Task 2 Annotated bibliography	Team research project: Oral presentation	Individual project
	Group formation & Pre-task questionnaire	Researcher's log & archived wiki records	Researcher's log & archived wiki records	Researcher's log & archived wiki records	Reflection paper	Follow-up interview (Member-checking)
	Individual (29 students)	Group (29 students)	Group (29 students)	Post-task questionnaire (Individual, 29 students) & Interview (individual, 12 students)	Individual (11 students)	Individual (5 students)

In Week 2, all the students expressed agreement in participating in this study and they signed informed consent forms (Appendix 3). Afterward, the participants were assigned into small groups for the team research project. The group size was determined to be three to four, because groups of three or four have been found to work most successfully in collaboration (Dobao, 2012; Morgan, Allen, Moore, et al, 1987). Therefore, one class with fifteen students

was divided into five small groups that consisted of three members each, and the other class with fourteen students was divided into four small groups, with two groups of three members each and two group of four each. Small groups were formed based on 1) students' free choosing of their partners; 2) language proficiency; and 3) students' L1/cultural background. Initially, the students formed their small groups by themselves. The instructor then made slight adjustments considering group members' language proficiency levels and L1 /cultural backgrounds. As previous research (Iwashita, 2001; Polio & Gass, 1998; Storch, 2013) suggested, learners who come from a different L1 backgrounds or have different L2 proficiency levels are likely to engage in more negotiations than those who share the first L1 or are at similar L2 proficiency level. Therefore, it was avoided that members of equally high or equally low language proficiency levels were placed into the same groups. Also, it was preferred that group members came from different L1/cultural background with the expectation that more opportunities would occur for group members to communicate in English, and more writing perspectives would be generated. However, as the majority of the participants in this study were Chinese, most small groups consisted of students of the same L1 background. After small groups were formed, students were asked to select a leader for their groups. As followed, all the 29 students completed a pre-task questionnaire (Appendix 4), concerning their demographic information, prior English learning and technology experiences, work style, and group member familiarity.

In Week 3, the class began to work on Research Proposal. The instructor taught students how to write a research proposal in class, and students worked on this task using wikis outside the class. Students' discussion/ writing processes and writing products were automatically recorded in wiki "Discussion," "Comments," "History," and "Page" modules under small group

tabs in Wikispaces sites. During this period, I wrote my research logs that recorded the entire process of the research activities and viewed small groups' writing behaviors in wikis.

In Week 4 and Week 5, after receiving relevant instructions in class, the students worked in small groups to construct annotated bibliography using wikis outside the class. As I did during the task of research proposal, I wrote my research logs and scrutinized students' writing processes automatically archived in the wiki sites. Toward the end of Week 5, upon the completion of the two wiki writing tasks, I administered a post-task questionnaire survey (see Appendix 4) to all the 29 students to explore their perceptions about the use of wikis for collaborative writing, the way in which they approached wiki tasks, and their group interactions. Moreover, I invited 12 students from four small groups that revealed diverse L1 background composite as purposeful examples to take post-task semi-structured individual interviews (see Appendix 5 for interview protocols) with me at the teacher's office. I recorded all the interviews with 12 participants using Audacity (http://audacity.sourceforge.net/) upon their consent.

Beginning in Week 6, small groups of students conducted oral presentations about their research projects in class. In Week 7, when students completed the task of oral presentation, they were asked to write reflection papers on group dynamics and individual contributions throughout the team research project, as one of the course requirements. In particular, the students addressed the process of their joint writing of research proposal and annotated bibliography in wikis in light of reflection prompt questions I designed (see Appendix 6). Afterwards, they worked on the last course task: individual research project in Week 8 and Week 9.

In Week 9 when the students completed their individual writing projects, I invited the same 12 students who had participated in the post-task interview to conduct follow-up interview,

including member-checking with me. However, it was the end of the semester and most students planned to travel back to their home countries, and they were not available for face-to-face interviews. Consequently, I conducted a follow-up interview with one participant on the phone using the free conference service (freeconferencecall.com), which was recorded upon the participant's consent. Four other participants sent me their written responses to follow-up interview protocols (see Appendix 5) via email messages. In terms of member-checking, I asked the participants to read my brief report about their group interaction/dynamics during wiki-based collaborative writing, and commented whether my interpretation accurately described the situation/phenomenon. I also invited them to rework on the statements that they feel were inappropriate.

Researcher's Role

My academic interest in computer-assisted language learning and second language writing and my prior successful researching experience working with Chinese EFL college students in the wiki small group writing project motivated me to continue the line of inquiry on wiki-based collaborative writing. In this study, I was personally involved in the processes under investigation and interacted with the participants (Patton, 2002). Being a technology person in the study, I developed Wikispaces sites where the students worked on two wiki writing tasks in small groups asynchronously outside the class. I organized an orientation session to train the students how to join the wiki site and how to use the wiki tabs/modules for collaborative writing. I also served as a technical consultant from whom the students could seek help when they encountered problems regarding the wiki. It is worth noting that I was subordinate to the course instructor in terms of wiki writing requirements, because this wiki project was integrated into the

existing course curriculum. The instructor mainly determined on group formation, private mode of small group writing, and writing rubrics.

Basically, my role was etic, from an outsider view. Throughout the study, I was an online observer. I wrote my research logs to keep a succinct record of my research activities throughout the study. I noted down specific information involving every aspect of implementation of the wiki project. Also, I constantly checked the wiki sites, viewed and reviewed students' wiki writing behaviors, and took notes of the salient features about their participation and collaboration. However, my observation, case selection, and interpretation of data were biased by my interest in sociocultural theory and my previous experience in researching wiki-based collaborative writing in the EFL context. I recognized my expectation to explore dynamic processes of ESL graduate students' academic collaborative writing, and seek different patterns of wiki-mediated interaction where varied degrees or different forms of scaffolding occurred.

Instruments

I employed multiple instruments in this study, including questionnaires, interviews, student reflection papers, coding schemes, and writing scoring rubrics. I tested all the instruments except interview protocols in a pilot study with nine ESL graduate students who were enrolled in one section of EAP 1851 in the Fall of 2012. In the pilot study, the participants were three male and six female students, six coming from Asia, two from the Middle East, and one from Africa. Three small groups of three collaboratively worked on the tasks of research proposal and annotated bibliography in a Wikispaces site. The pilot study tested and verified the reliability of research instruments and logistics of the research design. Below I describe the instruments used in this study.

Questionnaires

The questionnaires used in this study consisted of a pre-task questionnaire and a post-task questionnaire (see Appendix 4). Questionnaire items were field-tested in the pilot study. The nine respondents in the pilot study stated no difficulty in understanding each questionnaire item, and they smoothly completed the questionnaire survey. The pre-task questionnaire collected participants' background information such as gender, age, native country, field of study, prior English learning experience, prior technology experience (including wiki), preference of work style, and the degree of familiarity with group members. The post-task questionnaire consisted of twenty-two five-point Likert scale items and four short-answer questions. Items 1 to 5 related to participants' general experience with the wiki project; items 6 to 10 addressed participants' perceptions of using wikis for academic writing; items 11 to 15 concerned participants' wiki writing process; items 16 to 22 involved with participants' perceptions of their group interactions in this wiki project. Informed by Dörnyei (2003), the internal consistency reliability of the questionnaire was tested using SPSS 11.0 in the pilot study. The Cronbach's Alpha coefficient of the total scale reached 0.763, which ensured the reliability of this instrument.

Interviews

I conducted semi-structured interviews in English with 12 participants. The protocol of the post-task interview (Appendix 5A) consisted of seven guiding questions concerning participants' perceptions about the purpose of wiki-based collaborative writing, affordances of wikis for collaborative writing, their group interactions in the wiki, and their suggestions for future wiki writing projects. Toward the end of the semester, I conducted follow-up interviews (including member-checking) with five participants. The protocol(Appendix 5B) included students' perceptions about the influence of the wiki group writing project on their following

individual writing, their feedback on my written report about their small group interactions/dynamics, and additional comments on wiki-based collaborative writing activities. During the interviews, I clarified questions and asked probing questions when needed, and I also restated and summarized information and invited the interviewees to confirm what I understood about their perspectives. The smooth conduction of interviews assured the comprehensibility of the interview questions.

Reflection paper

Another instrument was a reflection paper in which students addressed wiki writing processes, and group interaction/collaboration throughout the project. I specifically designed six prompt questions (see Appendix 6) for the participants to answer in relation to the two wiki tasks. These questions mainly related to the ways in which the students worked on the collaborative writing tasks in wikis, and their perceptions of their own and group partners' contributions to group writing. I also tested these prompt questions in the pilot study in which the participants indicated no difficulty understanding each question and wrote several paragraphs based on the prompt questions. In the present study, I collected eleven reflection papers with a length ranging from 300 words to 500 words.

Writing scoring rubrics

I used the writing rubrics (Appendix 7) co-designed by the course coordinator and instructors to assess students' joint writing quality regarding the two wiki tasks. The analytical writing rubrics evaluated three main areas with a different portion of scores: students' task-related skills, application of course content knowledge, and language use. The writing rubrics have been used to assess student writing in multiple EAP 1851 class sections over the past years and found to be robust. I also ensured the reliability of the rubrics through the pilot study, in

which I invited an advanced student in the same doctoral program with me to rate wiki writings [2]. We discussed the scoring criteria for each task, and then independently scored fifty percent of the wiki essays. The overall inter-rater reliability reached 0.96 via a measure of Pearson product-moment correlation coefficient using SPSS 11.0.

Coding scheme of writing change functions

I adapted the coding scheme of writing change functions reported in Li (2013) to examine students' writing efforts and mutual engagements during wiki-based collaborative writing. The coding scheme fell into five main categories: addition, deletion, rephrasing, reordering, and correction. Each category was sub-divided into global level (e.g., sentence and paragraph) and local level (e.g., word, phrase and clause). Meanwhile, to delve into the students' mutual engagement with each other's texts, the five writing change categories were also sub-divided into "self" and "other," which referred to the writing changes made to the texts composed by the member himself/herself and those made to the texts constructed by other group member(s), respectively. Similar to Li (2013), the present study involved collaborative writing tasks conducted within small groups and aimed to delve into students' writing efforts and mutual scaffolding in constructing joint writing products using wikis, so the coding scheme reported in Li (2013) was considered to fit the present study. Also, I found the coding scheme to be applicable to the analysis of wiki "History" records in the pilot study. However, I made a few amendments to this coding scheme, based on the data that emerged from this study. The taxonomy of writing change functions used for this study was found to be reliable, as the inter-coder reliability reached 89.4%. Details about this taxonomy will be discussed in the section of data analysis.

Email communication with the instructor

To better understand the context for the students' academic writing and learning, and their writing performance in wiki collaborative writing tasks, I consulted the course instructor by communicating via email messages at the end of this study. The major questions (see Appendix 8) included the instructor's perceptions of students' writing skills, the specific knowledge/skills required for the two writing assignments (i.e., annotated bibliography and research proposal), and information about classroom instructions for two tasks.

Data Processing

Case selection

As discussed earlier, participants were a total of twenty-nine graduate students enrolled in two sections of EAP 1851. They were formed into seven groups consisting of three members each, and two groups consisting of four members each. Influenced by my prior research exploring the interactions of three group members during wiki-based collaborative writing in the EFL context, I was particularly interested in how the small groups of three interacted and co-constructed wiki writing in the EAP context in this study, so I did not select the two groups composed of four members for close examination. Among the seven groups composed of three members each, I selected cases according to the criterion of maximum variations (Miles & Huberman, 1994). As the specific research site was an EAP course for international students, I selected small groups that mainly revealed variations in the L1/cultural composite of grouping. Four groups were composed of all Chinese students, and remaining three groups consisted of students from different L1/cultural backgrounds. Accordingly, I selected the three groups with a diversity of cultural background, i.e., China and a different origin. Also, considering the

variation in gender, I selected the fourth group that consisted of three female students among the groups composed of all Chinese students.

Delimiting the data set

The four small groups, therefore, constituted the focal cases in this study. The background information of the four small groups, gathered through the pre-task questionnaire, is displayed in Table 2.

Table 2

Basic Information of the Four Cases

	Pseudo name	Gender	Nation	Study area	English proficiency	Computer use	Attitude to teamwork
Group 1	Dong	M	China	Finance	Intermediate	Comfortable	Positive
	Feng	M	China	Finance	Intermediate-high	Comfortable	Positive
	Abdul	M	Saudi Arabia	Finance	Intermediate	Neutral	Very positive
Group 2	Xia	F	China	TESOL	Intermediate-high	Comfortable	Positive
	Hai	M	China	Civil engineering	Intermediate	Comfortable	Positive
	Ali	M	Iraq	Electrical engineering	Intermediate	Very comfortable	Very positive
Group 3	Gao	M	China	Finance	Intermediate-high	Comfortable	Positive
	Chuan	M	China	Finance	Intermediate	Neutral	Positive
	Vitaly	M	Russia	Finance	Intermediate-high	Very comfortable	Positive
Group 4	Mei	F	China	Finance	Intermediate	Comfortable	Neutral
	Lan	F	China	Finance	Intermediate	Comfortable	Positive
	Ju	F	China	Finance	Intermediate	Comfortable	Positive

Note. Participants' English proficiency levels presented in the table are their own perceptions indicated in the pre-task questionnaire.

Among the twelve participants, the majority of participants (i.e., nine students) came from China, the rest three came from Russia, Saudi Arabia, and Iraq, respectively. I used pseudonyms to

preserve the participants' anonymity. Most of the participants studied Finance, and the English proficiency levels they perceived ranged from intermediate to intermediate-high. All of them reported positive attitude towards teamwork in the pre-task questionnaire. Group 1 consisted of two Chinese males and one Saudi Arabian male, all majoring in Finance. Group 2 consisted of one Chinese female majoring in TESOL and two males majoring in engineering, one from China and the other from Iraq. Group 3 was composed of three males majoring in Finance, two from China and another from Russia. Group 4 was composed of three Chinese females, all majoring in Finance.

The data set included archived wiki records under the four group tabs, the pre-task questionnaire, post-task questionnaire, post-task interview, follow-up interview, and reflection papers. I collected the wiki "Discussion," "Comments," and "History" records in relation to research proposals and annotated bibliographies that the four small groups constructed. I also collected the pre-task and post-task questionnaires from all the members of the four groups (12 students). Moreover, the interview data set includes post-task interviews with 12 students and follow-up interviews with only 5 students **(**one from Group 1, Group 3 and Group 4, and two from Group 2) based on the convenient sampling discussed earlier. Reflection papers were collected from three members from Group 2, Group 3, and Group 4 respectively, and two members from Group 1 (due to one member's withdrawing toward the end of the task). Figure 5 illustrates the data set of the study.

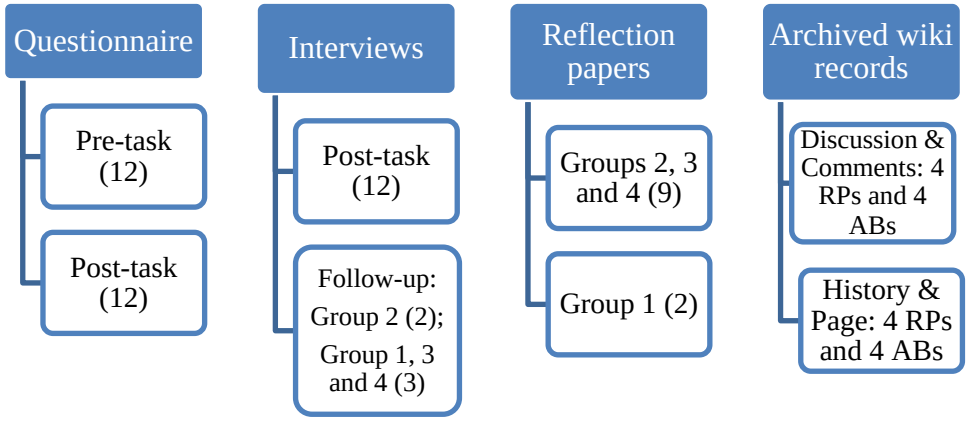


Figure 5. Data Set of the Study

Data Analysis

In this section, I first present the overview of data analysis method, followed by the techniques of analyzing each data source. Afterwards, I provide an overall picture of data analyses in relation to four research questions.

Overview of data analysis method

I conducted qualitative analysis, supplemented with descriptive analysis (such as scores and frequency counts) to examine wiki posting behaviors reflected in wiki records, students' wiki essays, and their responses to Likert-scale questionnaire items. As to the qualitative analysis, I utilized constant comparative method (Lincoln & Cuba, 1985; Strauss & Corbin, 1998) to derive salient categories and relationships between categories from the triangulated data sources. I broke down the data into "incidents" (Glaser & Strauss, 1967) or "units" (Lincoln & Guba, 1985) which were then coded to develop categories. Specifically, I read and reread multiple data, and simultaneously coded and analyzed data to develop categories rather than using predetermined categories (Strauss & Corbin, 1998). By continually comparing specific incidents/ units in the data, I refined the categories, identified their properties, and explored their relationships between the categories over the course of analytical process (Taylor & Bogdan, 1984).

To identify the overall patterns of interaction, I took a holistic view of the data collected from triangulated sources about the four groups and examined how each small group approached writing tasks in terms of ‘‘equality’’ and ‘‘mutuality’’(Damon & Phelp, 1989; Li & Zhu, 2013; Storch, 2002). In this study, “equality” is defined as the level of contribution to group writing and degree of control over the direction of writing (Li & Zhu, 2013); “mutuality” is defined as the degree of engagement with each other’s contribution throughout the writing process, namely the extent of reciprocal response in task negotiation and involvement with others’ texts in producing joint writing. The two indexes were mainly examined by students’ engagement and scaffolding reflected in group wiki “Discussion” and “Comments” modules and writing construction/posts reflected in group wiki “History” records. The secondary sources of interviews and reflection papers, which indicated each group member’s role and his/her perceived contribution vis-à-vis his partners’ contribution, complemented my analyses of group members’ interaction within small groups. Figure 6 shows the specific ways of analyzing the two indexes of group interaction: equality and mutuality.

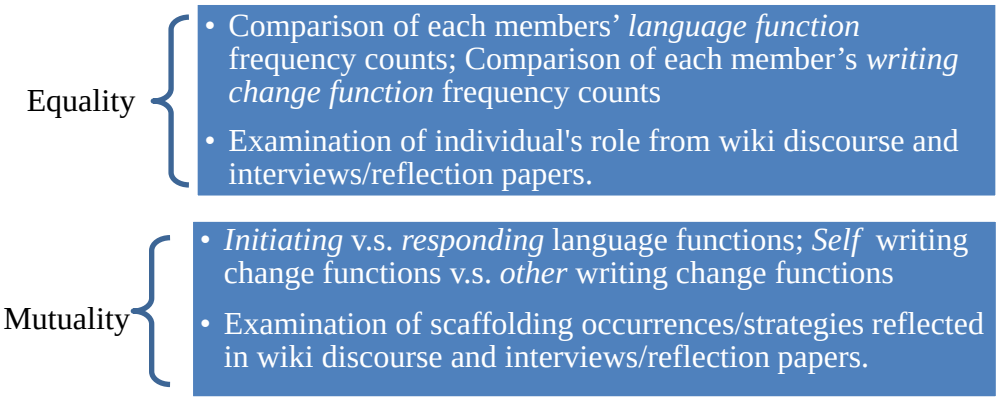


Figure 6. Analysis of Two Indexes of Group Interaction: Equality & Mutuality

As Figure 6 displays, I examined the patterns of interaction through analyses of small groups’ wiki-based communication (language functions), text co-construction (writing change

functions), scaffolding strategies, and roles that group members assumed. The first aspect of "equality," i.e., the level of individual contribution to group writing, was evaluated by the comparisons of each member's language function counts and writing change function frequency counts. The second aspect of "equality," i.e., degree of control over the direction of writing, was evaluated through the examination of individual's role reflected in wiki discourse and interviews/reflection papers. "Mutuality" is evaluated by comparing each group's *initiating* v.s. *responding* language functions and *self* v.s. *other* writing change functions, and the examination of scaffolding occurrences/strategies reflected in wiki discourse and interviews/reflection papers.

Furthermore, I conducted within-case analysis of small group's interactional features from the above aspects, followed by cross-case analysis to reveal the commonality and differences across small groups. The specific techniques to analyze these characteristic features will be presented in the following section where I discuss analyses of each data source. To explore sociocultural factors that mediated wiki interactions, I examined multiple data sources, particularly the interviews and reflection paper, and utilized within-case analysis and cross-case analysis simultaneously. Moreover, I conducted within-case analyses of small groups' writing products of two writing tasks according to course instructors' assessment/written feedback, and then compared the writing products across tasks among the groups in relation to their interactional patterns. Furthermore, I examined the triangulated data of post-task questionnaire, interviews, and reflection papers to derive students' perceptions of wiki-based collaborative writing, and then explored possible connections between patterns of interaction and reflections.

Analysis of data sources

In this section, I describe specific ways to manage and analyze each data source in this study. Note that some sorts of data sources were critical to answer research questions, whereas

others, as supplementary materials, assisted my data presentation and interpretation. In terms of the data sources of wiki records, I provide screenshots of wiki modules before I discuss the data analysis methods.

Analysis of wiki "Discussion"/ "Comments" posts

The wiki "Discussion"/ "Comments" posts revealed how the students in small groups negotiated the writing tasks and engaged with one another's ideas over the course of the wiki-based collaborative writing activity.

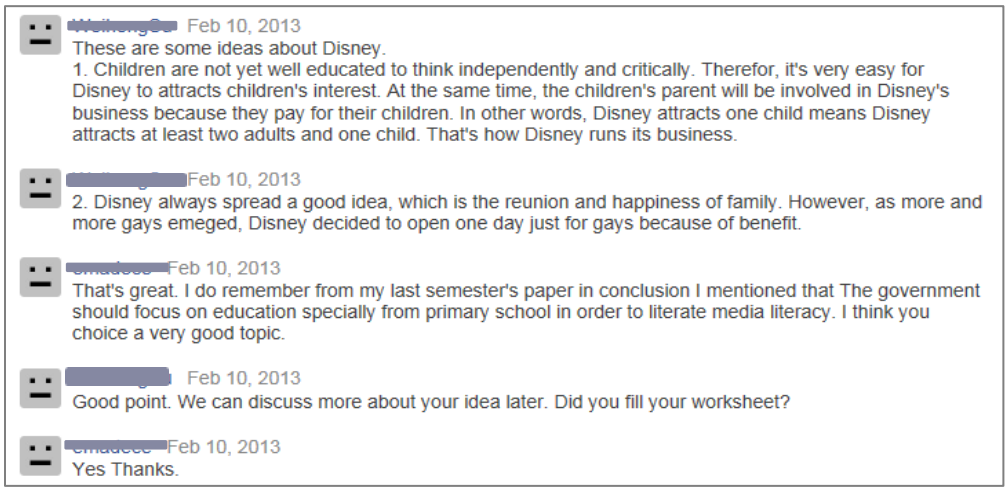


Figure 7. Screenshot of Wiki "Discussion"

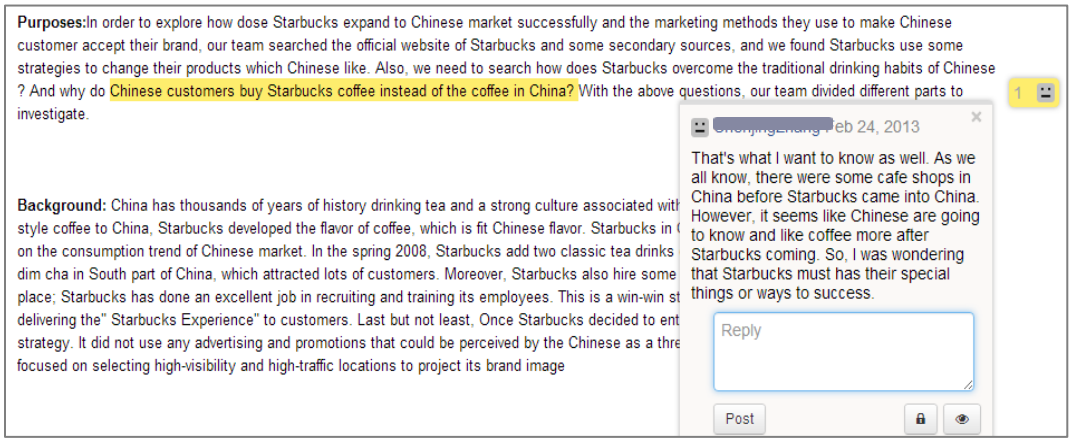


Figure 8. Screenshot of Wiki "Comments"

Figures 7 and 8 above depict screenshots of wiki "Discussion" and "Comments." Wiki "Discussion" allowed students to start new topics, pose questions, or add to others' comments via asynchronous posting. Wiki "Comments" is a newly established feature of Wikispaces, which is embedded in the editor toolbar. Students provided feedback/comments or raise questions regarding specific texts, by clicking on the "Comments" icon to post in pop-up boxes. I collected all the online posts except posts from the course instructor[3] from small groups' "Discussion" and "Comments" modules in relation to the two wiki tasks and put them in a Word document, and then I recorded each post and the person who made the corresponding post. I analyzed these records in terms of idea units, that is, "a series of brief spurts which reflect the speaker's object of consciousness" (Gere & Abbott, 1985, p.367). It was possible that more than one idea unit emerged from one post. Each idea unit was coded in terms of language functions, which refer to the mediating functions of the language occurring in wiki discourses in the Wikispaces site (Li & Zhu, 2013). Language functions of wiki discourses suggested how participants negotiated writing tasks and social relationships with group partners, and how they were engaged with one another's ideas, thus providing valuable insights into group interactions during wiki-based collaborative writing.

I first segmented wiki posts into idea units and then invited a second rater, an advanced doctoral student in the same program who had good performance in multiple doctoral qualitative methods courses, to verify my segmentation of wiki "Discussion"/"Comments" posts after I had discussed with her the concept of ''idea unit.'' Discrepancies were resolved through discussion. When idea units were determined, I coded the language function of each unit according to constant comparative methods (Glaser & Strauss, 1967; Lincoln & Guba, 1985; Strauss & Corbin, 1998). Rather than imposing existing categories in the available data, I read and reread

wiki "Discussion" and "Comments" records, developed salient categories of meaning and relationships between categories from the data per se, and derived the taxonomy of language functions through inductive reasoning (http://www.qdatraining.eu/content/defining-constant-comparative-method). The taxonomy of language functions are presented in Table 3, in which each category is illustrated with representative example of wiki posts from this study. Importantly, I further examined the categories of language functions in terms of "*initiating*" and "*responding*" to explore students' mutual engagement. "Initiating" refers to proposing new ideas while "responding" refers to reacting to others' ideas.

Table 3

Taxonomy of Language Functions

Language Functions	Definitions & Examples
Acknowledging	Recognizing or praising others' ideas, comments, helpfulness, and capabilities. e.g., *Nice job!*
Agreeing	Expressing agreement with others' viewpoints. e.g., *I agree with you.*
Clarifying	Making writing direction or contents clearer to group members. e.g., --- *Should we categorize them in terms of profit or in terms of audience? ---Audience.*
Confirming	Informing others that something has definitely happened. e.g., ---*Did you fill your worksheet? ---Yes.*
Disagreeing	Expressing disagreement with others' viewpoints. e.g., ---*We should focus on one company because we should narrow the topic. Focus on Apple.* --- *Apple could be just an example and I think it will be too narrow.*
Elaborating	Extending and elaborating on self or others' ideas about writing. e.g., *There're some more subtopic I come up with:[…]*
Eliciting	Inviting or eliciting opinions, comments etc. from group partners. e.g., *How you think about that?*
Encouraging	Encouraging group partners' participation and group communication or collaboration. e.g., *Don't worry.*
Greeting	Greeting group members. e.g., *Hi, guys.*
Justifying	Defending one's own ideas/comments by giving reasons. e.g., --- *(we can choose Coca-Cola as our target.) Cause it owns wide-range consumers and its successful development experience has made it standing over 100 years.*

Questioning	Asking questions that one is not clear about. e.g., *What is the difference of wiki comparing to Google doc?*
Requesting	Making direct requirements or requests. e.g., *Please respond and add something.*
Stating	Stating one's ideas and the ideas groups have discussed earlier; posting writing contents or sharing information. e.g., *As I knew, Starbucks has cooperated with three local companies in China*.
Suggesting	Offering suggestions/recommendations about writing contents, structure, format etc. e.g., *We can just discuss benefits for outsourcing, what the reason for it is…something like that.*

Note. The examples were directly drawn from the wiki site and language errors were not removed.

I invited the same person who worked with me on idea units to code wiki "Discussion"/"Comments" data. I first discussed with the colleague about the coding scheme, including the categories of language functions and distinction between "initiating" and "responding," and then the colleague and I coded the entire wiki "Discussion"/Comments" records independently according to the taxonomy. Afterwards, I checked the inter-coder reliability by using Miles and Huberman's (1994) formula: number of agreements is divided by total number of agreements plus disagreements. We agreed on 87.4 % of the coding, and disagreements were resolved through discussion. After coding language functions reflected in "Discussion" and "Comments" posts, I calculated the frequency of each type and subtype of the language functions performed by each individual within small groups to evaluate the "equality" and "mutuality" of group interaction. Afterwards, I compared the four groups' interactions during wiki discussion/negotiation to derive similarities and differences.

Moreover, I scrutinized the wiki "Discussion"/"Comments" records to overall gauge the stances and roles that group members assumed, and meanwhile to examine scaffolding mechanisms employed by the students when they jointly worked on wiki collaborative writing. I

coded the wiki data in terms of episodes, i.e., units of discourse during which the participants discussed writing problems and task procedures (de Gurrero & Villamil, 2000). I drew on established scaffolding terms and notions in previous scaffolding literature (e.g., Liz, 1991; Villamil & de Guerrero, 1996; Wood et al., 1976) and constructed the coding scheme based on the data collected in this study. The findings about scaffolding mechanism were also triangulated with the excerpts of interview transcripts and reflection papers to scrutinize group members' "mutuality" of interaction. The second rater was not used, because my close examination of each scaffolding episode in comparison with scaffolding episodes reported in the previous literature, and data triangulation established the validity and reliability of this instrument. Table 4 displays the coding scheme of scaffolding used for this study.

Table 4

Coding Scheme of Scaffolding

Scaffolding Mechanism	Definition
Affective involvement (Liz, 1991)	Expressing warmth to group members, and give group members sense of caring in the project.
Contingent responsibility (Liz, 1991)	Read group partner's behavior and respond appropriately. Group members are in tune to one another.
Direction maintenance (Wood et al, 1976)	Maintaining pursuit of the goal for the group work.
Instructing (Villamil & de Guerrero, 1996)	Giving mini-lessons in an authoritative tone.
Intersubjectivity (Rommetveit, 1985)	Group members participate in a common task and have a shared understanding of the situation and are in tune with one another.
Recruiting interest (Wood et al, 1978)	Arousing group members' interest in the task.

Analysis of wiki "History" records

As Figure 9 presents, wiki "History" records under each small group tab provided a comprehensive picture of how group members co-constructed written texts with the color coding of insertion and deletion.

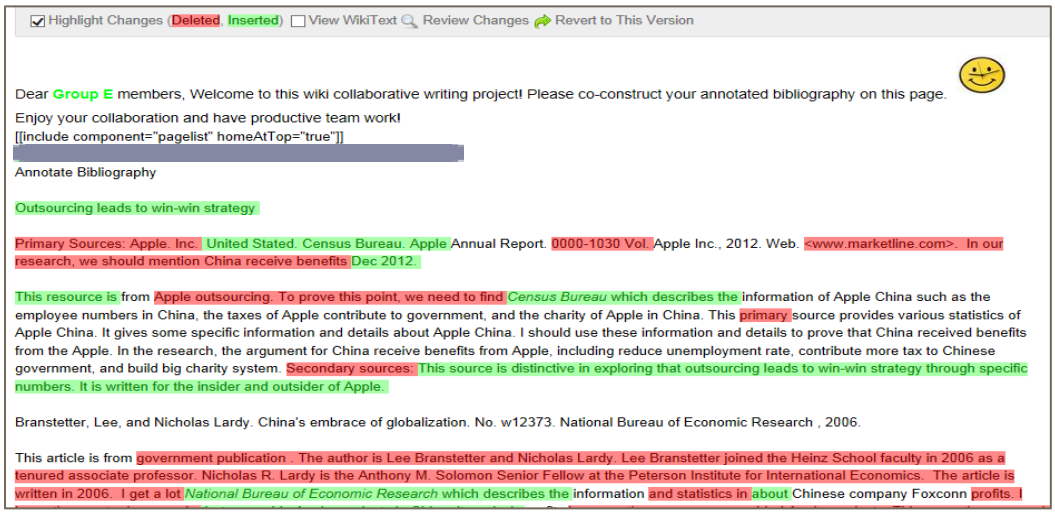


Figure 9. Screenshot of wiki "History"

The unit of analysis was a "History" thread of writing in relation to each of the two writing tasks that each small group constructed. I cataloged these data in a chronological order in a Word document and documented the text evolvement by noting a sequence of writing change instances using the combination of letters and numbers. I also indicated the name of the member who performed each corresponding writing change. As specified in Li (2013), the writing change evidenced in the first "History" thread was named as A1, and those tracked from the following "History" threads were named as B2, C3, D4 orderly. If the same thread encompassed multiple writing changes/revisions conducted by the same group member, the changes were marked with the same name and the same capital letter, but a different number.

I carefully read each small group's wiki "History" threads in relation to the two wiki tasks, and coded each writing change/revision in light of the coding schemes developed in Li

(2013) and made necessary adaptation according to the data emerging from this study. Specifically, I analyzed small groups' text co-construction behaviors in terms of writing change functions, i.e., adding, deleting, reordering, rephrasing, and correcting (Mak & Coniam, 2008; Li, 2013) and further categorized each type of functions according to the size of revision, namely different linguistic units, ranging from the larger units of paragraph and sentence to the smaller units of words and punctuation (Min, 2006; Sengupta, 1998). In this study, I defined the sentence and paragraph revisions as global units of revisions and other smaller linguistic units (i.e., clause, web link, bullet point, phrase, word, and mechanics) as local revisions. Meanwhile, to delve into students' mutual engagement with each other's texts, I distinguished the writing changes made to the texts constructed by the member himself/herself (*self* change functions)and those made to the texts composed by other member(s) (*other* change functions) when coding each revision of different categories performed by each group member (Li, 2013). Table 5 below shows the taxonomy of writing change functions with representative examples taken from the wiki "History" data in this study.

To ensure the reliability of this coding scheme, I invited a doctoral student in the same program who used to be an EFL university instructor and had assisted the coding of wiki "History" records in my previous wiki project. We first discussed the coding schemes, and then this colleague and I coded 25% of the data regarding each of the two tasks individually. The inter-coder reliability reached 89.4%, and disagreements was resolved by discussion. Afterwards, I coded the remaining data following the same steps, and counted the frequency of instances that fell into each category. These analyses revealed group members' individual contributions (mirroring "equality") as well as mutual engagements (mirroring "mutuality") in wiki text co-construction processes.

Table 5

Taxonomy of Writing Change Functions (adapted from Li, 2013)

Writing Change Functions	**Definitions & Examples**
Adding	**Contributing new contents or adding information to existing contents at different levels, in different forms.**
Global	To identifies a series of question. I have some questions about this topic. 1. What is the definition of outsourcing? 2. why there are so many countries using this strategy? 3. Is it useful? Does the company get benefits from the outsourcing? (*the paragraph added*)
Local	e.g., BUSINESS: In the United States, tourism is big business. In fact, it's the number one service that we export. In 2010, we welcomed nearly 60 million international visitors to America, and they helped to boost our economy to the tune of $134 billion. (**http://www.whitehouse.gov/blog/2012/01/19/president-obama-promotes-tourism-disney-world**) (*the link added*)
Deleting	**Removing texts or existing information.**
Global	e.g., ~~Through this report, we can obtain a clear understanding of the question that how Disney runs its business.~~ (*the sentence deleted*)
Local	e.g., Venkatraman, Meera. "From Services cape to Consumptions cape: A Photo-Elicitation Study of Starbucks in the New China." Journal of International Business Studies. ~~Sep., 2008, Vol. 39, Issue 6, p1010-1026, 17p~~ *(specific publication information deleted)*
Rephrasing	**Expressing existing ideas in an alternative way**.
Global	e.g., […] we need to analysis his perspective in religion, political view[…] → […] we can through this article to examine that how dose Disney's culture influence people's ideology.(*the sentence rephrased*)
Local	e.g., […]narrowing to focus on the business in China and ~~Saudi Arabia~~ **Middle East countries** (*the words rephrased*)
Reordering	**Reorganizing ideas or moving around contents**
Global	e.g., Banister, Judith. "Manufacturing Earnings and Compensation in China." Monthly Labor Review 128.8 (2005): 22-40. Print. The article, from an academic journal, written for a general audience, evaluates the quality and usability of statistics on manufacturing earnings and labor compensation in China. […] Also, it uses numerous data and especially cites the source of the annual data on labor compensation used in the article, which always makes an article more scientific and more reliable.

	(*This annotation moved to a former section according to the alphabetic order of authors.*)
Local	e.g., How Disney Magic and the Corporate Media Shape Youth Identity in the Digital Age. **http://www.truth-out.org/opinion/item/2808:how-disney-magic-and-the-corporate-media-shape-youth-identity-in-the-digital-age** Note: This article mainly illustrated that in digital times, how does disney use media to influence youth's identity, including multi-cultures, their living styles, etc. Through this way, Disney's target market is children. They make a lot of money from children through their products, movies and Disneyland […] ~~Link: **http://www.truth-out.org/opinion/item/2808:how-disney-magic-and-the-corporate-media-shape-youth-identity-in-the-digital-age**~~ (*the link moved above right after the title*)
Correcting	**Correcting or attempting to correct mistakes in grammar, mechanics and spelling.**
Local	e.g., This annual report is useful for our research work because it provides some numbers and ~~statitic~~ **statistic** data which can be used as evaluation of benefits that Apple company gets from work outsourcing. (*the spelling mistake corrected*)

Note. The examples were directly drawn from the wiki data and language errors were not removed.

Analysis of wiki writing

Group wiki "Page" module documented the final products of small group writing. I collected from the wiki sites a total of eight academic papers completed by four groups, and documented them in a Word document. I analyzed the wiki writing mainly through instructors' assessment/written feedback on each wiki essay produced by each of the four small groups. As both wiki tasks were course assignments, and course instructors co-constructed writing rubrics (see Appendix 7), the instructor rather than other people had the advantage of grading small groups' wiki essays. I therefore invited the EAP1851 course instructor who had cooperated with me in the pilot study to assess the Word docs of small group writing. Meanwhile, I gathered the scores and comments regarding each small group's writing in relation to two wiki tasks from the instructor who taught the participants in this study. Specifically, both course instructors provided

sub-scores and total scores for each essay, and also made comments in three assessment areas: content application, task-related skills, and language, according to the course rubrics. I input all the scores into SPSS 11.0 and tested the inter-rater reliability of the scores assigned by both raters, using the measure of Pearson product-moment correlation coefficient. The inter-rater reliability reached 0.94. Because of the high inter-rater reliability, the average of the scores given by the two raters constituted the final score of each essay. Afterwards, I synthesized both raters' written comments, based on which I briefly discussed the salient features of four groups' writing products from the three assessment areas. Lastly, I compared the overall quality of writing products across tasks performed by the four small groups, and examined the link between writing products and interactional processes.

Analysis of interviews

As to the recorded post-task face-to-face interview with twelve participants and the follow-up phone interview with one participant, I transcribed them and record the transcripts in a Word document. The remaining interviews via e-mail messages were in the form of Word document notes, and no transcribing was needed. Since interviews were used to collect insights and perspectives of participants, I mainly conducted content analysis of these interviews and paid a small degree of attention to linguistic and textual features of the discourse (Duff, 2008) except for the words the students used to address their group partners, which revealed their social relationships. Generally, I read through the interview transcripts and participants' notes multiple times, marked important texts and assigned code labels. I then made comparison among labels, identified recurring and salient themes, and consequently generated thematic categories (Lincoln & Guba, 1985).

Analysis of reflection paper

The students' reflection papers were in the form of Word docs. Similar to the analysis of interview transcripts, I read and reread every reflection paper, noted down key phrases and clauses, summarized data segments with codes, and generated thematic categories.

Analysis of research logs and the instructor's email message

Throughout the study, I kept a complete account of my research activities and occasional reflections in my logs. I also consulted the course instructor via email right after the wiki project was completed to seek additional pertinent information. As to the two kinds of supplementary sources, I highlighted the most salient points that could be helpful in data presentation and interpretation.

Analysis of pre-task questionnaire

I documented the participants' responses to the thirteen questionnaire items in an Excel file. Based on this data source, I generated the case profile, as presented in the former section "Data processing." I compared the students' answers regarding computer use, attitude towards small group work, and L1/cultural background, which assisted my interpretation of factors that influenced wiki-based collaborative writing process.

Analysis of post-task questionnaire

The post-task questionnaire consisted of two parts: twenty-two 5-point Likert scale questionnaire items, and four short-answer questions. First, I input the participants' responses to each Likert scale questionnaire item in the Excel file, and calculated the average point for each of the twenty-two questionnaire items within each small group. Scores in relation to the questionnaire responses informed me of the overall trends of students' perceptions about wiki-based collaborative writing. Short-answer questions constituted supplementary data. I read the

participants' short answers carefully and highlighted the key information, particularly the fresh points that were not revealed in interviews and reflection papers, thus adding to the existing themes.

Data analysis in relation to research questions

Below I describe an overall data analysis of the study in relation to triangulated data sources and four research questions. Table 6 shows the overview of the data analysis procedures.

Table 6

Overview of Data Analysis

RQs	Constructs Examined	Data Sources		Unit of Analysis	Data Analysis Strategy
		Major	Minor		
RQ 1	Task/Meaning negotiation	Wiki "Discussion," "Comments"	N/A	Each small group across tasks	Coding, taxonomy of language functions
	Text co-construction	Wiki "History"	N/A	Each small group within tasks	Taxonomy of writing change functions
	Scaffolding	Wiki "Discussion," "Comments"	Reflection paper (2)*, Interviews	Each small group across tasks	Coding schemes of scaffolding mechanism
RQ2	Mediating factors	Post-task interview (2,3,5,6), Reflection paper (3,4,5, 6)	Research logs Pre-task questionnaire	Individual/ small group across task	Constant comparative method (Glaser & Strauss, 1967; Strauss & Corbin, 1998)
RQ3	Writing product	Instructor assessments of writing	Wiki "Page" records, Instructor message	Each small group within task	Writing scores and comments from course instructors; Descriptive analysis according to writing rubrics
RQ4	Student reflections	Post-task questionnaire, Post-task Interview (1,7),	Reflection paper, Follow-up interview (1)	Individual across task	Constant comparative method (Glaser & Strauss, 1967; Strauss & Corbin, 1998)

Note. The number 2 marked with * indicates that the responses to the second prompt question for reflection paper were mainly analyzed. It is the same case with other numbers.

As to Research Question 1 regarding patterns of interaction in wiki-based collaborative writing, I asked three sub-questions: 1) How do students in their small groups negotiate writing tasks and engage with each other's ideas via wikis? 2) How do students in their small groups co-construct written texts via wikis? and 3) How do students scaffold each other during wiki-based collaborative writing? To address RQ1.1 concerning task negotiation, I analyzed each group's "Discussion" and "Comments" records according to taxonomy of language functions. To address RQ 1.2 concerning text co-construction, I analyzed group "History" records in light of the Taxonomy of Writing Change Functions. To address RQ 1.3 concerning peer scaffolding, I examined wiki "Discussion"/ "Comments" records, interview transcripts, and students' reflection papers in light of the Coding Schemes of Scaffolding Strategies. In addition, I referred to my research logs I kept during the ongoing project, regarding students' performance/stance in the wiki site to confirm the findings. By comparing the cases in an iterative and holistic manner with the focus on "equality"/ "mutuality" and group members' roles, I discussed the characteristic dynamic patterns of interactions the four small groups demonstrated while jointly working on two wiki writing tasks.

To address Research Question 2 regarding mediating factors, I mainly examined post-task interviews and reflection papers. Post-task interviews and reflections papers probed into students' perceptions, behaviors, and attitudes in wiki-based collaborative writing and unpacked multiple mediating factors. Three main categories of mediating factors, i.e., motives/goals, agency and emotions, and prior experiences, emerged from the data sources. Specifically, to examine motives/goals, I paid attention to students' responses to Post-task Interview Question 2 concerning their understanding of the purpose/aim of the wiki project. To examine agency and emotion, I focused on students' answers to Interview Questions 3 & 5 regarding their perceptions

of roles they played and their attitude toward group work, and students' reflections based on prompt Questions 3, 5, 6 regarding the perceptions of their own and others' contributions. Specifically, I conducted a small portion of linguistic analysis, and attended to the words that group members used to address their group partners, which were reported to demonstrate their agency in specific activity (van lier, 1996). Moreover, students' responses to Interview Question 6 and Reflection Prompt Question 4 on the factors they believed that influenced their group interaction during two wiki writing tasks led me to identify subcategories of students' prior experiences, including L1/cultural experience, small group work, and technology use. Overall, I employed constant comparative methods (Strauss & Corbin, 1998; Lincoln & Guba, 1985) to analyze interviews and reflection paper in an iterative, inductive, and holistic manner, and derived the categories and sub-categories about mediating factors. In addition, I consulted my research logs and the pre-task questionnaire to confirm and interpret the findings.

To address Research Question 3 on the influence of interactions on writing products, I mainly analyzed instructors' assessments of the wiki essays, supplemented with wiki essays. I also reviewed the course instructor's email message to confirm or interpret the findings regarding the small group writing products. After examining the textual features and quality of small group writing in relation to two writing tasks, I reviewed the results of small groups' dynamic interaction explored in RQ1 and investigated the influences of small group's interactions on writing products across two writing tasks.

To address Research Question 4 regarding connection between interactions and student reflections, I examined triangulated sources, i.e., post-task questionnaires, post-task interviews, follow-up interviews, and reflection papers, to explore students' overall perceptions of wiki-based collaborative writing, and particularly their perceptions of using wikis for collaborative

writing and learning. I made a descriptive analysis of small groups' responses to each questionnaire item, calculating the average of the three scores assigned by three group members. Then I set each individual as the unit of analysis, and mainly analyzed the interview transcripts and reflection papers of each student in light of constant comparative method (Strauss & Corbin, 1998). Specifically, I examined students' answers to Interview Questions 1 concerning their perceptions of wiki-based collaborative writing and Question 7 asking their suggestions for future wiki projects in the post-task interview. I also consulted students' reflection papers and their notes in the follow-up interview to elicit additional information. Furthermore, I reviewed the results of small groups' interactions explored in RQ1 and discovered connections between small groups' interactions and student reflections about wiki-based collaborative writing.

Ethical Considerations

I took necessary precaution to protect the rights of the participants. All the participants were treated in accordance to the institutional review board (IRB) at the university where the study was conducted (see Appendix 3 for Informed Consent Form). Regarding the informed consent, I gave students one week to consider whether they would like to participate in this study or not, and they were informed of the voluntary nature of the participation and the freedom to withdraw from the study if they felt they need to. Also, they were told that the decision to participate or not to participate would not affect their course grade at all. It was also made clear that the fact that they decided to discontinue their participation or if they decided not to participate in the study would not free them from completing the two wiki tasks because these tasks were part of their course activities.

Also, the participants' identities were protected. The Wikispaces site was private, which was invisible to people outside the class section. I asked the students to use pseudo names when

they registered the wiki site. I also assigned each participant a study ID and the participant provided only his or her study ID when filling in questionnaires and writing reflection papers. Data confidentiality was ensured. I kept signed consent forms, questionnaires, and reflection papers confidentially in my personal bookcase. I conducted interviews individually and stored the recorded interview data in my password-set laptop computer. Moreover, I checked all the data once every month to ensure its integrity. While analyzing the data, I maintained researcher loyalty and gave the total weight to the data and tried to avoid imposing my beliefs and bias on the data.

Trustworthiness

To enhance the rigor of this qualitative inquiry, I established the trustworthiness of the study in terms of four criteria that Lincoln and Guba (1985) proposed: credibility, transferability, dependability, and conformability. Credibility refers to confidence in the "truth" of the data and of the interpretations of these data. Transferability, a criterion for the applicability of qualitative data (Guba, 1981), refers to the extent to which the findings of the inquiry can be applied in other contexts. The readers of research "make connections between elements of a study and their own experience" and selectively apply the study situation and research findings to their own context (http://writing.colostate.edu/guides/guide.cfm?guideid=65). Dependability refers to the quality and appropriateness of the integrated inquiry processes of data collection, data analysis and conclusion generations. Conformability refers to the degree in which the findings of a study are shaped by the data collected, not the researcher bias or interests (Lincoln & Guba, 1985).

I employed several strategies to address the four criteria. To achieve credibility, I triangulated the data, a process of using multiple perspectives to clarify meaning and verify interpretation (Stake, 2000). The triangulated data sources include interviews, questionnaires,

reflection papers, archived wiki records, instructors' writing assessment, and my research logs. These multiple data sources enabled me to make authentic interpretation of the event under investigation and achieve *verisimilitude.* Also, I conducted *member checking*, a procedure to check the "reconstruction of the emic perspective by having field participants review statements in the researchers' report for accuracy and completeness" (Gall,Gall, & Borg, 2005, p551). During the post-task interview, I restated and summarized the information that the students reported, and checked with them whether my understanding of their responses was accurate. Also, during the follow-up interview, I shared my written reports about their group interactions with the students and asked them via email exchange or phone interview whether the interpretation reflected their experiences. The students confirmed the correctness of my interpretation. Moreover, in terms of the analysis of wiki records, I invited my colleagues to co-code the wiki records with me; regarding small group writing, I invited the other EAP 1851 course instructor to grade the students' wiki writing apart from the instructor of the participants in this study. I ensured high inter-coder/rater reliability via SPSS 11.0.

To enhance the transferability of the study, I provided a rich and *thick description* of the setting and participants, the research design, and the students' participation in wiki-mediate collaborative writing. These descriptions transported readers to the study and allowed them to have shared experiences and thus judge the transferability of the findings to other cases. To consolidate dependability, I used the *audit trail.* I kept the detailed records of the entire inquiry, including my research logs, the recorded interviews, transcripts, and coding schemes. Also, I tried to minimize my bias and explicitly described my role in this study. In addition to audit trail that can also help accomplish conformability (Lincoln & Guba, 1985), I triangulated my research

data from multiple sources. The triangulation of data sources definitely helped ensure the conformability of this study.

Limitations and Delimitations

The current study was conducted within a span of nine weeks, in which students jointly worked on two collaborative writing tasks using wikis in small groups for four weeks. This was relatively a short length for a qualitative study, and the nature of an activity and students' learning could have been better captured after a longer period of time. However, the wiki-based collaborative writing project was launched across two writing tasks in two class sections, and the dynamics of students' wiki-based collaborative writing were sufficiently explored.

Also, I selected cases purposefully according to my research interest, and the criteria of selecting groups to be analyzed in focus might affect the findings of this qualitative study. Nevertheless, purposeful sampling is an essential element in a qualitative study (Creswell, 2007).

In addition, I developed a post-task questionnaire for this study, in an attempt to comprehensively investigate students' perceptions of using wikis for academic writing, wiki writing processes, and small group interactions via wikis. Although efforts have been taken to enhance the reliability of questionnaire items, this questionnaire needs to be further tested by future studies.

Last but not least, I need to address researcher subjectivity. My previous teaching and research experiences, and my interest in sociocultural theory and computer-mediated collaboration shaped the ways in which I identified and analyzed the data and interpret the findings. As Denzin and Lincoln (2005) posited, "research is an interactive process shaped by one's personal history, biography, gender, social class, race, and ethnicity and those of the people in the setting." (p. 6).

Summary

In this chapter, I discussed the research methodology used to explore ESL students' interactions in wiki-based collaborative writing in the EAP context. I provided detailed information about the research design, the setting, participants, Wikispaces sites, and two wiki tasks. I specifically reported multiple instruments and data collection procedures. Moreover, I presented detailed information about the analyses of triangulated data sources in relation to four research questions. In addition, I discussed ethical considerations, the researcher's role, the trustworthiness, and limitations and delimitations of this study. From Chapter 4 through Chapter 7, I will discuss findings from the four perspectives: patterns of small group interaction, factors mediating wiki interactions, influence of interactional processes on writing products, and connection between interactions and student reflections about wiki-based collaborative writing.

Endnotes

[2] As the two wiki tasks were course assignments, course instructors had advantages of grading wiki writing. Although course instructors' assessments of wiki writing constituted one of data sources in this study, the instructor's assessment was not collected for some reason in the pilot study. The doctoral student whom I invited to co-rate writing with me had master's degree in TESOL and had sufficient experience in assessing ESL writing. The high inter-rater reliabilities obtained in both the pilot study and the dissertation study ensured the course writing rubrics' reliability.

[3] In this study, the course instructor provided feedback via the group wiki "Discussion" after the students completed each sub-task. I excluded the instructor's wiki posts during my data analysis,

because I focused on exploring peer interactions in wiki-based collaborative writing. However, the teacher's scaffolding in group writing deserves investigation in future studies.

CHAPTER FOUR: PATTERNS OF INTERACTION IN WIKI-BASED COLLABORATIVE WRITING

This study aimed to examine computer-mediated interactions when the small groups of ESL graduate students worked on collaborative writing tasks using wikis. I analyzed and interpreted the results about small group interactions from the lens of sociocultural theory. The constructs of ZPD and scaffolding mainly framed my description and interpretation of peer interactions occurring within the four small groups. This chapter focuses on answering Research Question 1 "What characteristic patterns of group interaction are visible when small groups of ESL graduate students work on two collaborative writing tasks using wikis?" To study this central question, I address three sub-questions: 1) How do students in their small groups negotiate writing tasks and engage with each other's ideas via wikis? 2) How do students in their small groups co-construct written texts via wikis? and 3) How do students scaffold each other during wiki-based collaborative writing?

This chapter begins with a holistic view of different patterns of wiki-based interaction that the four groups demonstrated during two wiki writing tasks. I report on main findings regarding the overall characteristics of these interactional patterns, and then discuss salient features of these patterns from the perspectives of 1) wiki discussion engagement reflected by language functions; 2) wiki text co-construction process reflected by writing change functions; and 3) occurrences of scaffolding within the four groups.

Overall Patterns of Small Group Interactions

In this wiki-mediated collaborative writing task environment, patterns of interaction refer to the ways in which small groups of ESL graduate students negotiated writing tasks and co-constructed texts using wikis in relation to two writing tasks —a research proposal and an annotated bibliography. Students' interactions during task/meaning negotiation were revealed in wiki "Discussion" and "Comments" modules, and their text co-construction behaviors were reflected in the wiki "History" module. Thus, main data sources comprised of Wiki "Discussion," "Comments," and "History" records under each small group tab were automatically logged in the Wikispaces sites.

As addressed in Chapter 3, I selected four small groups that revealed variations in group composing for close examination. To identify the overall interactional patterns of the four cases, I followed the grounded theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1998) and analyzed the data in an iterative and holistic manner for each group and then made comparisons of the data from the four groups. While reviewing the data of wiki records, I particularly attended to 1) the degree of each group member's contribution and 2) the extent of each group member's engagement with one another's contribution. I also examined the wiki discourse as well as the secondary data sources, i.e., interviews and reflection papers, to explore the occurrences/strategies of peer scaffolding and group members' stances over writing tasks and the roles they assumed (Li & Zhu, 2013; Storch, 2002). Figure 6 in Chapter 3 specifically showed how the two indexes of interaction — "equality" and "mutuality" — were informed by analyses of wiki discourse, interviews, and reflection papers.

Drawing on the triangulated data sources, I identified four overall patterns of interaction that the four small groups demonstrated across two wiki tasks: Collective—Active/withdrawn

(Group 1); Expert/novice (Group 2); Dominant/defensive—Collaborative (Group 3); and Cooperating in parallel (Group 4). Group interactions were dynamic: mixed patterns of interaction were evident in Group 1 and Group 3, and variations occurred in Group 2 and Group 4 despite un-switched overall patterns. Table 7 presents overall patterns of interaction and interactional dynamics with defining features that the four groups demonstrated in two tasks. These patterns revealed how students in small groups approached wiki-based collaborative writing tasks in terms of "equality" and "mutuality."

Group 1 generally demonstrated a collective approach to wiki writing tasks. Group members displayed collaborative involvement in task completion (high degree of "equality") and exhibited much mutual engagement (high "mutuality") in text construction. Collective scaffolding was particularly evident in Task 1. There was no one clearly identifiable expert, but group members, acting as a collective, drew on their resources and scaffolded each other's efforts on the collaborative writing task. However, in Task 2, group members' collectiveness in completing the writing task reduced with Abdul's absence toward the end of the project. Although Dong and Feng took responsibility of the annotation construction and they also reminded Abdul to have the fair share of the work, equality and mutuality decreased in this task.

Group 2 displayed an expert/novice pattern of interaction featured by high "mutuality" and mid-low "equality." In both writing tasks, three group members all engaged with the discussion of task orientation and writing contents. In Task 1, due to their familiarity in the writing topic, Hai and Xi played the role of "expert," taking more control over the writing direction, and they also encouraged and actively engaged with Ali's contribution. Ali, who was unfamiliar with the writing topic, acknowledged the leading role of the two experts, and was very active and responsive to their ideas and suggestions. In Task 2, Hai exhibited obvious

leadership, involved with group partners' contribution, particularly in text contribution. The other two members Xi and Abdul had the fair share of the workload.

Table 7

Patterns of Interaction for the Four Small Groups across Two Tasks

		Patterns of Interaction
Group 1		**Collective**
	Task 1	Three members make joint contribution to and equal degree of control over group writing in terms of task negotiation and text co-construction. They are also willing to engage with one another's ideas/contribution.
		[Active/Withdrawn]
	Task 2	Two members actively participate in the writing task, but the third member has a reduced degree of participation and even withdraws from the task.
Group 2		**Expert/Novice**
	Task 1	Group members have unequal contribution and degree of control. Two members share the role of "expert," taking more control over the task. Experts encourage the third member (novice) to participate. The novice is active in participation and responsive to experts' ideas/ behaviors.
	Task 2	One member takes a role of "expert," taking a lead in text-construction. The second member (former expert) and the third member (novice) have the fair share of the group work.
Group 3		**Dominant/Defensive**
	Task 1	Two members take control over the task, which are manifested in different ways. The third member, although being an assigned leader, contributes the least to group writing, but defends his writing contribution and leadership. Group members are unwilling or unable to engage with one another's contribution, and few instances of reciprocal interaction occur.
		[Collaborative]
	Task 2	Three members take a more collaborative stance to the writing task. They actively participate in the group writing. They show willingness to engage with one another's ideas/contribution.
Group 4		**Cooperating in Parallel**
	Task 1	Three members make equal contribution to text construction. Division of labor is quite obvious. No sufficient evidence shows group members' engagement with one another's contribution.
	Task 2	Three members are fully responsible for their individual subtasks. Equal share of labor is obvious. A few instances involving each other's contribution occur.

Group 3 started with a dominant/defensive pattern of interaction with a distinctive feature of low "mutuality." The data of wiki records, interviews and reflection papers revealed that Vitaly and Gao took control over the task, which were manifested in different ways: Vitaly played an authoritative role explicitly and Gao exerted influence on group writing products implicitly. Chuan, as an assigned leader at the beginning of the project, turned out to contribute the least to wiki writing, but defended his writing contribution and leadership: overseeing writing tasks, particularly in charge of division of workload. The three members showed low degree of engagement with one another's contribution and offered few reciprocal responses to one another's efforts. However, the group members took a more collaborative stance with a higher degree of "mutuality" in Task 2, showing evidences of engagement with each other's ideas/contribution.

Different from the three patterns discussed above, Group 4 demonstrated a cooperating in parallel pattern, evidenced by high "equality" and mid-low "mutuality." When brainstorming the writing topic, each of the three group members made one post in the wiki. The three members equally divided the tasks and cooperated on collaborative writing in a harmonious manner. The three members had equal participation in text construction, and the writing product was combination of each member's equal efforts (Bradley et al., 2010). However, not much evidence showed that group members were actively engaged with one another's contribution, although a few instances showing involvement in each other's contribution occurred in Task 2.

Taken together, four characteristic patterns of interaction were evident when ESL graduate students worked on two wiki writing tasks. Also, the patterns were not static, and variations were obvious. I will discuss in detail dynamic group interactions in the following section. Specifically, I took a lens of sociocultural theory and examined specific characteristics

of these four patterns of interaction, in terms of language functions, writing change functions, and scaffolding strategies. The language functions identified in online wiki discourse mirrored how students used the target language as a mediating tool to interact with group partners by negotiating writing tasks and meanwhile negotiating social relationship over the course of wiki-based collaborative writing. Moreover, writing change functions (Mak & Coniam, 2008) reflected how students interacted and collaborated as they jointly constructed the wiki texts within their small groups. The investigation of writing change functions also revealed an evolving process of participants' scaffolded interaction at writing and revising stages. In addition, an examination of scaffolding mechanism/strategies reflected in both online discourse and interview/reflection episodes enriched the understanding of the dynamics of group interactions.

Characteristics of Group Interactions: Language Functions, Writing Change Functions, and Scaffolding Strategies

I explored the characteristics of the four groups' interactions by addressing three sub-questions. To answer RQ1.1 "How do students in their small groups negotiate writing tasks and engage with each other's ideas via wikis?," I analyzed the wiki "Discussion" and "Comments" records and detected the types of language functions that each small group performed throughout the two wiki tasks. To answer RQ 1.2 "How do students in their small groups co-construct written texts via wikis?," I examined the writing change functions that each small group performed in each wiki writing task, revealed by wiki "History" records. To answer RQ 1.3 "How do students scaffold each other during wiki-based collaborative writing?," I drew on wiki records, interviews and reflection papers to examine the scaffolding episodes within each small group. Overall, the students' negotiation of writing tasks by conducting various *initiating* and *responding* language functions, and their text construction behaviors reflected in *self/other*

writing change functions, helped me identify the "equality' and "mutuality" of group interactions. Also, the participants' emic perspectives of their group interaction, particularly their perceptions of peer scaffolding, revealed in interviews and reflection papers, were valuable supplementary sources to discover a comprehensive picture of small groups' interactional patterns. Below I present characteristics of peer interactions group by group.

Group 1: Collective—Active/withdrawn

Group 1 was composed of three male graduate students: Dong and Feng from China, and Abdul from Saudi Arabia. When group members worked on Task 1 (Research Proposal), they displayed a collective approach to wiki-based collaborative writing, and *collective scaffolding* (Donato, 1994) was perceivable during their writing processes. Three group members made joint efforts in the discussion of writing tasks and construction of written texts. They were involved with reciprocal communication via wiki "Discussion" and collectively performed multiple writing change instances as reflected in wiki "History." Unfortunately, when working on Task 2 (Annotated Bibliography) involving the combination of each individual's work, Abdul's participation was largely reduced, and he did not complete his individual part of writing three annotations.

I discuss below how the members of Group 1 interacted to co-produce group writing in relation to both tasks. Group interactions were elucidated from language functions, writing change functions, and scaffolding strategies that group members conducted. Specifically, I present below writing change functions that small groups performed task by task, while discussing language functions and scaffolding strategies taking the two tasks as a collective. Because all the small groups discussed about both writing tasks, such as the specific research topic, rhetorical structure, and sources to use, mostly before they actually wrote the two wiki

essays, I took the wiki "Discussion," and "Comments" records under each small group tab as a whole, and examined the language functions combining both wiki tasks. Also, as interaction/scaffolding occurred throughout the wiki writing processes, I discuss scaffolding strategies as a holistic observation.

Language functions performed by Group 1

As noted in previous discussion, I analyzed the language functions exemplified in wiki "Discussion" and "Comments" posts under the group tab according to Taxonomy of Language Functions (Table 3). Language functions were defined as mediating functions of language occurring in the online discourse, and they fell into multiple categories such as encouraging, elaborating, and suggesting. Each instance of language functions was further categorized into either "initiating" or "responding," so as to reveal the degree of group members' joint contribution and mutual assistance in task negotiation. Results of data analysis revealed that the members of Group 1 collectively contributed to the discussion of task orientation and writing contents. The language functions that Group 1 performed are displayed in Table 8.

Table 8 shows that Group 1 conducted a total of 24 language functions. The three members made joint contribution to task discussion, with Dong performing 9 instances of language functions, Feng 10 instances and Abdul 5 instances. The language functions fell into 15 instances of the "initiating" move and 9 instances of the "responding" move. The relatively high frequency of language functions they performed include suggesting (5), elaborating (3), eliciting (3), stating (3), justifying (3), and agreeing(3). Every group member freely stated their ideas and justified for their own perspectives. This finding echoed the occurrence in collaborative interactions reported in Villamil and Guerrero (1996) that group members respect one another's perspectives and also feel free to present their own views. Also, their interaction was featured with suggesting,

eliciting, and elaborating. Both Dong and Feng made several suggestions and successfully elicited/invited their group partners to respond to and elaborate on previous ideas. Moreover, they constructed nice social relationship by conveying greeting, agreement, and acknowledgment.

Table 8

Language Functions Performed by Group 1

Language Functions		Dong	Feng	Abdul	Subtotal
Initiating (Total:15)	Eliciting	2	1	0	3
	Greeting	1	0	0	1
	Justifying	1	1	1	3
	Requesting	0	1	0	1
	Stating	1	1	1	3
	Suggesting	3	1	0	4
Responding (Total: 9)	Acknowledging	0	1	1	2
	Agreeing	1	1	1	3
	Elaborating	0	2	1	3
	Suggesting	0	1	0	1
	Subtotal	9	10	5	24

The following excerpts show examples of their use of language functions. I included visuals before introducing excerpts in the hope to illustrate group interactions more clearly.

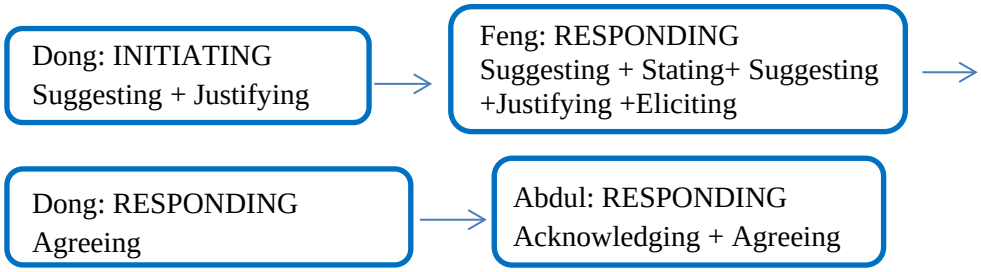
Excerpt 1: Wiki "Discussion" (2/24/2013)

1. **Dong**: Hi, guys (***Greeting***), our proposal will be divided into topic, resources, method and problems (***Suggesting***). How you think about that? (***Eliciting***)

2. **Feng**: Sure (***Agreeing***) and rhetorical stance should be presented, and explain the significance of the research. we need a timeline for investigating the topic, possible sources for investigation. (***Elaborating***)

Except 1 demonstrated that Dong and Feng jointly brainstormed the essay structure by appropriately employing multiple language functions in the wiki "Discussion." These language functions involving both initiating and responding moves suggested group members' concerted efforts on the negotiation of the writing task. Excerpt 2 is another example.

Excerpt 2: Wiki "Discussion (2/10/13)



1. **Dong**: I recommend we choose the topic of immigration in the United States and its influence on American Culture, (***Suggesting***) because its the topic that we have already familiar with and can find the subtopic and resourses quickly and easily. (***Justifying***)

2. **Feng**: The idea is good, but we need some more challenges. … (***Suggesting***) Globalization is a hot topic nowadays, Lots of people in China wear NIKE, eat KFC, drink Coca, make calls by Iphone, drive BMW, shopping in Walmart, but none of these are Chinese company. (***Stating***) So how about we make our research on Globalization, and we can choose Coca-Cola as our target (***Suggesting***). Cause it owns wide-range consumers and its successful development experience has made it standing over 100 years (***Justifying***). What's your opinion, guys (***Eliciting***)?

3. **Dong**: Fine, I agree (***Agreeing***)

4. **Abdul**: fantastic (***Acknowledging***), I agree with you (***Agreeing***)

As indicated in Excerpt 2, Dong initiated the group discussion by suggesting the topic of immigration and reasoning that this topic would be easy to handle. Feng politely responded to Dong by making the suggestion of choosing a more challenging topic. He went on to point out the hot topic of globalization and recommended "globalization of Coco-Cola." After justifying his choice, Feng elicited his group partners' response. Consequently, both Dong and Abdul endorsed his idea by performing agreeing/acknowledging. In this way did the three members have shared understanding and reach consensus before proceeding with writing.

Writing change functions performed by Group 1

After negotiating about their research topic and writing direction, group members co-constructed group writing in relation to two tasks: a research proposal and an annotated bibliography in the group wiki site. I discuss writing change functions occurring while Group 1 worked on each of the two tasks.

Task 1: Research proposal

Table 9 below displays writing change functions that the members of Group 1 performed while working on Task 1: Research Proposal. Two types of writing change functions—adding and rephrasing— were identified. As Table 9 indicates, the members of Group 1 made a total of 9 instances of writing change functions, including adding (6) and rephrasing (3). They mostly changed the texts that they had composed themselves, and they were also involved with others' writing contribution. For instance, Dong rephrased his group partner's text once, and Abdul also added to and rephrased other's texts. Also, group members made both global changes and local changes.

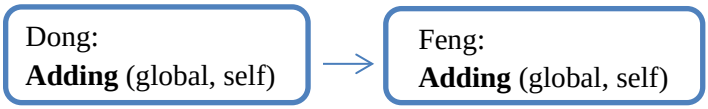
Table 9

Writing Change Functions Performed by Group 1 in Task 1

	Adding				Rephrasing				Total
	Global	Local	Self	Other	Global	Local	Self	Other	
Dong	3	0	3	0	0	2	1	1	5
	(3)				(2)				
Feng	2	0	2	0	0	0	0	0	2
	(2)				(0)				
Abdul	1	0	0	1	0	1	0	1	2
	(1)				(1)				
Total	6				3				9

Below I discuss group members' text constructing behaviors with illustrative excerpts.

Excerpt 3: *Wiki "History" (2/24/13)*



a. **Dong** (***Adding: global, self***):

Topic: The main topic is about the globalization of Coca-Cola. It will state the successful strategies the company conducted under globalization trend and how they sovled problems. the detailed topic is the business of Coca-Cola in China and Saudi Arabia. For part of business in China, I will talk about how they influence local residence with american style and what strategies they used in competition and also any problems. The purpose of this is to show us why and how the company affects us or change the way we used to live with.

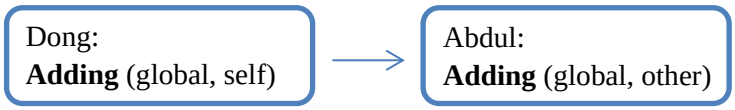
b. **Feng** (***Adding: global, self***):

Significance: Every business company pursues profit. With Globalization process, Coca-Cola have more customers overseas, more skilled workers and unskilled laborers can be get accessed, costs will decrease. In the cases of China, Coca-Cola has more benefits than these, but it also has problems to enlarge its market in this huge population country, how to make people there like Coke and accept American culture, and what strategies they use to make Coke localization and compete with other soft

drink companies. The experiences and lesson of Coke have some reference for the firms which need to be globalization.

This excerpt shows the group members made global additions to their group writing, with Dong contributing to "topic" and Feng to "significance." Excerpt 4 below, on the other hand, depicted group members' joint efforts to composing texts regarding "method," with Dong and Abdul bringing together their different resources.

Excerpt 4: Wiki "History (2/24/13)



a. **Dong** (***Adding: global, self***)

Method: Because in the research of this topic, we need to think about the questions as:

1. what strategies the company used to expand business under globalization trend

2. what successful advantages the company possess in competition

3. what is the globalization goals of company

4. how the company keep the share of the global market

5. what rules Coca made to lead the beverage industry

6. what the effects that have tipped in the favor of the company and made it more competitive

b. **Abdul** (***Adding: global, other***)

1) I am going to focus on this issue, by showing the problems in the depth and how the company settled the issues. To be clear, Coca Cola Company faced problems in their way to be expanded in the Middle East since some countries reported some issues for many reason such political, religious and cultural and local problems in some of these countries.

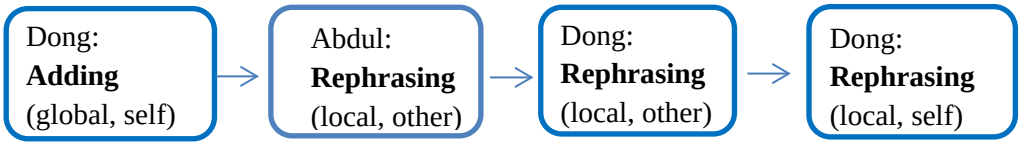
2) Why company was in trouble by the false of advertising in Middle East countries.

3) Not only the company did use the false of advertising but also they did not focus on social networks that many people are using in those countries. In order to solve such problems, the main

method is to find some studies or researches already done related to our topic. We will search online to seek what researches already have on internet and we will look for any database can help us to support our argument.

Moreover, the members of Group 1 conducted several instances of rephrasing to either their own texts or others' texts. Excerpt 5 is illustrative.

Excerpt 5: Wiki "History (2/24/2013)



a. **Dong**: The detailed topic is the business of Coca-Cola in China and Saudi Arabia. (***Adding: global, self***)

b. **Abdul**: The detailed topic is the business of Coca-Cola in China and ~~Saudi Arabia~~ **Middle East countries**. (***Rephrasing: local, other***)

c. **Dong**: The detailed topic is the business of Coca-Cola in China and ~~Middle East countries~~ **Saudi Arabia** (***Rephrasing: local other***)

d. **Dong**: The detailed topic is the business of Coca-Cola in China and ~~Saudi Arabia~~ **the Middle East** (***Rephrasing: local, self***)

The above excerpt shows that members of Group 1 were involved with several rounds of rephrasing acts when co-constructing the specific topic of their research proposal. Abdul were not satisfied with the phrase "Saudi Arabia" used by Dong, and substituted this phrase with "Middle East countries" at the second round. However, Dong changed the phrase back to "Saudi Arabia" since he knew that Abdul was from Saudi Arabia. Consequently, the group members decided to use the phrase "the Middle East" in the sentence after they had a face-to-face meeting. As Dong commented during the member-checking with me, "We need to respect the writer's point of view when tending to change his texts" (Follow-up interview, 4/30/2013)

Task 2: Annotated bibliography

In Task 2, different degree of group members' participation was identified. Table 10 depicts writing change functions that the three group members conducted while constructing their annotated bibliography. Among a total of 17 writing change acts, Dong contributed 7, Feng 9, and Abdul only 1. Abdul's participation was quite reduced in Task 2, merely contributing one annotation, which did not meet the task requirement of three annotations per person. However, both Dong and Feng participated as the task required, and they performed multiple writing change functions: adding, rephrasing, deleting and correcting. The group members made several rounds of revisions on their own texts in most occasions. Dong corrected twice the format of the annotations that his group partners constructed. Taken together, this group performed 12 instances of adding, 2 instances of rephrasing, 1 instance of deleting, and 2 instances of correcting. I discuss below the details of text construction while the group members worked on the task of annotated bibliography.

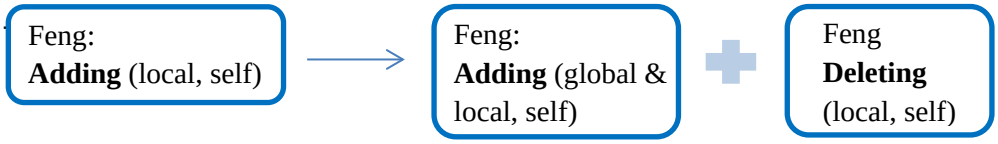
Table 10

Writing Change Functions Performed by Group 1 in Task 2

	Adding				**Rephrasing**				**Deleting**				**Correcting**				**Total**
	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	
Dong	3	1	4	0	0	1	1	0	0	0	0	0	0	2	0	2	7
	(4)				(1)				(0)				(2)				
Feng	6	1	7	0	0	1	1	0	0	1	1	0	0	0	0	0	9
	(7)				(1)				(1)				(0)				
Abdul	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	(1)				(0)				(0)				(0)				
Total	12				2				1				2				17

This task required each group member to write three annotations, a total of nine for this group. Wiki "History" records from Group 1 revealed an overall sequence of the members' participation: Dong first posted two annotations (adding: global, self), Abdul continued to post one annotation (adding: global, self,), and then Feng contributed two annotations one at a time (adding: global, self,). As followed, Dong and Feng completed their respective third annotation (adding: global, self) sequentially. Compared with their participation in Task 1, a division of labor was quite obvious in Task 2, partly due to the nature of the task involving combination of individual contribution. Also, more types of writing change functions were detected, namely deleting and correcting. Excerpt 6 shows examples of adding and deleting.

Excerpt 6: *Wiki "History"*



a. **Feng** (2/28/13):

"Coca-Cola in China: Quenching the Thirst of a Billion.". Jul/Aug 2001, Vol. 28 Issue 4, p52, 4p. Print **.**

Reports on the partnership between the Chinese government and Coca- Cola Company. Annual sales of Coca-Cola; Carbonated beverages sold by the company; Business strategy adopted by the company in Asia; Joint ventures with government agencies. INSET: A Joint Study TracesCoca-Cola's Economic Impact (***Adding: local, self***)

b. **Feng** (3/8/13):

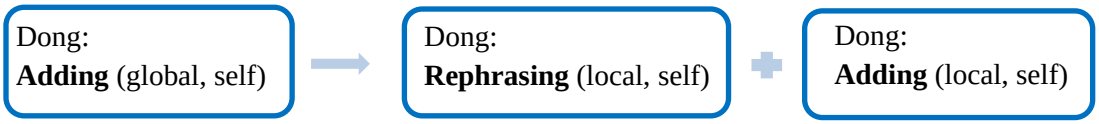
"Coca-Cola in China: Quenching the Thirst of a Billion.". Jul/Aug 2001, Vol. 28 Issue 4, p52, 4p. Print **.**

~~Reports on~~ More evidences come from this report, the author pointed out Coca-Cola's long-term strategies of localizing production and building infrastructure through partnerships with the

Chinese government and domestic companies have allowed it to establish nationwide operations and generate a strong market presence. ***(Adding: global, self)*** **The report wants to explain** the partnership between the Chinese government and Coca- Cola Company**, and** annual sales of Coca-Cola; Carbonated beverages sold by the company; Business strategy adopted by the company in Asia; Joint ventures with government agencies. ~~INSET: A Joint Study TracesCoca-Cola's Economic Impact~~ (***Deleting: local, self***) **are all covered in the report** ***(Adding: local, self)***. From this report, I found more clues on the relationship between the Corporation and China government which is also a critical point in our research. And the audience would be general people. ***(Adding: global, self)***

Excerpt 6 indicated Feng's recursive writing process using the wiki. In the first round, he included important bullet points in the annotation of a source about Coco-Cola in China. After a couple of days, he revised this annotation, conducting global and local additions, as well as local deletions to make the texts more readable and informative. In particular, he added two other rhetorical moves of the annotated bibliography: the source's relevance to the research and audience of the source, as lectured in class and required in the team project guideline. This example reinforces the advantage of the wiki as an asynchronous tool in affording participants' reflection and continual revision over a reasonable time span (e.g., Li, 2012; Storch, 2011). Such affordance can also be glimpsed in the following excerpt.

Excerpt 7: Wiki "History"



a. **Dong** (2/27/13):

This article describes the nature and causes of the parallel trade in Coca - Cola between Shanghai and Hangzhou and the geographic and theoretical implications for the regional monopolies that

have been artificially created by Coca-Cola in China . The source provides the evidence of successful specific strategies and advantages of the company doing business in china and fairly analyze the specific situation of Chinese market. (***Adding: global, self***)

b. **Dong** (3/8/13)

The purpose of this article is to describe (*Rephrasing: local, self*) the nature and causes of the parallel trade in Coca - Cola between Shanghai and Hangzhou and the geographic and theoretical implications for the regional monopolies that have been artificially created by Coca - Cola in China. **The audience is the individuals who has the strong intrest with the business strategies of Coca-Cola in China. *(Adding: global, self)*** The source provides the evidence of successful specific strategies and advantages of the company doing business in china and fairly analyze the specific situation of Chinese market.

c. **Dong** (3/8/13):

The purpose of this article is to describe the nature and causes of the parallel trade in Coca - Cola between Shanghai and Hangzhou and the geographic and theoretical implications for the regional monopolies that have been artificially created by Coca - Cola in China. The audience is the individuals who has the strong intrest with the business strategies of Coca-Cola in China. The source provides the evidence of successful specific strategies and advantages of the company doing business in china and fairly analyze the specific situation of Chinese market, **which is related to my position of research that the strategies of business in China.** (***Adding: local, self***)

Again, this excerpt displays students' learning of a new genre by applying what they newly learned in writing (Hirvela, 1999). To meet with the task requirements (e.g., rhetorical moves including the purpose of the work, what type of audience the work is written, and its relevance to the research topic), Dong rephrased "this article describes […]" by stating explicitly "the purpose of this article is to describe […]." He also expanded the content of this annotation by adding a

sentence addressing the audience of this article and a clause which indicated its relevance to their research topic. However, Dong did not attend to language accuracy and quite a few language errors were not removed from the texts. Interestingly, rather than language accuracy, he heeded to the format, which was one of the important components that they were instructed in class regarding the genre of annotated bibliography. Dong was found to revise twice the formats of the texts that his group partners constructed where he saw inappropriateness, such as indention.

Taken together, two members Dong and Feng made good use of the wiki and performed quite a few instances of writing change functions at diverse types in the task of annotated bibliography. However, they engaged with each other's contribution in a smaller degree. Particularly, Abdul was identified to withdraw in the mid of the task.

Occurrence and strategies of scaffolding in Group 1

Drawing on the primary data source of wiki records and secondary sources of interviews and reflection papers, I discuss the evidence of group members' mutual scaffolding as it occurred particularly in Task 1, and the strategies they applied as to scaffolding acts. Group 1 worked together closely and built the writing ideas collectively at the pre-writing stage. Their collective interaction was featured by *intersujectivity*, *joint decision-making*, and *collective scaffolding*.

The three members mutually constructed a scaffold while negotiating writing contents, and achieved shared understanding and joint commitment to the task, which is described as "intersubjectivity" (Rommetveit, 1985). de Guerrero & Villamil (1994) asserted that "establishing and maintaining intersubjectivity are essential for development to occur within the ZPD" (p. 53). Excerpt 2 noted in the earlier discussion is a vivid example. In the pre-writing stage, Dong suggested selecting immigration as the research topic because of their familiarity with immigration. However, Feng politely suggested a more challenging and popular topic

"globalization." After offering sound rationale of targeting their topic at Coca-Cola, Feng invited his group partners to respond to his thoughts. Both of his partners expressed agreement via "Comments," and they reached consensus smoothly. The finding echoed Tudge (1992)'s viewpoint that individuals approach a task with "their own subjective ways of making sense of it" (p. 1365); as to the differing viewpoints, they attained some mutually agreed-upon understanding. As Nyikos and Hashimoto (1997) posited, intersubjectivity entails critical thinking. They argued that although collaborative activity entails convergent thinking, negotiation of divergent problem allows group members to construct new understandings and attain a new consensus.

Feng in the reflection paper vividly explained his group's critical thinking. Feng elaborated on the negotiation of sources to choose with his group partners during Task 2. He stated, "We talked together openly and honestly keeps improving. We challenged each other and disagreed when we need to, inviting and welcoming all perspectives" (Reflection paper of Feng, 4/ 5/13). Importantly, he shared an anecdote showing how the group members discussed the different viewpoints about what to be included in the annotated bibliography and reached shared understanding finally.

> When Dong[4] uses a source about "parallel trade", I realized that it was not that related to our topic. […] I tried to persuade him to find the key point that can express in presentation, he didn't want to change his ideas. So I adjusted myself and used "coordinative" way to communicate instead of "pushing" him to accept my ideas. Finally, we found another passage which included "five forces analysis" that he's familiar with to replace the original one. We are satisfied with the new source. (Reflection paper of Feng, 4/5/2013)

Feng was the assigned group leader, but he did not assume an authoritative stance in wiki writing tasks. He engaged himself in critical thinking, but did not impose his ideas on others, in his words, "using 'coordinative' way to communicate" rather than "pushing" others. This

scenario shows that Feng took a collective stance in wiki group writing and engaged others' contribution contingently.

Also, members of Group 1 interactively worked in their ZPD. The group members co-constructed the solution to a problem in discussion and displayed joint decision making. After they decided on the research topic of globalization of Coca-Cola, they continued to discuss the subtopics to be included in their research proposal. Excerpt 8 is illustrative.

Excerpt 8: Wiki "Discussion" (2/10/2013)

1. **Dong**: … But few of us know the history track of the monopoly to show us why and how the company [Coca-Cola] affects us or change the way we used to live with. … In that case, I recommend our subtopic as:

    1) development history of the company

    2) strategies the company used to expand business under globalization trend

    3) successful advantages the company possess in competition

    4) globalization goals

2. **Feng**: Great! And there're some more subtopic I come up with:

    5) the reasons that Coca needs globalization

    6) how the company keeps the share of the global market

    7) what rules Coca made to lead the beverage industry

3. **Abdul**: […] There is no doubt that the Coca Coal has faced difficulties in order to spread in the world, Therefore, we will observe about the difficulties and how the company has overcome the difficulties by the globalization.

As Excerpt 8 indicated, Dong initiated four subtasks, and based on his ideas, Feng came up with three more subtasks. Abdul, on the other hand, initiated a new perspective: the difficulties Coca-Cola encountered in the path of globalization, which seemed to add up to a complete picture of this topic. This excerpt reflects mutual assistance and a smooth flow of

collective thoughts during the process of joint decision making. Also, the group members acted upon their negotiated meaning through text construction. Group wiki "Page" revealed that the ideas from each of the three members have been incorporated.

Moreover, the group members conveyed instances of *collective scaffolding* (Donato, 1989, 1994) occurring through their group work in the interviews and reflection papers. In this group, no member asserted his "expertise" but members collectively acted as experts. Assigned as a leader, Feng stated, "I informed group partners we need to move on, what next we need to do. If I forgetted sth, my members informed me, as well" (Interview with Feng, 3/8/13). He added in the reflection paper, "We exchange ideas from Wiki and Email, and we urged each other to finish every step in case of passing the due date" (Reflection paper of Feng, 4/5/13).

The other member Dong also expressed the group members' scaffolded assistance in wiki projects. He told in the interview, "When we have some good ideas, we just go on the wikis and consult others' ideas […] I also invited others to respond" (Interview with Dong, 3/9/2013). Dong exclaimed in his reflection paper, "We arranged every team member specific tasks adequately and motivated positivity of each member. […] Everyone have the inspiration to work as teamwork in order to make better performance" (Reflection paper of Dong, 4/5/13). Abdul also commented in the interview that group members had nice interactions, and his group partners supported his ideas.

It is important to note that less mutual scaffolding were identified when the members of Group 1 constructed Task 2 which required the combination of group members' individual efforts. Dong and Feng actively participated in the collaborative writing, but Abdul turned to be rather passive. For instance, Dong corrected the formats of others' texts twice. Feng, as the group leader, attempted to elicit his group partner Abdul's contribution. When Feng identified the

missing of annotations from Abdul, he left a comment “Can you find one more source to add?” on the wiki, but eventually Abdul withdrew from the wiki writing project, and ended up with merely one annotation. Abdul’s reduced participation mainly stemmed from his personal goal that was more important than performing well in the wiki project. I will discuss the dynamic motive, as one of mediating factors in wiki-based collaborative writing, in the following chapter.

Group 2: Expert/Novice

Group 2 demonstrated an Expert/Novice pattern of interaction throughout the writing process, although individual contributions varied during the two writing tasks. This group consisted of two male graduate students Hai and Ali, and one female graduate student Xia. Hai and Xia came from China, and Ali from Iraq. In Task 1, Xia and Hai shared the role of “expert” and led the writing direction together. They were both in charge of task operationalization and text co-construction in wikis, and also encouraged Ali’s participation. Their leadership, to a large degree, originated from their familiarity with the research topic “Disney,” as revealed in the interviews and reflection papers. Ali, who had little knowledge in the topic, acknowledged the other two members’ “expert” role, and he was responsive to the two leaders’ behaviors. In Task 2, Hai played the role of “expert” and clearly assumed the leadership, particularly in text construction. Xia and Ali also contributed to the group writing by composing their individual annotations as required.

Language functions performed by Group 2

In Group 2, the three group members all engaged with the discussion of task orientation and writing contents. They made full use of wiki “Discussion” and “Comments” to negotiate writing tasks. Analysis of language functions reflected in their wiki “Discussion” and

"Comments" posts revealed their mutual engagement with each other's contribution. Table 11 shows language functions that the members of Group 2 performed.

Table 11

Language Functions Performed by Group 2

		Hai	Xia	Ali	Subtotal
INITIATING Total:12	Eliciting	1	0	0	1
	Encouraging	1	0	0	1
	Greeting	1	0	0	1
	Justifying	2	0	0	2
	Questioning	0	1	2	3
	Requesting	0	0	1	1
	Stating	2	0	0	2
	Suggesting	1	1	0	2
RESPONDING Total: 15	Acknowledging	1	2	4	7
	Agreeing	0	0	1	1
	Clarifying	2	0	0	2
	Confirming	0	0	1	1
	Questioning	0	0	1	1
	Stating	1	0	2	3
	Subtotal	12	4	12	28

According to Table 11, a total of 28 language functions were identified. The group members were involved with a variety of language functions, including 12 initiating moves and 15 responding moves, which indicated high "mutuality." The language functions they used frequently were acknowledging (7), stating (5), and questioning (4). Many instances of acknowledgement and other contingent responses reflected Group 2's effective negotiation of the task and the social relationship. Also, quite a few instances of "stating" suggested that group

members, either the “expert” or “novice,” expressed their ideas willingly. The other salient feature of this group interaction was the occurrences of encouraging, clarifying, requesting and questioning. The expert encouraged the novice to participate and also made clarifications about the issue that the novice was unclear; the novice asked questions and requested help of the expert.

In this group, Hai’s leadership was reflected in his initial post through a variety of language functions, as displayed in Excerpt 9.

Excerpt 9:Wiki “Discussion”(Hai, 2/9/13)

Hai: INITIATING
Greeting + Stating + Justifying + Requesting + Eliciting

> Hi, guys. (***Greeting***) I have some ideas about our topic. According to the our discussion before, our potential topic would be Starbucks or Disney (***Stating***). However, I prefer Disney for several reasons (***Justifying***). First of all, as we know, Group B has chosen Starbucks as their topic. I don't think it's a great idea to share the same topic with other groups, and I'm pretty sure that professor xxx (course instructor) doesn't want to see it. Secondly, if we choose "Starbucks" have you ever think about how we can present to audience? Starbucks sells coffees and some other products, such as cups with their brand on it. Is there anything else about about Starbucks you can figure out right now to talk about 30mins? It's very hard. However, we were child, we know how Disney attract us and get us involved from our own experience, and the content related to Disney must be very interesting. Just think about these topics and see how many points pops out in your mind, you will agree with me! ***(Requesting***) What do you think? (***Eliciting***)

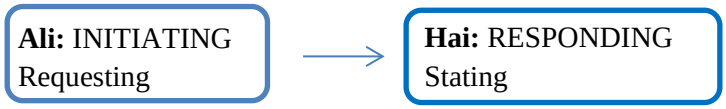
In the pre-writing stage, Hai initially conveyed his preference of Disney to Starbucks as their research topic. He articulated his rationale of choosing the topic of Disney, and tried to persuade his group partners to echo his idea and elicited others to respond. He also invited his group

partners to join the discussion by using wiki "Discussion," and suggested "Let's discuss in the discussion post! (2/10/13).

Hai recalled in the interview, "I am always the first to talk on the wiki. I am interested in the internet. I am willing to express my ideas there. […] They [group partners] made comments based on my comments" (Interview with Hai, 3/ 7/13). That is, Hai's initial wiki posts guided the task orientation and encouraged other group members to participate.

Ali, despite a novice, was highly engaged in collaborative writing tasks. As he was unfamiliar with the research topic "Globalization of Disney," he asked questions and requested help in the beginning of the task. Hai, playing a role of expert, provided scaffolded assistance to him in a timely manner. Excerpt 10 is illuminating example.

Excerpt 10: Wiki "Discussion" (2/10/13)



> **Ali**: […] because you have more information about Disney you should explain more for me so then I will be able to research about better. (***Requesting***)
>
> **Hai**: These are some ideas about Disney. (***Stating***)
>
> Children are not yet well educated to think independently and critically. Therefor, it's very easy for Disney to attracts children's interest. At the same time, the children's parent will be involved in Disney's business because they pay for their children. In other words, Disney attracts one child means Disney attracts at least two adults and one child. That's how Disney runs its business. Disney always spread a good idea, which is the reunion and happiness of family. […]

With continued scaffolding from the experts, Ali participated more actively as the project proceeded. He freely expressed his ideas, and responded promptly to his partners' posts. He

even questioned about his partner's writing contents using wiki "Comments" in Task 2. Excerpt 11 depicted the interaction in relation to the annotation of a source that Xia composed:

> "This article mainly explain that in digital times, how does disney use media to influence youth's identity, including multi-cultures, their living styles, etc. Through this way, Disney's target market is children. They make a lot of money from children through their products, movies and Disneyland" (Wiki "Page," Xia, 2/ 24/13)

Excerpt 11: Wiki "Comment" (2/24/13)

Ali: Thanks it's great (***Acknowledging***). Are there any criticism against any Disney production??(***Questioning***)

Hai: Maybe it has. But we will not focus on this point. (***Clarifying***)

Ali: okay. (***Agreeing***)

Excerpt 11 depicted Ali's active participation by assuming a critical role of questioner regarding his group partner's texts addressing the influence of Disney on youth's identity.

While Ali let himself be guided by his partners, he gradually grew into a self-regulated learner (Villamil & de Guerrero, 1996), contributing actively to group writing and meanwhile taking initiative to involve with group partners' contribution. However, Ali still did not have control over the writing direction, and Hai demonstrated higher control by clarifying that criticism against Disney production was not the focus of their essay.

Despite the assigned role of leader, Xia did not make many posts in the wiki discussion. As Xia commented in the interview, "I used emails to give instruction. Emails are more convenient. I remind the partners of the schedule and deadlines set by the professor" (Interview

with Xia, 3/8/13). Xia's leadership, if any, was displayed through her holistic view of the tasks that each person can contribute to in the pre-writing stage. The following notes are illustrative.

> Since Ali did not know the information, when I divided our group tasks and labors, I asked Ali to deal with the background information. He can use this process to gather informations. Hai did the business part which is his good at, and I did the cultural part which is my interesting. (Interview with Xia, 3/8/13)

Writing change functions performed by Group 2

Task 1: Research Proposal

Table 12 displays the writing change functions that members of Group 2 performed in Task 1. The group members performed two types of writing change functions, namely adding and correcting. Among the total of 13 instances of changes, they made a large portion of global adding (8) and some local adding (3). Xia added to his group partner's text once and corrected others' text once. Hai, the other expert, also conducted one instance of correcting other's text. In terms of individual contribution, Hai performed 5 writing change acts, Xia 4 instances, and Ali 4 instances.

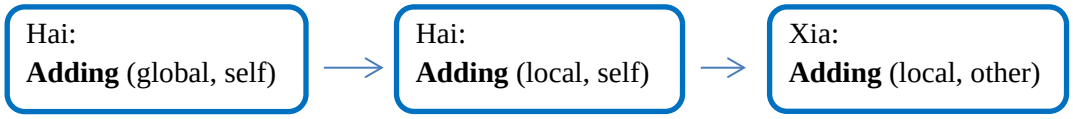
Table 12

Writing Change Functions Performed by Group 2 in Task 1

	Adding				Correcting				Total
	Global	Local	Self	Other	Global	Local	Self	Other	
Hai	3	1	4	0	0	1	0	1	5
		(4)				(1)			
Xia	1	2	2	1	0	1	0	1	4
		(3)				(1)			
Ali	4	0	4	0	0	0	0	0	4
		(4)				(0)			
Total		11				2			13

In addition to individual members' sequential global adding as identified in Group 1, the group members were found to highly involve with others' texts when they jointly produced the research proposal in the wiki. Excerpt 12 is an example.

Excerpt 12: Wiki "History"



a. **Hai** (2/20/13)

BUSINESS: In the United States, tourism is big business. In fact, it's the number one service that we export. In 2010, we welcomed nearly 60 million international visitors to America, and they helped to boost our economy to the tune of $134 billion. (***Adding: global, self***)

b. **Hai** (2/20/13)

BUSINESS: In the United States, tourism is big business. In fact, it's the number one service that we export. In 2010, we welcomed nearly 60 million international visitors to America, and they helped to boost our economy to the tune of $134 billion.

(http://www.whitehouse.gov/blog/2012/01/19/president-obama-promotes-tourism-disney-world) (***Adding: local, self***)

c. Xia (2/24/13)

Sources: (*Adding: local, other*)

BUSINESS: In the United States, tourism is big business. In fact, it's the number one service that we export. In 2010, we welcomed nearly 60 million international visitors to America, and they helped to boost our economy to the tune of $134 billion.

(http://www.whitehouse.gov/blog/2012/01/19/president-obama-promotes-tourism-disney-world)

The above excerpt depicted that the members asynchronously contribute to text construction by adding to both *self* and *other* texts. Specifically, Hai added a paragraph to provide a broad context for the business of Disney, and then continued to expand the texts by adding a link of

citation. Xia later added a subtitle “Sources” to the texts that Hai contributed earlier. Thus, the texts met with one of the task requirements salient rhetorical moves (“Sources” in this example), and the essay consequently became more reader-friendly. It was also detected that Xi and Hai, who shared the role of “expert” in Task 1, corrected the novice Ali’s mechanical mistakes, namely leaving out spaces when necessary.

Task 2: Annotated Bibliography

In Task 2, Hai assumed a predominant role in text construction. As can be seen in Table 13, Hai contributed 19 instances among a total of 27 writing change acts, while Xia and Ali contributed 4 instances each. Hai demonstrated great efforts to improve his group partners’ texts, but Xia was found to be less engaged with the revision of texts in the wiki. Xia’s behavior/stance change in text construction was largely due to her observation that wikis have constraints for constructing writing that highly demands formats, such as in the task of Annotated Bibliography, as she commented in the interview.

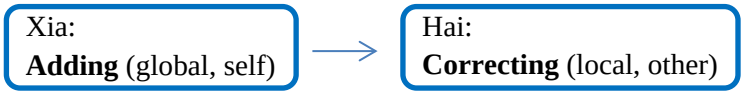
Table 13

Writing Change Functions Performed by Group 2 in Task 2

	Adding				Rephrasing				Reordering				Deleting				Correcting				Tot
	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	
Hai	4	1	4	1	1	1	0	2	2	1	1	2	0	4	0	4	0	5	1	4	19
	(5)				(2)				(3)				(4)				(5)				
Xia	3	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	(4)				(0)				(0)				(0)				(0)				
Ali	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	(4)				(0)				(0)				(0)				(0)				
Tot	13				2				3				4				5				27

Below I focus on discussing Hai's leadership in text construction with illustrative excerpts. Hai conducted multiple types of writing change functions, including adding, rephrasing, reordering, deleting, and correcting.

Excerpt 13: *Wiki "Comments" (2/14/13)*



a. **Xia**:

… maybe our conceptions came from cartoons which they created another word for us"

(***Adding: global, self***)

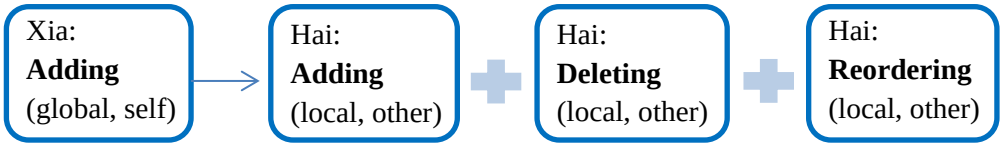
b. **Hai**:

"cartoons which they created…" need to be changed into "cartoons by which Disney created..."

(***Correcting: local, other***)

As the above excerpt indicates, Hai made use of wiki "Comments," pointing out the grammatical mistake in the attributive clause that Xia composed earlier. While negotiation of language points was seldom revealed from wiki records in this study, it is particularly encouraging to see that Hai left a comment on the texts with language problems and elicited his group partner to respond. As a result, this corrective feedback was accepted by Xia and then incorporated in the writing product. Excerpt 14 is yet another example.

Excerpt 14: Wiki "History"



a. **Xia** (2/27/13)

How Disney Magic and the Corporate Media Shape Youth Identity in the Digital Age.

Note:

This article mainly illustrated that in digital times, how does disney use media to influence youth's identity, including multi-cultures, their living styles, etc. Through this way, Disney's target market is children. They make a lot of money from children through their products, movies and Disneyland.

Credibility Rating:

This article absolutely is that what I am looking for. Since it topic relevant our topic, at the same time it include many statistics and examples which our team can explain it.

Link : http://www.truth-out.org/opinion/item/2808:how-disney-magic-and-the- corporate-media-shape-youth-identity-in-the-digital-age (***Adding: global, self***)

b. **Hai** (3/8/13)

Giroux, A. Henry. (***Adding, local, other***) "How Disney Magic and the Corporate Media Shape Youth Identity in the Digital Age" Truthout. **Web. 21 August 2011**. **Link:** http://www.truth-out.org/opinion/item/2808:how-disney-magic-and-the-corporate-media-shape-youth-identity-in-the-digital-age (***Reordering: local, other***)

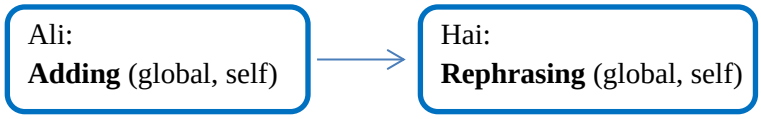
This article mainly illustrated that in digital times, how does disney use media to influence youth's identity, including multi-cultures, their living styles, etc. Through this way, Disney's target market is children. They make a lot of money from children through their products, movies and Disneyland . ~~**Credibility Rating:**~~ (***Deleting: local, other***) This article absolutely is that what I am looking for. Since it topic relevant our topic, at the same time it include many statistics and examples which our team can explain it.

As revealed in Excerpt 14, Hai improved the above annotation that had been composed by Xia according to task requirements, including MLA style, inclusion of references in the annotation, and description in a paragraph format. Specifically, he modified the citation following the MLA style by adding the author, the retrieving date, and re-ordering the web link of the article. To meet the requirement of a paragraph format, he also deleted the bulletin point "credibility rating."

Moreover, Hai made several rounds of global re-ordering, involving both *self* texts and *other* texts, to make the annotations arranged in an alphabetical order.

Furthermore, Hai was found to perform global rephrasing as to others' texts. Excerpt 15 was an illuminating example.

Excerpt 15: Wiki "History"



a. **Ali** (2/27/13)

…we need to analysis his perspective in religion, political view… (**Adding: global, self**)

b. **Hai** (3/8/13)

…we can through this article to examine that how dose Disney's culture influence people's ideology (**Rephrasing: global, other**)

As Excerpt 15 indicates, Hai rephrased Ali's statement to make the texts more pertinent to the topic of Disney's globalization, although the texts were not error free. As such, Hai, playing a role of "expert," led the text construction over the course of the writing of Annotated Bibliography.

Occurrence and strategies of scaffolding in Group 2

Many episodes of scaffolding emerged when members of Group 2 collaborated on wiki writing tasks. The experts, particularly Hai, involved the novice Ali in the interaction and provided assistance that would help him learn; Ali performed responsively to the experts' suggestions.

As Ali had little background in Disney, Xia and Hai provided scaffolded assistance to enhance his familiarity with the research topic. At the pre-writing stage when group members

negotiated a potential research topic, Hai and Xia concurred with the topic of Disney's globalization. However, Ali did not quite echo this idea because of his little knowledge on Disney. Excerpt 16 depicted how Hai adopted the strategy of *recruiting interest in the task* (Wood et al., 1978) in an attempt to seek Ali's endorsement.

Excerpt 16: Wiki "Discussion" (*Hai, 2/9/13)*

> "we were child, we know how Disney attract us and get us involved from our own experience, and the content related to Disney must be very interesting. Just think about these topics and see how many points pops out in your mind, you will agree with me!"

However, Hai's great interest in Disney was not contagious to Ali, who later expressed his concern in the wiki "Discussion," as portrayed in Excerpt 17.

Excerpt 17: Wiki "Discussion" (2/10/13)

> Ali: unfortunately I don't have background about Disney.
>
> Ali: However, if you prefer this topic, It's Okay. For me it might be more difficult but I have to research about it.
>
> Hai: Don't worry. we will meet tomorrow and I can show you the details of our topic.

Excerpt 17 shows that Hai was able to read Ali's uneasiness through his posts, so he responded immediately to meet Ali's affective and motivational needs," which was described as *contingent responsibility* (Lidz, 1991). Meanwhile, Hai used the strategy of *direction maintenance* and attempted to keep the novice motivated so as to start pursuing the task goal. Hai also tried to simplify the task (Wood et al., 1976) by presenting a clear outline of the task and sharing relevant sources about Disney with Ali in the face-to-face meeting. Through a series of scaffolded help, Ali understood the topic better and he acknowledged in the wiki "Discussion," "That is great. […] I think you choice a very good topic." (2/11/13)

Moreover, the two "experts" adopted the strategy of *affective involvement* (Lidz, 1991) to stimulate the novice's active participation while maintaining self-esteem in Task 1. Specifically, when Ali successfully completed the section of "Background" about Disney, both Hai and Xia praised his nice work in the wiki "Comments", as depicted in Excerpt 18.

Excerpt 18: Wiki "Comment" (2/24/13)

Xia: Ali, thank you for your sharing such a wonderful information!

Hai: Nice job.

Their acclamation at Ali's performance gave Ali a sense of enjoyment in the task and spurred him on to work harder.

Actually, Ali commented on the scaffolding he received from his group partners. As Ali recalled in post-task interview, "Before [In the beginning of the project] I have little knowledge [about Disney]. I asked them questions. They have some ideas about Disney.[…] They are helpful. They gave me some clues to do research, give me some key words. So I conducted research smoothly." (Interview with Ali, 3/8/13)

In particular, Ali addressed the scaffolds of his group partners' wiki posting. He stated, "I have not much information. I was able to read others' comments or information they posted. […] I have better understanding later" (Interview with Ali, 3/8/13). He added in his reflection paper: "I enjoyed the topic," "I got familiarized with the topic and can do better." (4/ 3/13) Ali's enjoyment and competence in writing the topic of Disney's globalization was also reported by his two partners Hai and Xia in the interviews. This observation resonated with what Donato (1994) perceived, "the experienced member guided, supported, and shaped actions of the novice, who in turn internalized the expert's strategic processes" (p.37).

As he becomes more familiarized with the topic, Ali took more responsibility for the task, and he started to question his partner's texts, as depicted in Excerpt 11. Ali's increasing

participation and critical thinking skills gradually emerging from writing tasks reflected the development in his ZPD. As Ohta (2000) posited, in collaborative writing tasks, no group member was requested to help or facilitate others' development, but "peer interaction may result in the emergence of a ZPD that enhances individual internalization" (p.56).

Group 3: Dominant/Defensive—Collaborative

Group 3 was composed of three male graduate students, namely Vitaly from Russia, and Gao and Chuan from China. Interactional dynamics were obvious when this group worked on two writing tasks. They demonstrated a dominant/ defensive pattern in Task 1 in which two members took control over the writing task in different manners, and the third member defended his writing contribution and assigned leadership. Specifically, Vitaly played an authoritative role in the process of task negotiation/communication, and Gao exerted influence on group writing products implicitly. The group members showed little mutual engagement with one another's contribution. However, they exhibited a collaborative stances in Task 2 in which mutual engagement and reciprocal scaffolding began to emerge. Below I discuss the language functions, writing change functions, and scaffolding mechanism occurring in this group.

Language functions performed by Group 3

Table 14 displays the language functions that Group 3 performed while discussing writing tasks. As Table 14 indicates, Group 3 performed a total of 26 instances of writing change functions, consisting of 17 instances of initiating acts and 9 instances of responding acts. The functions most used by this group are stating (6), requesting (5) and suggesting (3). Disagreeing is a unique function identified in this group. Both Gao and Vitaly made quite a few suggestions and requests, most of which were not echoed positively by the group partners. Vitaly and Gao also asked a question to which no group partner responded. Elaborating is also an identifiable

language function. However, different from Group 1 in which group members elaborated on one another's ideas, the instance of elaborating occurring in Group 3 were only directed at the group member's own ideas.

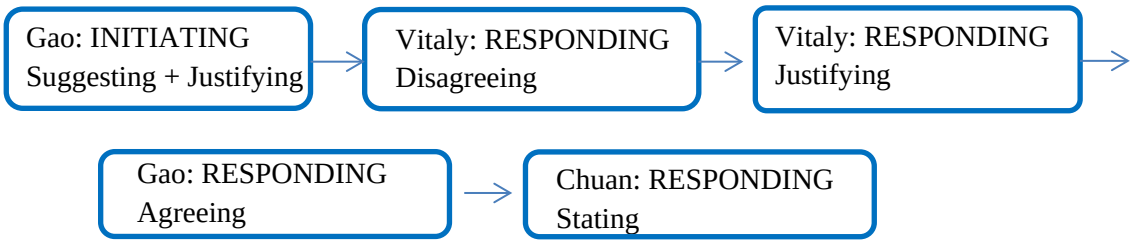
Table 14

Language Functions Performed by Group 3

Language Functions		Gao	Chuan	Vitaly	Subtotal
INITIATING **Total: 17**	Eliciting	1	0	1	2
	Greeting	1	0	0	1
	Justifying	1	0	1	2
	Questioning	1	0	1	2
	Requesting	3	0	2	5
	Stating	3	0	1	4
	Suggesting	0	0	1	1
RESPONDING **Total: 9**	Agreeing	1	0	0	1
	Disagreeing	0	0	2	2
	Elaborating	1	0	0	1
	Greeting	0	0	1	1
	Stating	0	1	1	2
	Suggesting	1	0	1	2
Subtotal		13	1	12	26

Below I provide two illustrative excerpts to explain the group interaction featured with little mutual understanding and engagement while negotiating the writing task.

Excerpt 19: Wiki "Discussion" (2/10/13):



Gao: We should focus on one company because we should narrow the topic. Focus on Apple (***Suggesting, justifying***).

Vitaly: Apple could be just an example and I think it will be too narrow (**Disagreeing**).

Vitaly: …if we take Apple we can talk only about USA and China. Whether it's enough for us or not, I don't know. Our big topic is globalization so we need to develop it to show that it is spread all over the world. Do you know that we have Korean "Hyundai", German "BMW" and "Volkswagen" factories in Russia? We do and it's also one of the examples of globalization. (***Justifying***)

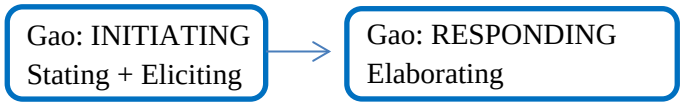
Gao: OK. Our topic include Apple, Hyundai, BMW and Volkswagen. We will talk about all of these brands get benefits from globalization outsourcing. (***Agreeing***)

Chuan: The professor wants us to narrow out topic. She advises us use one company Apple in Russia and China. (***Stating***)

As Excerpt 19 shows, group members did not reach consensus on the specific topic that they were going to explore. When Gao suggested narrowing down the topic to Apple's outsourcing strategy, Vitaly expressed his disagreement by justifying that discussion of multiple companies in diverse countries better supported the broad topic of globalization. Gao later conveyed agreement on Vitaly's idea, but Chuan's subsequent statement about what their instructor advised "Apple in Russia and China" implied his disagreement. In this excerpt, both Vitaly and Chuan conveyed disagreement, either explicitly or implicitly, while Gao, tending to assume a cooperative stance, performed an agreeing act. Ironically, Gao's agreeing act was not

incorporated into his own writing, which was not the least appreciated by his group partners. As revealed in the semi-structured interviews with Vitaly and Chuan, this kind of agreeing act merely led to confusion because they were not clear about Gao's true idea and feeling. Excerpt 20 is yet another example that shows the group members' little engagement with each other's contribution.

Excerpt 20:Wiki "Discussion" (2/10/13)



7. **Gao**: outsourcing is a kind of strategy such as Apple use Chinese labor sources or raw materials. (***Stating***) Is is right? (***Eliciting***)

8. **Gao**: Outsourcing is the contracting out of an internal business process to a third party organization. The practice of contracting a business process—rather than staffing it internally—is a common feature in the modern economy. This is the definition by wikipedia. (***Elaborating***)

In the beginning, Gao was not quite sure of the key word "Outsourcing" in their research study, so he made a post in the wiki "Discussion" and elicited others' response. Neither of his group partners made an immediate response. Later, Gao searched a definition of "outsourcing" in Wikipedia, and elaborated on his previous statement. Likewise, the other member Vitaly was found to make several requests, such as "I put some ideas, please respond and add something" (wiki "Discussion," 2/10/13), and "Add something else" (wiki "Page," 2/10/13), but few evidence showed his group partners' contingent response.

Also important to note, Chuan was the group leader assigned at the beginning of the project. Ironically, he involved little with the discussion via wikis. However, he defended his leadership in the interview, "I think I am the leader […] we decide by our group when the project starts." He continued to state his responsibility: "What we should do first, what we should do

next and separate the tasks, what you should do, what they should do, make every steps clear for everyone. […] I gave my recommendation face-to-face" (interview with Chuan, 3/8/2013). Although the wiki records were not able to reflect every detail of group members' interaction, Group 3 was identified to demonstrate an interaction with low "mutuality" while discussing writing tasks.

Writing change functions performed by Group 3

Wiki "History" records demonstrated that the members of Group 3 conducted multiple types of writing change functions during wiki collaborative writing processes. I discuss below their text co-construction behaviors in Task 1 and Task 2, respectively.

Task 1: Research Proposal

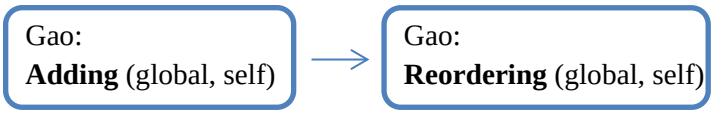
Table 15

Writing Change Functions Performed by Group 3 in Task 1

	Adding				Rephrasing				Reordering				Deleting				Total
	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	
Gao	3	0	3	0	0	0	0	0	1	2	2	1	0	1	1	0	7
	(3)				(0)				(3)				(1)				
Chuan	2	0	2	0	0	1	1	0	0	0	0	0	1	0	1	0	4
	(2)				(1)				(0)				(1)				
Vitaly	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	3
	(2)				(0)				(0)				(1)				
Total	7				1				3				3				14

In Task 1, as displayed in Table 15, the group members produced a total of 14 writing change acts, involving more types than Group 1 and Group 2 had, namely adding (7), rephrasing (1), reordering (3), and deleting (3). However, the majority of the writing changes were made to *self* texts and only one instance was directed at *other* texts. The following excerpts illustrate group members' text construction behaviors.

Excerpt 21: Wiki "History"



a. **Gao** (2/19/13)

Our purpose is finding the outsourcing use in different countries. To find why it is best way to make both host countries and home countries get benefits. (***Adding: self, global)***

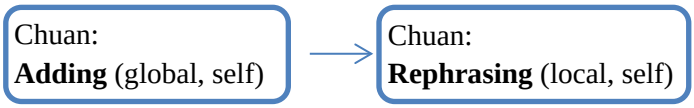
b. **Gao** (2/13/13)

Moved the above texts to the latter part of the essay (***Reordering: self, global***)

Throughout the writing process, Gao was found to perform quite a few instances of writing change functions, including adding, reordering and deleting, to their own texts. Other members were also detected to revise their own posts, such as making local deletions. In the early stage of writing, Vitaly posted "Our methods" as one of the rhetorical moves that he thought their group writing should include. However, no one contributed to the methods section at the approach of the task's due date, so he deleted "Our methods."

In addition, Chuan was found to copy and paste digital texts on the Internet, and later he *reused* the language, keeping the sentence pattern while rephrasing the original phrases to apply to their group writing topic. Excerpt 22 is illustrative.

Excerpt 22:Wiki "History"



a. Chuan (2/24/13)

A key to writing a good research paper is to focus your topic as much as possible. Chances are that your topic is too broad if you are wondering where to start writing. For example, instead of writing

on "The Economic Crisis," narrow the topic down to "The Effects of the Economic Crisis on Rural Areas in the state of Michigan in 2010."

b. Chuan (2/24/13)

~~A key~~ **a method** (***Rephrasing: local, self***) to writing a good research paper is to focus your topic as much as possible. Chances are that ~~your~~ **the** (***Rephrasing: local, self***) topic is too broad if you are wondering where to start writing. For example, instead of writing on ~~"The Economic Crisis,"~~ "**global outsourcing,**" narrow the topic down to "The ~~Effects of the Economic Crisis on Rural Areas in the state of Michigan in 2010."~~ **benefits of outsouring for both Apple Company and chinese economy**" (***Rephrasing: local, self***)

The above texts turned out to be a trouble source even after Chuan's revision. His group partner Vitaly criticized its inappropriateness, but none of the group members made further revisions on these texts. The findings revealed that although the group members made their individual contribution to the group writing of a research proposal, they did not have the co-ownership and instead just wrote at their own desire.

Task 2: Annotated Bibliography

Table 16 below depicts the writing change functions that Group 3 performed when jointly working on Task 2. Gao's predominant contribution to text construction was quite obvious. He made a total of 24 instances of writing change acts, while his partners made 8, respectively. Compared with their performance in Task 1, the group members showed a higher degree of mutuality, reflected with writing change functions directed at other texts.

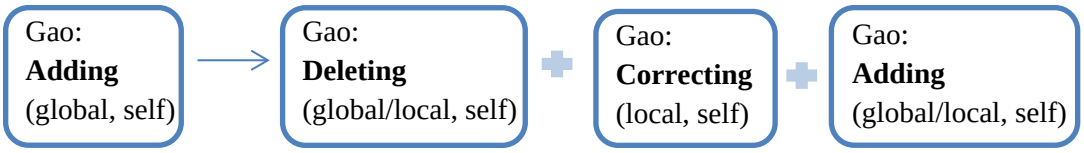
I discuss some illustrative excerpts to show the group members' interaction while working on the annotated bibliography. As did in Task 1, Gao firstly made wiki posts, and performed a variety of writing change acts during the recursive writing process. He was found to substantially revise his own texts. Excerpt 23 is an example.

Table 16

Writing Change Functions Performed by Group 3 in Task 2

	Adding				Rephrasing				Reordering				Deleting				Correcting				Tot
	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	
Gao	7	3	10		0	1	4	5	0	1	0	1	0	2	3	5	0	0	3	3	24
			(10)				(5)				(1)				(5)				(3)		
Chuan	3	0	2		1	0	0	0	0	1	0	1	0	1	0	1	0	0	3	0	8
			(3)				(0)				(1)				(1)				(3)		
Vitaly	2	3	4		1	0	1	1	0	1	0	1	0	0	1	1	0	0	0	0	8
			(5)				(1)				(1)				(1)				(0)		
Total			18				6				3				7				6		40

Excerpt 23: Wiki "History"



a. **Gao** (2/27/13):

This article is from government publication . The author is Lee Branstetter and Nicholas Lardy. Lee Branstetter joined the Heinz School faculty in 2006 as a tenured associate professor. Nicholas R. Lardy is the Anthony M. Solomon Senior Fellow at the Peterson Institute for International Economics. The article is written in 2006. I get a lot information and statistics in Chinese company Foxconn profits. I know the greater increase in profits because the company assembled Apple products. This secondary source is useful to find some information about Apple employment in China. (**Adding, global, self**)

b. **Gao** (3/8/13):

This article is from ~~government publication~~ *National Bureau of Economic Research*, ~~The author is Lee Branstetter and Nicholas Lardy. Lee Branstetter joined the Heinz School faculty in 2006 as a tenured associate professor. Nicholas R. Lardy is the Anthony M. Solomon Senior Fellow at the Peterson Institute for International Economics. The article is written in 2006.~~ (***Deleting, global,***

self) which describes the information ~~and statistics~~ (***Deleting, local, self***) ~~in~~ **about (*Correcting, local, self*)** Chinese company Foxconn ~~profits~~ **that assemble Apple products in China**. (***Adding, local, self***) ~~I know the greater increase in profits because the company assembled Apple products. This secondary source is useful to find some information about Apple employment~~ ***(Deleting, global, self***) **It analysis profits and employees created in Foxconn** in China. (**Adding, global, self**)

Different from Task 1, the members of Group 3 demonstrated a collaborative approach to Task 2. For instance, after Vitaly left a note on the group wiki page, "don't forget to post in alphabetical order," two group partners took his advice and reordered their own annotations sequentially. In addition, Chuan engaged with his group partner's texts and made several instances of correcting to others' texts. Specifically, Chuan corrected the spelling mistakes made by Vitaly, i.e., "statistic" ("statistic"), "demonstrate" ("demonstate") and "facilities"("faicilities").

Occurrences and strategies of scaffolding in Group 3

Divergent voices and "*one-man show*" were evident when the group members worked on the research proposal. *Lack of intersubjectivity* was a salient feature of this group. As noted in the earlier discussion, the three members had a heated discussion about the topic they would research on via the wiki. They posed competing ideas and it was not easy for the three members to share understanding and reach consensus.

In the process of task negotiation, quite a few instances of divergent thinking occurred, but divergent thoughts did not attain shared understanding. Excerpt 19 discussed in the previous section depicted the *missing of intersubjectivity* in this group. In Excerpt 19, Gao suggested narrowing down the topic to the outsourcing strategy of Apple. However, Vitaly expressed disagreement and suggested outsourcing strategies employed by multiple companies. He reasoned that globalization is a big topic involving multiple nations; if choosing the topic of

Apple, they can talk only about USA and China, which excluded his Russia culture. The third member Chuan, nevertheless, resorted to their instructor's suggestion, that is, discussing Apple in Russia and China. The wiki records did not show their further negotiation about these conflicting ideas. They seemed to proceed with writing before reaching agreement.

Also, in Task 1, each of the three group members appeared to play a *one-man show* in the wiki writing platform. Quite a few questions posted in the wiki were unanswered. For instance, Vitaly initiated a technical communication: "what is the difference between wikis and Googledocs?" (Vitaly, "Page," 2/10/2013), but their group partners made no responses. Gao shared a definition of the key word "Outsourcing" from the Wikipedia, but no further comment and discussion was triggered by this post; such posting could have been potential scaffolds though. In the pre-writing stage, with the belief that his initial posting would have positive impact on his group partners' follow-up work, Gao wrote a long paragraph on the topic of Apple's outsourcing, but unfortunately his contribution was not acknowledged by his group partners. Excerpt 24 revealed the potential conflict and the group members' *lack of intersubjectivity*.

Excerpt 24: Wiki "Page" (Vitaly, 2/23/13)

> "Hey! There are lots of information witch is not related to your part. Your job is to write about the purpose and goal of our research. Chuan is supposed to identify questions. I wrote about background. Otherwise our research proposal will be like mishmash."

Vitaly "voiced loudly" in an authoritative tone, when he saw inappropriate posts from his group partner Gao. In Vitaly's mind, Gao should have only composed the texts in relation to the rhetorical moves that he was assigned to according to their previous group discussion. However, Gao believed in the potential scaffolds of his own posts for others' text construction, and therefore made a large portion of contribution to text construction. As such, the group members

did not have a shared understanding of their writing situation and were not in tune with each other's ideas.

Of particular note, Vitaly employed the scaffolding strategy of *instructing* (Villamil & Guerrero, 1996) in both Task 1 and Task 2, which was reacted to differently in both tasks. Excerpt 25 below illustrates Vitaly's instructing behavior after reading Chuan's irrelevant posts regarding "Series of questions," which mainly addressed problems of writing an academic paper, in Task 1.

Excerpt 25:Wiki "History" (Vitaly, 2/24/13)

> Don't you remember that last time we already defined the series of questions. (What is the contra argument, what is the argument and etc). Even in the assignment it's written: **I** identify a series of questions that will inform **your** research. It should be a kind of overview of **our** resarch but not a paragraph with concepts of writing a research paper."

In this scenario, Vitaly tried to regulate the task by calling attention to a *trouble source*, that is, irrelevant texts posted by Chuan. He attempted to guide writing direction by *marking critical features and discrepancies* between what has been produced and the perceived goal: "It should be a kind of overview of our research but not a paragraph with concepts of writing a research paper." However, this scaffolding strategy was in vain—the identified trouble source was not repaired and irrelevant texts were not removed by his group partner. Worthy of note, personality conflict seemed to emerge under this circumstance. Chuan's posts, as illustrated in Excerpt 22, addressed problems of writing academic writing, including too broad research topic. Ironically, at pre-writing stage, Vitaly considered selecting a broad research topic while others suggested narrowing down the topic. The texts Chuan posted, in a tone of expert, were incompatible with the task requirement and also in conflict with Vitaly's belief. Thus, Vitaly expressed his

frustration/criticism, as shown in Excerpt 25. Such instructing showing authoritative stance (Villamil & Guerrero, 1996) did not take effect in their constructing of the research proposal.

Interestingly, the group dynamics underwent positive change when the members of Group 3 worked on Task 2 Annotated Bibliography that requires a clear division of labor. After discussing each individual's role within the small group, every member was fully responsible for their individual assignment of writing three annotations as this task required. The group members also took a more collaborative stance, reflected by a higher degree of mutual engagement with one another's contribution.

Episodes of *mutual scaffolding* started to emerge. For instance,Vitaly instructed his group partners to arrange the nine annotations in an alphabetic order, and this suggestion was accepted and incorporated into writing immediately by both Gao and Chuan. Also, Vitaly shared with Chuan a useful source link about the "counter-argument" in the group wiki "Page," and Chuan responded to Vitaly's assistance and consequently wrote an annotation of this source. Meanwhile, Chuan played an active role in the revising stage. He not only rephrased and added to his own annotations but also corrected Vitaly's language mistakes. In sharp contrast to what the group members performed in the task of research proposal, no one asserted his leadership, and the three members co-constructed scaffolds for one another while jointly producing the annotated bibliography. Group ZPD gradually emerged as group members grew willingness to engage with one another's contribution.

Group 4: Cooperative in parallel

Group 4 demonstrated a cooperative in parallel pattern during wiki-based small group writing. This group consisted of three female graduate students Mei, Lan, and Ju, all coming from China. Multiple data sources (e.g., wiki records, interviews, and reflection paper) revealed

that the distinctive feature of the group interaction is equal division of labor. The group members equally divided the writing tasks into three parts and each member conducted the respective assigned sub-task in parallel, with a cooperative manner. Below I discuss the features of the group interaction from the perspectives of language functions, writing change functions, and occurrences and strategies of scaffolding.

Language functions performed by Group 4

This group demonstrated high "equality" and mid-low "mutuality" in wiki discussion. When brainstorming the writing topic, each of the three group members made one post in the wiki and conveyed different perspectives about the topic of Starbucks. At the writing stage, Lan left two notes regarding her group partners' texts using wiki "Comments," but her comments were not incorporated in their group writing.

Table 17

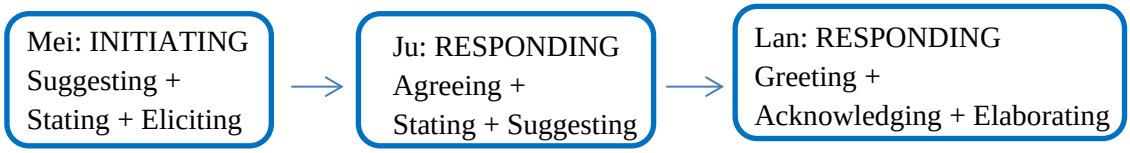
Language Functions Performed by Group 4

		Mei	Lan	Ju	Subtotal
INITIATING	Eliciting	1	0	1	2
Total: 13	Greeting	0	1	0	1
	Justifying	0	2	2	4
	Stating	2	0	1	3
	Suggesting	1	1	1	3
RESPONDING	Acknowledging	0	1	0	1
Total: 6	Agreeing	0	1	1	2
	Elaborating	0	2	0	2
	Stating	0	1	0	1
Subtotal		4	9	6	19

The analysis of language functions they performed through wiki "Discussion" and "Comments," as displayed in Table 17, casts light on their interactional patterns. According to Table 17, Group 4 conducted a total of 19 instances of writing change functions, including 13 instances of initiating moves and 6 instances of responding moves. The three members made relatively balanced instances of language functions, with Mei contributing 4, Lan 9 and Ju 6. Compared with other three groups discussed in earlier sections, this group conducted a small amount of language function instances. The language functions they mostly conducted included justifying (4), stating (4), and suggesting (3). I discuss an illustrative excerpt below to depict the distinct pattern that Group 4 demonstrated.

Excerpt 26 shows that every group member made suggestions on the writing topic at the pre-writing stage. The three members stated and/or justified their viewpoints from different aspects.

Excerpt 26: Wiki "Discussion" (2/10 /13)



Mei: In my opinion, I suggest our team choose the topic that "how does Starbucks take over chinese market successfully?" (***Suggesting***)

[…] The above is my research about our topic, (***Stating***) What do you think, guys? (***Eliciting***)

Ju: I agree with Mei's choice of topic related to Starbucks, (***Agreeing***) but I'm not sure about the general topic narrowed to Chinese market. (***Stating***) […] I suggest that we could change the general topic as "The success and failure of Starbucks global expansion".(***Suggesting***)

Lan: Hey, (***Greeting***) Mei and Ju both did a very good job! (***Acknowledging***)

> The topic, written by Mei, of How does Starbucks success in China is really good. However, I think if we add another example of café, which is not successful in China's market. […] it would highlight that how and why Starbucks could success in China while others can't do. (***Elaborating***)

The above excerpt clearly reflected how the members of Group 4 discussed the research writing topic. Initially, Mei suggested focusing on how Starbucks takes over the Chinese market successfully, and then elicited her group partners' feedback. To respond to Mei's posts, Ju expressed her agreement on the topic of Starbucks and stated further suggestion of choosing the topic of "the success and failure of Starbucks global expansion." Afterwards, Lan continued to post her thoughts. She began with greeting and acknowledging her two group partners' contribution, and then elaborated on Mei's perspective comparing Starbuck and the other brand of café which is not so successfully in the Chinese market. It can be seen that the three group members negotiated the writing task and their social relationship in a harmonious atmosphere. However, how/whether they reached agreed decision on their task orientation was barely visible. The interviews with the group members revealed that they occasionally used some other tools, such as Wechat (a popular Chinese web-chatting application), to discuss about their writing tasks using L1 Chinese. The wiki did not track the entire process of their discussion and only mirrored the general trend of the group interaction, featured by individual contribution in parallel, which was again reflected in their text co-construction behaviors.

Writing change functions performed by Group 4

Task 1: Research Proposal

Wiki records revealed that the members of Group 4 exhibited a high degree of "equality" and low "mutuality" when they discussed the research topic of the research proposal. The writing change functions they performed during wiki text construction are displayed in Table 18.

Table 18

Writing Change Functions Performed by Group 4 in Task 1

	Adding				Correcting				Total
	Global	Local	Self	Other	Global	Local	Self	Other	
Mei	1	0	1	0	0	0	0	0	1
		(1)				(0)			
Lan	1	0	1	0	0	1	0	1	2
		(1)				(1)			
Ju	1	0	1	0	0	0	0	0	1
		(1)				(0)			
Total		3				1			4

The group members performed only four instances of writing changes, including three *global, self* additions from each of the three group members. For the fourth instance, Lan corrected a format leaving out a necessary space in Mei's texts. Also, Lan wrote two notes on her group partners' texts using wiki "Comments," as displayed in Excerpt 27, which received no response from her group partners.

Excerpt 27: Wiki "Comments" (Lan, 2/24/13)

> I want to add something. Except Starbucks offers us a new life style, it also gives us a status symbol. Starbucks represents a fashion and high symbol for Chinese. Starbucks has built it a high reputation with offering high quality coffee in China. The average coffee sold in China is more expensive than in the U.S. carrying a cup is now seen as a status symbol, a way to demonstrate sophistication, a little personal luxury for middle class Chinese. I think this is the influence of Starbucks to Chinese.

Lan left the above comments on the texts regarding the scope of their research topic on globalization of Starbucks that was posted by her group partner Mei. As she believed that her group partner had the ownership over her writing, Lan did not change the texts directly in the wiki "Page," whereas she left a note to Mei using wiki "Comments." Unfortunately, the note

was not incorporated in their group essay. Evidently, members of Group 4 did not take advantages of wiki affordances, such as asynchronous communication and continual revision, when working on Task 1. However, variation in their group performance in the wiki was identified in Task 2.

Task 2: Annotated Bibliography

Table 19 shows writing change functions that Group 4 performed in Task 2.

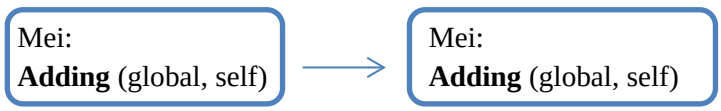
Table 19

Writing Change Functions Performed by Group 4 in Task 2

	Adding				Reordering				Deleting				Correcting				Total
	G	L	S	O	G	L	S	O	G	L	S	O	G	L	S	O	
Mei	5	1	6	0	0	0	0	0	0	1	1	0	0	3	2	1	10
			(6)				(0)				(1)				(3)		
Lan	3	0	2	1	1	0	1	0	0	0	0	0	0	1	0	1	
			(3)				(1)				(0)				(1)		5
Ju	3	1	4	0	0	0	0	0	0	0	0	0	0	1	1	0	
			(4)				(0)				(0)				(1)		5
Total			13				1				1				5		20

Group 4 produced a total of twenty instance of writing change functions: Lan and Ju contributing 5 instances each and Mei 10 instances. The group members performed multiple types of writing change functions, including most instances of adding (13), a few instances of correcting (5), and one instance of deleting and one instance of reordering. Below I discuss illuminating examples of their text construction behaviors.

Excerpt 28: Wiki "History"



a. **Mei** (2/23/13)

This article used “Starbucks” as a case company to explore how young, urban Chinese consumers transform the iconic global brand Starbucks into a consumption scape through their enactment of personally meaningful experiences, roles, and identities in the setting. The author also mentioned that how Starbucks use study site, photo elicitation research methods to study new Chinese customers’ lifestyle, therefore Starbucks as an emotional brand became meaningful and influential in China (***Adding: global, self***).

b. **Mei** (3/8/13)

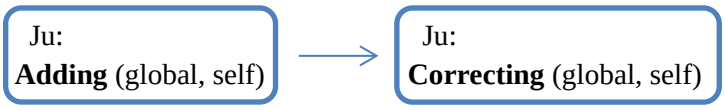
This article used “Starbucks” as a case company to explore how young, urban Chinese consumers transform the iconic global brand Starbucks into a consumption scape through their enactment of personally meaningful experiences, roles, and identities in the setting. The author also mentioned that how Starbucks use study site, photo elicitation research methods to study new Chinese customers’ lifestyle, therefore Starbucks as an emotional brand became meaningful and influential in China. **This article expand our team project thesis, which gave the reasons how Starbucks learn Chinese culture and become successful in china. (*Adding: global, self*)**

As the members of Group 3 did, Mei was aware of rhetorical moves, such as the relevance of sources to the research project. Therefore, after a couple of days when she had an initial post about the annotation, she added a sentence stating that the source she used was relevant to their group research project.

Mei was also found to correct grammar mistakes in her own texts. She changed “audiences” to “audience” in the sentence “this article is read by general audiences” she composed earlier. Moreover, note that the group members paid much attention to the format of annotations. Mei corrected the format of annotations by indenting the first sentence that her group partners previously contributed. Excerpt 29 below is another illustrative example that

shows group members' attention to format. Ju made a global correction to her own texts by changing APA format to MLA format to comply with the task requirement.

Excerpt 29: Wiki "History"



a. **Ju** (2/23/13)

Harrison, J. S., Chang, E., Gauthier, C., Joerchel, T., Nevarez, J., & Wang, M. (2005). Exporting a north american concept to asia starbucks in china. Cornell Hotel and Restaurant Administration Quarterly, 46 (2), 275-283. (***Adding: global, self***)

b. **Ju** (2/23/13)

1.Harrison, Jeffrey S., ~~Chang, E., Gauthier, C., Joerchel, T., Nevarez, J., & Wang, M. (2005). Exporting a north american concept to asia starbucks in china.~~ et al. "Exporting a North American Concept to Asia Starbucks in China." Cornell Hotel and Restaurant Administration ~~Quarterly, 46 (2), 275-283.~~ Quarterly 46.2 (2005): 275-83. Print. (***Correcting: global, self***)

Occurrences of scaffolding in Group 4

Scaffolding from group peers was barely identified, and *equal division of labor* was obvious in this group's writing process. Apart from clear evidences of this group's equal division of labor revealed in the wiki records, this unique feature was confirmed and supplemented through interviews and reflection papers. Both interview transcripts and reflection papers from Mei illustrated how she equally divided writing tasks as the assigned group leader. She recalled in the interview (3/8/13), "I am assigned as leader. I like that role. I often arrange for the schedule. I divided different parts of assignments to my group members." She also explained their division of labor in the reflection paper (4/5/13): "Lan wrote the background of Starbucks Company, I wrote the method and source of how to do that research, and Ju took charge to the

timeline and the conclusion of the research proposal." This perspective was echoed by both of her group members. Lan reckoned in her reflection paper (4/5/13), "Our team usually divides assignments into 3 parts and every member chooses one of them." Ju also commented, "We assigned the tasks evenly for three parts" (reflection paper of Ju, 4/5 /13)

Interestingly, Ju indicated in the interview that the group members sometimes changed the roles, that is, the group members played the role of leader alternately. When I asked her the responsibility of the leader, she responded, "Leader is in charge of what aspect each member need to research and divide the labor" (Interview with Ju, 3/8/13). In this sense, rather than competing for the leadership as displayed in Group 3, the members of Group 4 shared the leadership in a harmonious way. Interestingly, in addition to equally dividing writing tasks, they equally divided the opportunity of being a leader.

Moreover, the group members seemed to be wide aware of the division between the subtasks that each member was responsible for. The group members tried their best to complete their own part, but did not involve much with the subtasks assigned to other members. Despite a small degree of engagement with others' texts, they displayed a cooperative stance during collaborative writing tasks. The scaffolding emerging from group interactions was through sharing resources. As Ju revealed, "We had different sub-tasks. […] When I do my homework, I found sources, maybe I cannot use them in my work, and it is useful to others, and I can share with them (interview with Ju, 3/8/13). Despite the low-mid degree of mutuality in this group, the three members were content with their group interaction. As Mei commented, "We cooperated very happy and do the task quickly every time" (reflection paper, 4/5/13). However, the rigid division of labor barely allowed for cognitive interaction, thus making the group ZPD hard to emerge.

Discussion and Summary

Sociocultural theory provided a valuable venue to explore the nature of interaction during collaborative writing. Informed by Storch's studies on dyadic patterns in collaborative writing undergirded by sociocultural theory, I innovatively explored four distinctive triadic patterns of interactions in wiki-based collaborative writing: Collective—Active/withdrawn (Group 1); Expert/novice (Group 2); Dominant/defensive—Collaborative (Group 3); and Cooperating in parallel (Group 4).

These interactional patterns are described heuristically, and they share both similarities and dissimilarities with the patterns identified in previous studies that examined peer interaction in collaborative writing tasks. For instance, the pattern of "expert/novice" identified in this study was previously reported in Storch (2002), in which this dyadic pattern remained static as the peer with a higher language proficiency level provided scaffolding to the partner with a lower language level throughout writing processes. The current study, however, discovered dynamic interactional processes when the small group of three worked on two wiki writing tasks. In Task 1, two members with a better familiarity with the research writing topic jointly played the role of "expert," whereas only one of the two assumed the leadership in Task 2. The "expert/novice" pattern also overlapped with the "authoritative/responsive" reported in Li and Zhu (2013), in that both patterns exhibited the relatively high degree of mutuality and low degree of equality. Moreover, the "collective" pattern that Group 1 demonstrated in Task 1 resembled with the "collective" in Donato (1998, 1994), in which group members were collectively experts, and collective scaffolding featured the interactional pattern. In addition, "cooperating in parallel" is to a large extent identical to "cooperation" discussed in Bradley et al. (2010) and Arnold et al.

(2012), in which group members made duly individual contribution but engaged little with each other's contribution.

Salient features of four small groups' interaction

I examined how the group members interacted and scaffolded during wiki-based collaborative writing from three perspectives: language functions, writing change functions, and scaffolding occurrences/strategies. Table 19 summarizes salient features of the interactional patterns that four small groups of graduate ESL students demonstrated when working on academic collaborative writing tasks using wikis.

As noted in the earlier discussion, distinct language functions that the four small groups performed were identified through the analyses of wiki "Discussion"/ "Comments" records. Combining both writing tasks in cross-case analyses, I detected that the four small groups demonstrated different features of interactions. As shown in Table 20, elaborating on one another's ideas is the unique language function used in Group 1. The group members stated and justified their own ideas, extended on each other's ideas, and gradually reaching shared understanding. In Group 2, the members nicely negotiated social relationship while being engaged with each other's writing contribution. Their interaction was featured by many instances of acknowledgement and contingent responses. The experts encouraged the novice to participate; the novice asked questions and requested help. In Group 3, each group member made quite a few suggestions, but did not reach consensus. Most of the responses were negative. Questions were asked, but not answered. Disagreeing was a unique function this group performed. In Group 4 which showed a cooperating in parallel pattern, group members posted in their group wiki page in sequence. They made suggestions, stated and justified their own ideas.

As to writing change functions, all the four groups conducted several rounds of adding acts. Some differences were identified, as well. Group 2 and Group 3 were involved with more variety of writing change functions, followed by Group 1 and Group 4. Members of Group 1 were involved with both self-changes and other-changes in Task 1 but demonstrated less degree of mutual engagement in Task 2. Group 2 showed mutual engagements in both tasks. It was evident that the expert(s) corrected his group partners' texts. Group 3 were also highly involved with writing change functions, but only a small portion of changes were directed at others' texts. Group 4 was featured by obvious equal instances of writing change functions performed by each member and also small portion of other-changes.

I also identified dissimilarities in the scaffolding strategies that the four small groups adopted. Occurrences of intersubjectivity and collective scaffolding were evident in Group 1. Members of Group 2 effectively used such scaffolding strategies as recruiting interest, direction maintenance, and affective involvement. These findings confirmed Donato's (1994) argument that learners are able to provide guided support to their peers during collaborative L2 interaction in ways analogous to expert scaffolding. However, in Group 3 which demonstrated a dominant/defensive pattern during Task 1, I noticed a lack of intersubjectivity. It was difficult for the group members to reach consensus. One member attempted to instruct, which did not receive positive response from other group members. However, instructing took positive effect in Task 2. Group 4 demonstrated equal division of labor, but a lack of mutual scaffolding.

Taken together, the different patterns in this study are differentiated along the lines of "equality" and "mutuality." Generally, the "collective" pattern is featured with high mutuality and high equality, the "collaborative" is featured with mid-high mutuality and mid equality, and the "cooperative" is characterized with low mutuality and high equality.

Table 20

Salient Traits of Four Patterns of Interaction

Groups Salient Traits	Group 1: Collective-- Active/ Withdrawn	Group 2: Expert/novice	Group 3: Dominant/ Defensive- Collaborative	Group 4: Cooperating in parallel
Salient language functions	Elaborating, agreeing, justifying	Suggesting, encouraging, acknowledging	Disagreeing, requesting, suggesting	Acknowledging, responding, stating
Writing change functions	Adding, deleting, rephrasing, correcting (involving both *self* and *other* texts)	Adding, deleting, reordering, rephrasing, correcting (involving both *self* and *other* texts)	Adding, deleting, reordering, rephrasing, correcting (mainly involving *self* texts)	Adding, deleting, reordering, correcting (mainly involving *self* texts)
Scaffolding occurrences	Intersubjectivity, collective scaffolding, joint problem solving	Recruiting interest, direction maintenance, affective involvement	Lack of inter-subjectivity, instructing (responded to & unresponded to)	Lack of mutual scaffolding
Equality & Mutuality	High mutuality, high equality → Low equality, mid mutuality	High mutuality, mid-low equality	Low mutuality, mid-low equality → high-mid mutuality, mid equality	Low mutuality, High equality

Influence of the nature of tasks

Although scaffolding/ collective scaffolding occurred during the communication of wiki tasks in some small groups, students seldom discussed language points as reflected in Language-Related Episodes (LREs), i.e., an episode where learners talked about or question their own or others' language use, as reported in prior research studies (e.g., Kessler, 2009; Li & Zhu, 2013). Also, I detected the instances of correction during the process of text co-construction in most small group interactions, but barely saw group members' elaborated negotiation of language

points. The requirements of wiki writing tasks may partly account for this finding. In this study, both writing tasks are academic writing genres that students were newly exposed to. The course grading rubrics and the email message with the course instructor revealed that task-based skills and application of the course contents were priorities of both tasks, but language received much less attention. For instance, in Task 2 "Annotated Bibliography," MLA format was regarded as an important element in class instruction. Consequently, the students attended to formats during revising. Also, students' perception of the wiki's informality may additionally explain their little focus on language points. In line with Kessler (2009), two participants in this study stated that the wiki was an informal collaborative writing environment in which they mostly commented on ideas rather than language.

It is also worth noting that the nature of writing tasks influenced group members' interactional behaviors. Task 1 involved group members' joint construction of the research proposal using wikis throughout the writing process, while Task 2, although entailing a common writing product, required division of labor, with each member contributing three annotations. Therefore, Task 1 was more collaborative in nature, which entailed group members' collaboration rather than cooperation. The results revealed that the small groups that attached importance to the group collectiveness of writing, Group 1 and Group 2 in this study, benefited from the collaborative nature of Task 1: Research Proposal. Both groups thus produced positive writing outcome, which will be discussed in Chapter 6. Interestingly, Task 2 that was cooperative in nature was compatible with group interactions that focus on individual contribution/accountability, just as Group 3 and Group 4 exhibited in this study. Consequently, these two groups felt comfortable jointly working on the Annotated Bibliography which entails the combination of individual efforts, and thus they produced co-writing of better quality.

Interactional dynamics of four groups

Another new insight from this study was that small groups demonstrated dynamic patterns of interaction when working on two wiki-based collaborative writing tasks. Differing from the previous studies on L2 collaborative writing (e.g., Li & Zhu, 2013; Storch, 2002, 2004) that discussed the relatively stable patterns of interaction that pairs/small groups exhibited, this study revealed the dynamics of peer interactions as well as the fluidity of scaffolding. For instance, Group 3 and 4 demonstrated a higher degree of mutuality when conducting Task 2, while Group 1 and Group 2 showed a lower degree of equality when conducting Task 2. The scaffolding the peers provided was also fluid across the wiki writing tasks within small groups.

Below I briefly visualize the interaction dynamics for each of the four groups in relation to the two tasks. I interpret small group interactions from the lens of sociocultural theory, particularly drawing on the notions of scaffolding and ZPD. The operational definition of scaffolding in this study is "those supportive behaviors by which one partner in a semiotically mediated interactive situation can help another achieve higher levels of competence and regulation." (de Guerrero & Villamil, 1994, p.56)

Dynamics of interaction that Group 1 demonstrated during the two writing tasks are illustrated in Figure 10. In Task 1, the three members (e.g., Dong, Feng, and Abdul) exhibited a collective approach to group writing. They built on each other's ideas and made a joint contribution to the research proposal. Bilateral scaffolding (marked as $\leftrightarrow$ in Figure 10) was evident, and group ZPD emerged. Nevertheless, the interactional pattern shifted to Active/Withdrawn with the reduced participation of Abdul when the group worked on Task 2. Dong and Feng participated actively and both involved with Abdul's contribution, but Abdul did not respond and even withdrew in the mid of the task, thereby the group ZPD diminishing.

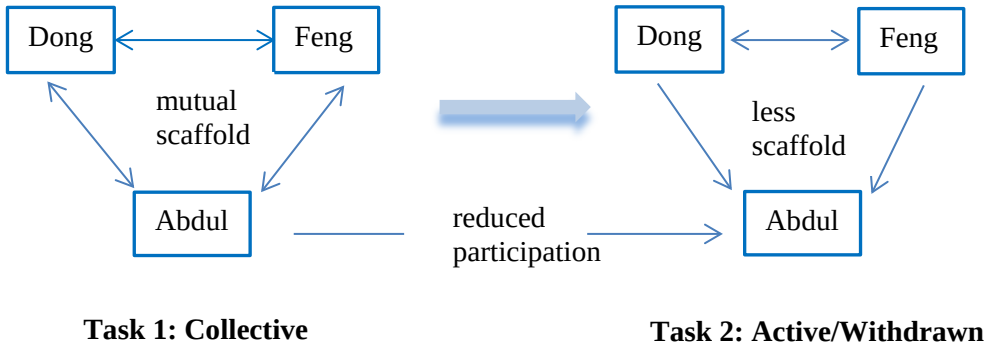


Figure 10. Interactional dynamics of Group 1

Group 2 depicted an expert-novice ZPD scenario, where the novice Ali moved through stages from other-regulation to self-regulation (de Guerrero & Villamil, 2000) after receiving different forms of scaffolding provided by experts, particularly Hai. Figure 11 below shows the interaction dynamics of Group 2.

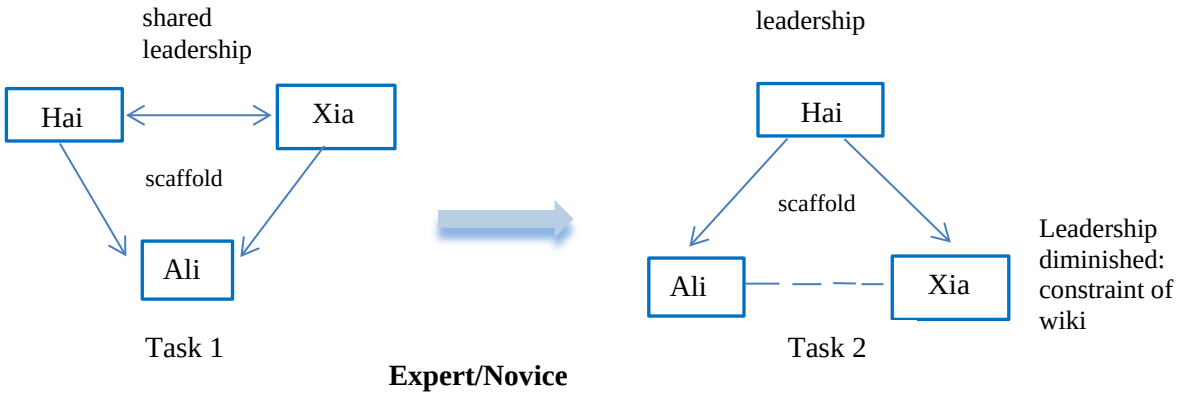


Figure11. Interactional Dynamics of Group 2

In Task 1, the self-regulated partner Hai exhibited a genuine desire to share knowledge with the other-regulated partner Ali and help him to complete the task successfully. With the expert's scaffolding, Ali was able to progress with the task during which his ZPD was activated and he became more self-regulated, which was reflected in his initiating conversation about the writing contents. Both Hai and Xia were found to scaffold Ali, and they also constructed scaffolds bilaterally. In Task 2, however, shared leadership was barely identified. Xia did not assume the

"expert" role and she turned to be less active in participation largely due to the constraint of wikis, in her words, "wiki is in a mess" with the formats required for the task of annotated bibliography. Little interaction occurred between Xia and Ali (the lack of interaction is marked as the dotted line in Figure 11. It was the same case with the following figures). However, Hai took up the leadership and provided scaffolded assistance to his two partners in text construction.

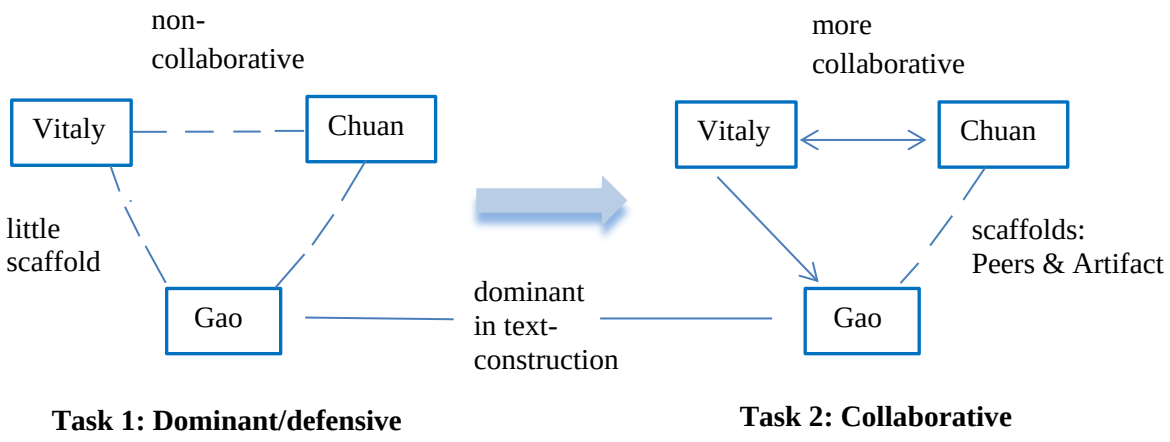


Figure 12. Interactional Dynamics of Group 3

As to Group 3, the group members demonstrated a non-collaborative stance in Task 1, but they became more collaborative in Task 2. The interactional dynamics of Group 3 is summarized in Figure 12. When the group worked on the research proposal, Vitaly put on an authoritative air and tried to provide instruction to other group members, but they fell back and potential scaffolding was not actualized. His partner Chuan, defending his role of assigned leader, seemed resistant to being helped, which formed hindrance to progress in ZPD. In Task 2, the interactional pattern shifted to collaborative. Each group member responded positively to his group partner's advice and involved more with each other's contribution. In addition to scaffolds from peers, such artifact as RefWorks, an online bibliographic management program, scaffolded their joint writing of the annotated bibliography.

Group 4 demonstrated a cooperating in parallel pattern and the interactional dynamics is displayed in Figure 13.

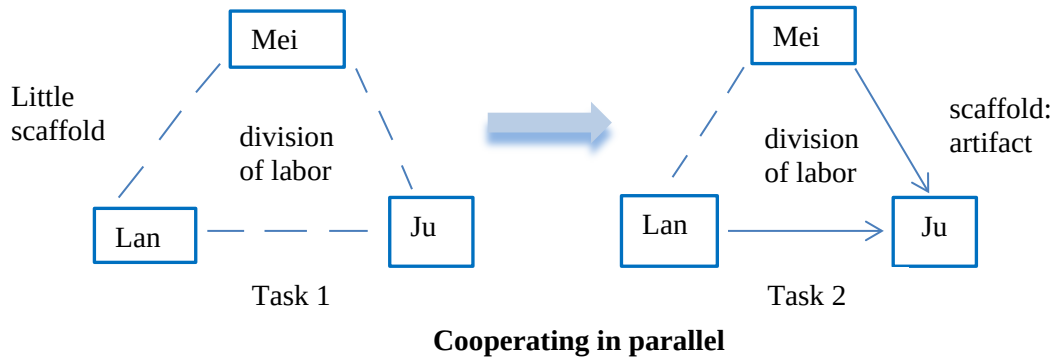


Figure 13. Interactional Dynamics of Group 4

One distinct feature of interaction for Group 4 was clear division of labor. Every group member showed responsibility of the subtasks assigned to her, but did not engage with group partners' contribution. Little scaffolding was evident from peers, although they started to engage with each other's contribution in Task 2. However, there occurred the scaffold of artifacts, such as exemplary genre writing posted under "Wiki Resources," as was pointed out by the group member in the interviews. The results echoed the importance of unanimated scaffolding (Donato, 1994), particularly when the animated scaffolding was limited. It is also worth noting that the members of this group did not entirely rely on the wiki technology to negotiate their writing tasks, because they were not allowed to use L1 in the wiki site, as revealed in the interviews. As Antón and DiCamilla (1998) addressed, "stifling the use of the L1 in collaborative writing tasks in the L2 classroom may not be a wise pedagogical practice because it discourages the employment of a critical psychological tool that is essential for collaboration" (p.64). In this case, however, the group members resorted to other technologies to communicate in L1 outside the class.

To summarize, this chapter drew on sociocultural theory and discussed the distinct patterns of computer-mediated interaction that the four small groups demonstrated during wiki-based collaborative writing. The salient features of each group pattern and the interactional dynamics were specifically examined from three perspectives: 1) task negotiation; 2) text co-construction; and 3) scaffolding occurrence. The next chapter will explore sociocultural factors that may influence students' wiki writing behaviors/stances, and that can explain the variations in these interactional patterns.

Endnotes

[4] To keep confidentiality of the participants, I adjusted all the names included in interviews and reflection papers according to pseudonyms I assigned.

CHAPTER FIVE: FACTORS MEDIATING SMALL GROUP INTERACTIONS IN WIKI-BASED COLLABORATIVE WRITING

This chapter answers the second research question: "What factors may mediate small group interactions in ESL wiki-based collaborative writing?" As Chapter 4 described, the four small groups revealed four distinct patterns of interaction and these patterns were dynamic over the course of wiki-based collaborative writing. The small groups conducted the same academic writing tasks in the same setting, but they experienced a very different "activity" (Storch, 2004; Wertsch, 1985). Why the group members participated in the act of wiki-based collaborative writing in the way they did and what factors may explain the variations in the patterns of group interaction, therefore, deserve close examination. Post-task interviews and reflection papers helped unpack the participants' orientations/ interpretations of the activity and the factors that influenced their wiki writing behaviors/stances.

Previous research has informed us that a number of factors have been found to influence students' interaction in pair/group work in the L2 context, such as personality differences (e.g., Villamil & de Guerrero, 1996), differences in L2 proficiency (e.g., Kowal & Swain, 1994; Storch & Aldosari, 2013), learners' language history and culture (e.g., Lockhart & Ng, 1995; Nelson & Carson, 1998), and learners' orientation to an activity (Appel & Lantolf, 1994) or motives/goals underlying an activity (e.g., Jin & Zhu, 2010; Storch, 2004; Zhu & Mitchelle, 2012). In this study, I examined the mediating factors that influenced the participants' wiki writing behaviors/stances from a sociocultural theory perspective.

The main analytical framework was activity theory. Activity theory goes beyond individual characteristics and examines the forces that generate the context in which the activity takes place (Storch, 1994). Activity theory encompasses three levels: 1) activity: impelled by motives, concerning why something is done; 2) action: fulfilling motives through the direction of goals, concerning what is done; 3) and operation: carrying out actions under specific conditions and constraints of the particular setting, concerning how something is done (Block, 2003; Lantolf, 2000; Leont'ev, 1978, 1981). Framing the data analysis/interpretation in a sociocultural theory perspective, particularly activity theory, I found such factors emerging from this study: motives/goals, agency and emotion, and prior experiences including cultural background, small group work and technology use, which turned out to mediate small group interactions in wiki-based collaborative writing.

Motives/Goals

Activity theory highlighted the role of motives for understanding human behaviors in sociocultural contexts, while focusing on motives of individuals and the link between motives and behaviors (Zhu & Mitchelle, 2012). With regards to the case of pair/group work, it is important to explore the goals that individual members perceived and whether these perceptions converge or diverge within pairs/small groups (Storch, 2001a, 2001b, 2012). The motive, i.e., "the object of an activity" (Leont'ev, 1978, p.62), is operationally defined as the goal or reason of conducting wiki small group writing, which was revealed in the interviews and reflection papers in this study. The semi-structured interviews addressed the participants' purpose for participating in wiki-based collaborative writing and their roles in wiki writing, and reflection papers included answers to the prompt questions concerning their perceptions of wiki writing and group interactions in the wiki. To examine the students' motives/goals for participating in

wiki group writing, I focused on the students' responses to Interview Question 2: "What do you think is the purpose of the wiki-based collaborative writing tasks? What is your aim in these tasks?" in the post-task interview. I also paid attention to students' responses to Interview Question 3 about their own roles in the wiki writing project, and the excerpts of reflection papers about students' overall perceptions of wiki small group writing and each group member's role to confirm and refine my findings about students' motives/goals. I first investigated the students' motives for participating in wiki-based collaborative writing and then compared the motives/goals within small groups, so as to explore the influence of individual motives and interaction of goals on dynamics of group interaction. Below I discuss the results group by group, explaining each group member's motives/goals in relation to those held by other group members over the course of wiki-based collaborative writing.

Group 1

I identified converged perceptions of the group members' motives in Group 1. However, the convergence did not persist because of the switch of one member's underlying goal. For Dong, his participation in wiki-based collaborative writing was driven by a motive/goal to "practice our teamwork." This goal is connected with both the object of passing the course, but also a need for his future career. When asked about his perception of the purpose of wiki collaborative writing project in the post-task interview, Dong eloquently commented, "To have a good collaboration in the teamwork. In the society, we need teamwork as a business man" (Post-task interview with Dong, 3/9/2013). As a graduate student majoring finance, Dong's projected identity (a business professional) emerged from this statement.

Coincidently, Feng echoed the importance of teamwork in the "imagined community," i.e., business world. He reiterated in the reflection paper, "As we look around different

businesses, companies, and agencies around the world, it's hard to deny that teams have become integral and essential components in organizations" (Reflection paper of Feng, 4/ 5/13). Like Dong, Feng also revealed his projected identity in the reflection paper, addressing the importance of teamwork for his future business career. Teamwork thus constituted the common motive for the two members in participating in the wiki collaborative writing activity. Moreover, Dong commented in the post-task interview that the goal for his group was to "exchange ideas," "communicate more effectively," and "get a good score." He explained, "We have the same goal: we need to pass the class, need a good score" (Post-task interview with Feng, 3/8/13). Under such circumstance, the intrinsic and extrinsic motivational factors acted in concerted environment (van Lier, 1996). In Dong's viewpoint, the group members worked hard with the aims to practice teamwork skills and to achieve a good course score.

The third member Abdul also stated his perception of the object of wiki collaborative writing: "We write in the same way. […] Do my best to achieve high" when asked about the purpose of the wiki writing project (Post-task interview with Abdul, 3/8/13). Abdul's statement suggested his collective stance and individual accountability over group writing tasks. This goal, converged with other goals articulated by his group members, stimulated him to actively negotiate tasks/ contents during joint writing processes. However, the motive was dynamic. In the mid of Task 2, Abdul's personal goal of "passing a very important test" became prominent, shadowing the goal of good performance in wiki writing, as revealed in the post-task interview with him (3/8/13). Thus his level of participation in Task 2 was largely reduced.

Taken together, with the converged perceptions of goals by the group members, Group 1 collectively contributed to their wiki writing project, and actively involved with one another's ideas via collective scaffolding, critical thinking, and reciprocal support during Task 1. In Task 2,

however, although Dong and Feng's motives maintained consistent, the degree of collectiveness gradually diminished with Abdul's less degree of participation and withdrawing from the group work. Abdul's goal shift was contingent upon the specific situation. For Abdul, he had good performance in the course tasks that he completed, and getting a passing score in this course would not be a problem for him. Thus he invested less time in wiki group writing when another personal goal became the priority. In short, the shift of the group member's perceived goals (i.e., from converged perception to diverged perception) explained the interaction dynamics of Group 1 (i.e., from collective pattern to active/withdrawn pattern).

Group 2

Members of Group 2 expressed the motives for wiki-based collaborative writing in a complementary manner. Xia commented in the post-task interview that the purpose of the wiki project for her is to "work together" as the course required. Driven by this motive, she dutifully conducted collaborative writing tasks to meet the instructor's expectation. Xia recalled her duty of being a group leader, "I used emails to give instruction. Emails are more convenient. I remind the partners of the schedule and deadlines set by the professor" (Post-task interview with Xia, 3/8/13). Bearing "work together" in mind, Xia was responsible for arranging for sub-tasks and reminding group partners of specific steps to take in group writing. However, she maintained that she was not responsible for others' actual writing process, in her words, "I just pay attention to what is his [Ali's] idea, not how he [Ali] presented his project" (Post-task interview with Xia, 3/8/13). Xia's viewpoint reflected Donato's (2004) arguments that collaborative learning does not necessarily entail assistance to others. Xia's unawareness of group members' co-ownership on their joint writing explained a small number of instances of Xia's engagement with others' writing change functions during text co-construction processes.

Hai, assuming a consistent expert role, seemed to be motivated more intrinsically in the wiki project. He acclaimed in the interview, "I like computer. I enjoy learning online" (Post-task Interview with Hai, 3/7/13). He felt an internal passion for collaborative writing and learning in the wiki site. Hai stated his interest in wiki-based collaborative writing per se, and his intrinsic motivation was evident. For Hai, the object of wiki-based collaborative writing tasks is to practice his writing skill, and learn how to "collaborate in the online community" (Hai, 3/7/13). Driven by the motive of enhancing writing skills, he took much effort to negotiate writing tasks and construct texts in wikis. Also, to create an online learning community, Hai was not only highly engaged in wiki writing himself but also provided effective assistance via multiple scaffolding strategies to the novice member Ali, especially at the beginning of the project.

Hai's motive "to collaborate" was echoed by Ali. When I asked Ali his view of the purpose of the wiki group project in the post-task interview, Ali emphasized the equal degree of group members' participation during collaboration, in his words, "Members can equally collaborate with each other" (Post-task interview with Ali, 3/8/2013). As he commented, "You have to work equally to finish the project. If some member did not do that much, you can see his level of participation in the wiki. […] In the beginning, I did not participate that much, I felt bad. Because other members are doing well, I had to participate well" (Interview with Ali, 3/8/13). Ali's goal of participating in the wiki writing project was very similar to the goal of maximizing personal participation perceived by a novice member in Storch's (2004) study. The motive to "equally collaborate" with his group partners accounted for Ali's behaviors in wiki collaborative writing. On one hand, Ali accepted scaffolds provided by his group partners and reacted responsibly to group partners' suggestions. One the other hand, as he became more familiarized with the research topic, he participated in the wiki project at an increasing scale. He exclaimed

that “I feel more involved in the annotated bibliography. […] I get familiarized with the topic and can do better” (Post-task interview with Ali, 3/8/13).

The group member’s motives/goals complemented each other. All the members aimed to work together. Xia oversaw the task as the group leader, and arranged ways to “work together” to meet the course requirement. Hai perceived the activity as collaborating in online community, and thus offered much assistance to Ali. With the shared goal of collaboration, both experts encouraged the novice Ali to participate, and Ali eventually took an active role in collaborative writing.

Group 3

Group 3 members held overlapping yet differing opinions about the motives for participating in wiki-based collaborative writing. When asked about the purpose of the wiki project, Vitaly eloquently conveyed multiple purposes: “to learn how to collaborate with each other, how to brainstorm kind of ideas, how to made the research of course step-by-step” (Post-task interviews with Vitaly, 3/8/2013). Later, his motive of guiding/leading the group work surfaced as the interview proceeded. As to his perceived role in the wiki writing project, Vitaly stated, “I think I am the leader of the wiki project. I do not want to, but I have to […] Another guy is the leader assigned.” He continued to claim the reason why he had to take the leadership, “They are not interested in this project. Or they could not/ do not understand…” (Post-task interview with Vitaly, 3/8/13). In the reflection paper, he added,

> “A group leader has to manage the entire project, because he is the manager of it. I expected the same thing from our leader, but it was worthless. I know that this project wasn’t taken seriously but still it had to be done. This is why I had to take responsibility and to plan the whole project. I know that one can achieve better results if everybody contributes in the same proportion. But unfortunately our group was not so stimulated” (Reflection paper of Vitaly, 4/5/13).

Vitaly's goal to learn and lack of trust in his group members made him feel the need to take the role of leadership. Driven by the motive of leading writing tasks, Vitaly heatedly discussed the writing topic and subtopics, made requests, and commented on his group partners' texts in an authoritative manner.

The other two group members Chuan and Gao explicitly conveyed their task-oriented motives. Chuan stated that the object of participating in the wiki project for him is to "get familiar with the tasks" and "achieve the goals with small groups" (Post-task interview with Chuan, 3/8/2013). Also, his motive "to play the role of leader as assigned" was indicated in the interview. He reckoned his leadership when asked about his role in the wiki writing project, "I think I am the leader […] we decide by our group when the project starts." Chuan stated his responsibility: "[…] separate the tasks, what you should do, what they should do, make every steps clear for everyone" (Post-task interview with Chuan, 3/8/13). These statements seemed to be in conflict with what Vitaly believed. As a leader, in his own viewpoint, Chuan tried to facilitate the process toward completing the task.

For the third member Gao, the purpose of the wiki project was "teamwork" and to "complete the task." With the goal of completing the task, he actively posted his ideas in the wiki "Discussion" and composed texts in the wiki "Page." As he commented, "I want to post my ideas, and sometimes good for others to relate to the topics" (Post-task interviews with Gao, 3/8/2013). Meanwhile, bearing "teamwork" in mind, he demonstrated a cooperative stance evidenced in wiki records. He always tended to express agreement whenever his group members had different ideas. Ironically, however, his posts in wiki "Page" may sometimes reveal his actual disagreement with his group partners' ideas. I will discuss this observation further in the following subsection of prior cultural experience.

The group members in Group 3 indicated the overlapping goals, i.e., completing the task and collaborating, and one member conveyed the goal of leading the group work, which was not echoed by his group partners. Interestingly, I detected different weights of the multiple goals across the two writing tasks. In Task 1, the goal of leading the group work received more weight than completing task/collaborating, with the result that this group demonstrated a non-collaborative pattern of interaction. However, in Task 2 involving combination of contributions from each individual member, the goal of leading the task diminished; instead, the motive of collaboration became dominant; thus, the group members approached the writing task in a more collaborative manner.

Group 4

The members of Group 4 coincidently expressed identical motives and almost used the same phrases to describe their perceived goals in the post-task interviews. Mei stated that the purpose of wiki-based collaborative writing was "to do some assignments as a team group. […] we can also improve our written communicative ability" (Post-task interview with Mei, 3/8/2013). Similarly, Ju mentioned the goal was "to do the homework as a team, and practice English and writing skills" (Post-task interview with Ju, 3/8/2013). Their perspectives were echoed and supplemented by Lan, who reckoned her motive of equally doing the assignments. The common object of completing writing tasks as a team motivated the group members to dutifully participate in the wiki writing project. The motive of "equal participation" in particular made them divide the workload equally into three parts, and they each completed their respective individual assignments timely. In general, their perceived motives accounted for the cooperating in parallel pattern in which they were seldom engaged in one another's writing efforts while paying more attention to the completion of individual parts. However, the group members'

common motive of doing assignments as a team enabled them to exhibit cooperation and group harmony.

Agency and Emotion

The other two important constructs that link motives to action— agency (Lantolf & Pavlenko, 2001) and emotion (Imai, 2010) —also emerged from the triangulated data. From a sociocultural theory perspective, second language learning is a way of acting and participation in which individuals who have agency, affect, and histories become members of symbolically mediated world of another culture (Pavlenko & Lantolf, 2000). Agency, constrained by such factors as social groupings, situational contingencies, and individual or group's capacities, helps us understand why participants act in the way they do (Lantolf & Thorne, 2006). Agency is not an individual characteristic (van Lier, 2008), but "socioculturally mediated capacity to act" (Ahearn, 2001, p. 112). Duff (2012) defined agency as "people's ability to make choices, take control, self-regulate" while pursuing their goals (p.414). In this study, agency is operationally defined as students' capacity to self-regulate wiki writing and make impact on group writing products.

Emotions, on the other hand, "are socially constructed acts of communication that can mediate one's thinking, acting and goals" (Imai, 2010, p. 279). Swain (2013) underscored reframing emotion from a sociocultural theory, and highlighted the inseparability of cognition and emotion in second language development. Swain (2013) reminded us that emotions are not private but interpersonal events, which mediate learning together with cognition. Socially and culturally derived, emotions can be co-constructed as an event progresses. In this study, I viewed emotion as an interpersonal factor, and investigated dynamic emotions emerging through peer interactions during two wiki writing tasks.

The students' responses to Question 3 "What do you think is your role in the wiki-based collaborative writing tasks?" in the post-task interview, and their comments as to the reflection paper Prompt Question 3 asking each group member's distinct role and Prompt Questions 5 and 6 concerning their own contribution and their partners' contribution unpacked the agencies that group members assumed in wiki-based small group writing. Also, I paid attention to the linguistic forms that they used to refer to their group partners so as to unpack the interpersonal nature of agency. Moreover, to explore students' emotions manifested in the wiki writing project, I specifically analyzed students' responses to Post-task Interview Question 5 "What do you think of your group interactions in the wiki-based collaborative writing tasks? Do you enjoy it? Why or why not?" and their comments in relation to Reflection Prompt Question 1 "How did you feel about working on the wiki-based collaborative writing tasks in small groups?" Below I discuss the results group by group.

Group 1

The members of Group 1 all exhibited a sense of agency. Feng stated that "each of our members have equal contribution […] I am a leader. It is good. I inform them we need to move on. What next we need to do. If I forgetted sth, my members informed me, as well" (Post-task interviews with Feng, 3/8/2013). This statement indicated that Feng took the role of leadership and also his group members together with him, as agents, co-constructed collaborative writing tasks actively. The group members' active agency was echoed by Dong, who recalled "When we have good ideas, we post on the wikis and comment on one another's ideas [….] I also invited others to respond" (Interview with Dong, 3/9/2013). The participants' individual agency reflected in commitment, initiative, and self-regulation was evident in the group interaction.

Also, agency was exercised not only by individual members but also by the group as a whole (van Lier, 2008). The language, particularly the use of pronoun indicates individuals' orientation to group functioning and joint activity (Donato, 1989; Storch, 2001).The participants in this group spoke from both an "I" perspective and a "we" perspective (van Lier, 1996). In the interviews and reflection papers, the pronoun that the group members used to refer to their partners were mostly the first person plural "we" and "our" (Post-task interviews with Dong and Feng, 3/9/13) as well as the endeared noun "my friends" (Post-task interview with Ali, 3/9/13) that indicated their joint regard, or "collaborative agency" (van Lier, 2008).

Moreover, positive emotions as well as collective cognition mediated the small group interaction, particularly when group members worked on Task 1. As Feng summarized in the post-task interview (3/8/13), "We respect each other's work. We are very friendly. We are sort of like old friends. We are familiar." Worthy of note, from a sociocultural theory perspective, emotions are not static or merely personal, but dynamic and interpersonal. Although the group members did not convey any negative emotions that mediated their group interaction in the interviews and reflection papers, I would assume that Abdul's withdrawal from Task 2 levelled down the group's positive emotions that had occurred during Task 1, which was implied in the group members' responses to the post-task questionnaire items regarding their perceptions of wiki affordances and their attitude toward wiki writing, which will be discussed in Chapter 7.

Group 2

In Group 2, Hai, being an expert in this wiki writing project, took an initiative to assist his group partners and exhibited a high sense of agency. Hai stated in the post-task interview (3/7/2013), "I am willing to express my ideas there [in the wiki site]. … They [group partners] made comments based on my comments." Hai's agency was related to the intrinsic motivation

springing from his interest in learning through the computer and collaborating in the online community, as noted in the earlier discussion. The other expert Xia also demonstrated her agency through overseeing the team project. As she recalled, "I use emails to give instructions"[5] (Post-task interview with Xia, 3/8/2013).

Ali, being a novice in the wiki project, was an active participant. Ali was very responsive to his group partners' ideas, and he worked diligently to devote to this group project. He recalled, "I hadn't any background and I read about Disney more than other members so to save more times as group" (Reflection paper of Ali, 4/3/2013). His group members acknowledged his efforts on joint writing. As Xia acclaimed, "he [Ali] wants to try new information to enlarge his knowledge, which we were glad to see" (Post-task interview with Xia, 3/8/2013).

In terms of emotions in this group interaction, I identified that positive emotion gradually developed, as both cognitive effort and affect (emotion) interplayed during the wiki collaborating writing activity. At the beginning of the project, Ali was concerned about the topic of Disney which was unfamiliar to him. He also felt bad as he did not participate as much as his group partners, which the archived wiki records revealed. The expert peers provided contingent scaffolding and encouraged him to participate. His group partner's acclamation about his contribution gave Ali a sense of enjoyment in the task; thereafter, he enhanced his confidence in the team project, and "grow emotionally with the help of others" (Swain et al., 2013, p. 23). With positive emotions, Ali became increasingly active in participating in the wiki project and made greater contribution to group writing. This observation exactly echoed Mahn and John-Stein (2003)'s point that "how a person, emotionally, not just cognitively, perceives his or her place within the social environment has a tremendous impact on the ability to flexibly, and perhaps creatively, respond to possibilities in that environment" (p.33). After completing the wiki writing

project, all the group members expressed satisfaction about their group interaction. As Hai reckoned, "We have a good collaboration […] our team did a great effort, not only because we finished all the tasks that we have to do, but also because we finished it under a joyful atmosphere" (Reflection paper of Hai, 4/5/13).

Group 3

The members of Group 3 exhibited their individual agency. Gao exhibited an evidently high sense of agency, and he contributed much to group discussion and text construction in the wiki. He showed his ability to make choices and self-regulate. As he stated in the post-task interview (3/8/13), "I want to post my ideas on the wiki, and maybe sometimes it's good for other members to relate to the topics […] I want to do something very quickly. […] [When it comes to] different opinions/ideas, sometimes I will follow, sometimes I will have my own opinion about this."

As noted in the earlier discussion, agency is relational. It involves an awareness of the responsibility for one's own action vis-à-vis the environment (van Lier, 2008, p.172). As noted earlier, Vitaly, although not assigned as the group leader, took a role of leadership when he felt his group partner's lack of ability to understand the writing tasks or lack of interest in the tasks. Showing no trust in the leadership of Chuan, Vitaly positioned himself as a leader and assumed a dominant stance. He explicitly conveyed his leadership when I asked him about his role in the wiki project during the post-task interview:

> Actually I played the role of leader in this project, because I had to tell everybody what to do, that we need to get together, we need to post something on the wiki. … I did not want to be the leader for that project, but I had to do this. . …The leader did nothing for the project, but we had due dates, so we had to take the responsibility of the leader.. to push everybody to do something. (Interview with Vitaly, 3/8/2013)

Vitaly carried out his agency by giving instructions like a teacher in an authoritative way. Vitaly reflected the way in which he demonstrated his leadership in the interview: to "push everybody to do something." and "I told them what to do, in what ways they should think to get information and post on the wiki" (Post-task interview with Vitaly, 3/8/2013).

Chuan also exhibited a sense of agency. He defended in the post-task interview that he was the leader that the group members selected. He made plans and made every step clear, and commented on group members' work both face to face and via the wiki. When I asked what Chuan felt about his leadership, he replied, "I am not sure whether should I say I like the leadership […] It's the experience you must have." Interestingly, he added "My leadership is important" (Post-task interview with Chuan, 3/8/2013).

It was evident that the group members barely demonstrated a collaborative agency, particularly in Task 1. The lack of collectivity can be glimpsed from what the group members addressed their partners in the interviews, e.g., "he," "group," "Russian guy," "Chinese people," which appeared detached and showed no collectiveness. Interestingly, Vitaly described himself as "minority" because the other group members were both Chinese. The notion of "minority" was coincidently echoed from Chuan's perspective. In the interviews, Chuan referred to Vitaly as "foreigner." Ironically, Chuan, being a Chinese citizen, was also an alien like Vitaly in the American land.

Emotionwise, Vitaly exhibited an obvious negative emotion when the group worked on Task 1. He conveyed his lack of trust, unhappiness, and frustration through the wiki posts, particularly when he read unsatisfactory posts from his group partners. Vitaly took up high responsibility and intended to lead his group by applying what he learned regarding task-related skills. Unfortunately, his group members did not respond to Vitaly's negative emotion during

Task 1. As asserted in Swain et al. (2013), people tend to "regress in the presence of negative interaction with others" (p.23). However, unsatisfactory interaction and performance in Task 1 seemed to enable the group members to reflect on their agency they previously manifested and to re-construct agency in a more favorable manner in Task 2. I observed that the members of Group 3 co-constructed a more positive emotion with a higher degree of mutuality when working on the annotated bibliographies.

Group 4

High individual agency and positive emotion were evident in Group 4. The group members were all committed to the wiki writing project. Mei expressed her agency as a group leader in the post-task interview (3/8/2013), "I am assigned as leader. I like that role. I often arrange for the schedule. I divided different parts of assignments to my group members". Mei also illustrated how the group members equally divided the task in relation to the research proposal: "Lan wrote the background of Starbucks Company, I wrote the method and source of how to do that research, and Ju took charge to the timeline and the conclusion of the research proposal" (Reflection paper of Mei, 4/5/2013). Lan made a pertinent viewpoint implying group members' agency that "Everyone do their best" in the post-task interview.

The three members co-constructed positive emotions in wiki-based interactions. As Mei commented, "we cooperated very happy and do the task quickly every time" (Reflection paper of Mei, 4/5/2013). Similarly, Ju acclaimed in the reflection paper, "We undertook our task equally without any complaint, and every one is finished the work without delay." Ju also commented that her group partners are "responsible and easy to talk with" (Reflection paper of Ju, 4/5/2013). Over the course of wiki collaborative writing, the group members trusted each other, and worked cooperatively, assuming the responsibility over respective subtasks they were assigned among

themselves. Such positive emotions as pride, happiness, joy, and trust mediated their wiki writing processes.

Students' Prior Experiences: L1/Cultural Background, Small Group Work, and Technology Use

Sociocultural theory argues that participants come into the interaction with their own previously established views (Storch, 2001a). As van Lier (2008) posited, "Agency is shaped by our historical and cultural trajectories" (p. 163). Prior experiences may shape the participants' goals, stances, and performances in the wiki collaborative writing project and mediated the ways of their wiki interaction. In particular, students' cultural background, and previous experiences of small group work and technology use as mediating factors emerged from the study via multiple data sources (i.e., interview, reflection paper, and pre-task questionnaire). These factors were reflected particularly in the students' answers to post-task Interview Question 6 "What do you think influence the ways your group members interacted on the wiki writing tasks?" as well as responses in relation to the reflection Prompt Question 4 re-addressing the students' perceptions of factors influencing their small group interactions. Students' responses to the pre-task questionnaire such as small group work and technology use provided additional information. I explain below how the factors of cultural experience, previous small group work and technology use mediated peer interactions for each small group.

Group 1

Group 1 consisted of students from China and Saudi Arabia. The group members acknowledged the positive role of diverse cultural backgrounds. For instance, Dong recalled that the way people think toward the world influences the perspectives in which they examine the writing topic. Dong elaborated this idea as follows:

> It broadens horizons. There has good sense to work with people from other culture. […] It is very interesting. You can see how they think about that topic. Maybe they have totally different ideas, different thinking. But most important is that because of the modern society, it's all kind of gone globalization. You need to open your mind to see what people from other cultures think. (Post-task interview with Dong, 3/9/13)

Dong's viewpoint suggested his open-mindedness toward working with people from other cultural background. Particularly, he related working with people of different cultural backgrounds to his projected identity in the future career. The Saudi Arabia student Abdul also echoed the benefit of collaborating with partners from a different L1 and cultural background. He stated in the post-task interview (3/8/13), "culture brings more perspectives; it was great experiences to work with my friends from other culture." When asked about their group familiarity in the pre-task questionnaire, Feng provided a very interesting answer, "we try." This answer inferred his willingness to approach people from either the same cultural background or different background. From the group members' perspectives, different cultural backgrounds mediated this group's wiki writing interaction in a positive way.

The other mediating factors were prior experiences of small group work and technology use. Both Dong and Feng, in the pre-task questionnaire (2/11/2013) expressed their positive attitude toward small group work. Also, they felt comfortable using computers. They usually used the computer for study, fun, and social networking; the Web 2.0 tool they both often used is Facebook. Abdul, in the pre-task questionnaire, stated that he was very positive toward small group work, but he showed neutral opinion toward the use of computer and only used computers for social networking. Because of the interest in small group work and the use of computer for study, Dong and Feng actively participated in wiki-based collaborative writing. They both made full use of the wiki technology to express their ideas and construct texts until they completed the

two academic writing tasks. Compared with Dong and Feng, Abdul made a small number of posts in the wiki. I partly attributed the fewer instances of wiki posts to his little prior experience in using the computer for study. When I asked Abdul about working on a team project using wikis in the post-task interview (3/8/13), he commented that "I like to contribute to the face-to-face discussion."

Group 2

Group 2 consisted of two students from China and one student from Iraq. The participants respected each other's cultural background. As Xia pointed out, "we need to respect people." [..] Ali's country ban the consumption of Disney Company, so he knew little about Disney" (Post-task interview with Xia, 3/8/2013). Both Xia and Hai eventually provided Ali the opportunity to learn about the topic that he was unfamiliar with. Hai held a positive attitude towards working with people from a different cultural background, and he stated, "It is good to see a different way of thinking from other culture" (Post-task interview with Hai, 3/7/2013). Moreover, Ali's persisting participation might originate from his perceptions toward teamwork, which may be influenced by his Asian value of face-saving. He commented in the post-task interview (3/8/13), "One need to collaborate equally. […] Wiki is transparent: as a member, you have to work equally to finish the project. If some member did not do that much, you can see his level of participation in the wiki." In a sense, he tried to contribute in the wiki site to maximize his participation and save his face due to wiki's transparency. Therefore, it can be seen that the students' prior cultural experience mediated the interaction during wiki-based collaborative writing.

Also, the group members' positive attitude toward group work and computer use enabled them to take a collaborative approach to wiki writing tasks. The pre-task questionnaires revealed

that they were comfortable using the computer for study, fun and social networking. Hai pointed out that the Web 2.0 tools were very useful for his study, and he particularly liked Google docs. Xia indicated that she was a fan of Google docs and Facebook. Ali also stated a very positive attitude towards small group work and computer use; the Web 2.0 tools he used were LinkedIn and Facebook.

It is worthy of note that Hai and Xia's experiences of using Google docs for a team project in their former EAP class influenced the way they interacted during wiki-based collaborative writing. Accustomed to the synchronous computer-mediated communication (CMC) using Google docs[6] for a team project, the group members tended to have a synchronous use of the asynchronous tool in this project. Their group wiki logs revealed that they frequently discussed writing tasks synchronously via the "Discussion" module after arranging for the time to virtually meet in the wiki. The potential use of wikis for long-time reflection and considered/thoughtful response initiated by the time gap of posting were largely untapped, therefore.

Group 3

The members of Group 3 were two students from China and one student from Russia. They seemed to be aware of their different ethnic identity. When asked about his suggestions to better this wiki project in the interview, Vitaly pointed out, "Mix the culture, I am only the person that represent other culture than Chinese. I am a minority. […] You have to force them to speak English. It will be very helpful for them to interact with others in English, not Chinese" (Post-task interview with Vitaly, 3/8/2013). Vitaly's statement revealed that he did not feel quite comfortable working with two students of another L1/cultural background. He also believed that

separating two students with identical L1 background into different groups would enhance the opportunity for them to communicate in English rather than their native language.

However, Gao posited oppositely: "Difference in culture background is not very good. Russian people and Chinese people are different" (Post-task interview with Gao, 3/8/2013). From Gao's perspective, people from western countries and Asia have different communicative styles. He elaborated,

> "In western culture, people will say something directly. Asian people speak like a circle […] For me I think it's good." When I asked him what he would do when he disagreed with others, he answered, "I will post my comments. Maybe sometimes I will use some tones not very formal and not very serious to them, […] in an indirect way" (Post-task interview with Gao, 3/8/2013).

In his opinion, group members' prior cultural experience resulted in different working styles, which he would not appreciate. Holding the belief in the implicit style of communication, Gao never asserted his leadership; rather, he played a significant role in text construction in a quiet way.

Interestingly, having the same L1/cultural background with Gao, Chuan did not appreciate the implicit way of speech/behaviors that Gao complied to. When I asked Chuan what he thought influenced the ways in which group members interacted on the two wiki writing tasks, Chuan commented that "Confidence is important. If you have some thoughts but you are not brave enough to say that out, that's will be a problem. […] When I communicate with group member, they say "That is fine" "I agree". They do not have own ideas. I must try very hard to get their thoughts" (Post-task interview with Chuan, 3/8/2013). This statement implied that Gao did not communicate his own ideas clearly, which was echoed by another group member Vitaly. When I asked Vitaly about his group partners' response to his ideas, Vitality recalled, "They just shake [nod] their head, told me 'Yes, Good idea'' (Interview with Vitaly, 3/8/2013). Vitaly

futher stated, “If we could communicate more frankly, get familiar with each other, that would be much easier to communicate and do the task together” (Post-task interview with Vitaly, 3/8/2013). In this case, different prior cultural/L1 experience, to some extent, generated dissimilarity in working styles, which seemed to influence the group interaction in an undesirable way.

The participants’ perspectives about computer use also influenced their wiki writing behaviors. Gao felt quite comfortable using the computer for study, fun, and social networking. Chuan, however, indicated his neutral attitude toward the computer use, although he indicated his use of the computer for study, fun, and social networking. Vitaly stated that he was comfortable using the computer, and he used it mostly for study. Interestingly, Vitaly had no prior experience of using wikis for collaborative writing, but he addressed in the pre-task questionnaire that he liked Google docs, not wikis, for a team project.

Gao’s interest and comfort in computer use partly accounted for his great contribution to text construction in the wiki. Chuan’s less interest in the technology may be one of the factors explaining his smaller number of wiki posts. Vitaly’s lack of interest in wikis partially explained the relatively few instances of wiki posts in wiki-based collaborative writing. Although I trained the participants to make full use of different wiki modules to conduct wiki collaborative writing, Vitaly mostly used the wiki “Page” rather than other wiki modules, i.e., “Discussion,” and “Comments” to communicate his ideas on writing tasks and responded to his group members’ wiki posts/performance.

Worthy of note, all the three members indicated their positive attitude towards small group work in the pre-task questionnaire. However, Vitaly revealed in the post-task interview that his group did not have a nice collaboration. His prior experience of group work in an EAP

class influenced how he acted and interacted with peers in this wiki project. As Vitaly stated in the post-task interview, "I did not expect them [group members] to be more active, because I had the same experiences in the last semester. So I know what to expect from them […] In previous EAP course, I was the leader, and I was really kind of tired, taking others' responsibility" (Post-task Interview with Vitaly, 3/8/13). Therefore, cultural background and prior experiences in technology use as well as group work mediated the group members' individual behaviors and peer interactions in the wiki collaborative writing project.

Group 4

Group 4 was composed of three female students all from China. The same cultural/L1background tended to bring a sense of familiarity, and thus the three members interacted in a harmonious way. Bearing modesty in mind partly due to their Chinese origin, the members never asserted "expertise" or attempted to hold a domineering stance in the group project. As discussed earlier, the three students participated equally and cooperated happily on the wiki writing tasks. For the wiki writing project, the course instructor would not like them to communicate using their L1 Chinese in the wiki site, so they ended up adopting other CMC tools, such as Wechat, a free instant voice messaging application, with which they were able to communicate freely in Chinese. As such, the same cultural/L1 background was likely to foster more relaxing working environment, but meanwhile decreased opportunities of communicating in the target language. This viewpoint resonated with the previous finding that learners coming from the same L1 background tended to engage in less negotiation in the group work (Iwashita, 2001; Polio & Gass, 1998; Storch, 2013). On the other hand, all the group members stated that they were comfortable using technologies and both Lan and Ju expressed positive attitude

towards small group work. Their overall positive attitude towards small group work and computer use partly accounted for their cooperative approach to wiki-based collaborative writing.

Discussion and Summary

This chapter draws on multiple data sources and discusses sociocultural factors that mediated small group interactions in wiki-based collaborative writing, including motives/goals, agency and emotion, and previous experiences in such aspects as L1/cultural background, small group writing and computer use. Table 21 succinctly depicts these four areas of factors across the four cases.

Sociocultural theorists argued that the task was only "behavioral blue print" (Coughlan & Duff, 1994), while "activity" manifests what individuals and groups actually do (Lantolf & Thorne, 2006). The study suggested that the same task can be interpreted differently by small groups and thus becomes in each case a different activity. Also, dynamic motives mediated dynamic group interactions. The small groups presented different pictures of wiki-based collaborative writing activities across groups and tasks. These variations were explained by the individual member's motives/goals and the ongoing relationship of these goals. Members of Group 1 had convergent motives and they took a collective approach in Task 1, but the collectiveness diminished with the changing motive of one group member Abdul. Members of Group 2 had complementary perceptions of goals and thus carried out collaborative writing tasks in a collaborative way. The members of Group 3 had overlapping but conflicting motives, which led to non-collaborative manner manifested in Task 1; however, as the motive of collaboration became predominant and the interaction turned out to be collaborative in Task 2. Members of Group 4 consistently shared common goals and thus carried out the collaborative writing tasks in a cooperative and harmonious way.

Table 21

Factors Mediating Small Group Interactions

	Motives	Agency & Emotion	Prior Experiences
Group 1	Convergent: To collaborate in teamwork (task-oriented, career-oriented) To achieve a good score ↓ Abdul: Divergent motive	Collaborative agency ("we," "our," "my friends") Positive emotion: respect, familiarity, friendship ↓ Potential negative emotion	Different cultural/L1 background: Broadened perspective, and better adaptation to globalization (positive influence) Small group work & computer use: Positive influence
Group 2	Complementary: To work together, to collaborate, to participate equally	"Expert" agency: Active, initiating "Novice" agency: Active responsive Gradual development of positive emotion: worry, concern → confidence, enjoyment communal satisfaction	Different cultural/L1 background: Cultural awareness (positive) Small group work: Positive Experience of collaborative writing using Google docs: Positive & Negative influence
Group 3	Differing/Conflicting: To lead the writing tasks > To learn/collaborate; to complete tasks in the team ↓ Shared goal: To collaborate > To lead	Each individual: High sense of agency---responsibility, self-regulation, choice-making; Zero collaborative agency: "he," "group," "Russian guy," "Chinese people," "minority" Negative affect: Distrust, unhappiness, frustration → less contention, more trust	Different cultural/L1 background: Negative & neutral Small group work: Negative & neutral Collaborative writing using Google docs: Positive & Negative influence
Group 4	Identical: To complete the tasks as a team with equal individual participation	Shared agency: commitment, responsibility Positive emotion: No complaints, happiness, joy, pride	Same cultural background: More relaxing co-working environment, but less communication in the target language (Positive & negative) Small group work & computer use: Positive

Motives, which are understood as emergent motivation, are related to the constructs of agency and emotion. Agency addresses "how learners as agents construct the task" (Roebuck, 2000, p.84), and emotion refers to affect exhibited during task construction. From the sociocultural theory perspective, Ford (1992) defined motivation as "the organized patterning of three psychological functions that serve to direct, energize, and regulate goal-directed activity: personal goals, emotional arousal process, and personal agency beliefs" (p.3). van Lier (1996) also posited the interrelatedness of motivation and emotion. He pointed out the emergent source of motivation may include "here-and-now interest in the tasks, the joy of exploration or working together, natural curiosity, and other factors operating in the immediate learning context" (p.105).

In this study, Group 1 demonstrated a collaborative agency, resulting in a collective pattern in Task 1. However, the collaborative agency diminished with Abdul's absence in Task 2. In Group 2, "experts" displayed a high sense of agency, and one "novice" increasingly exhibited his agency while experiencing the changing emotions from worry, concern to confidence, satisfaction, and joy. In Group 3, all the group members claimed a high sense of agency, but a collaborative agency barely occurred. Negative expression of emotion evidenced in this group, such as lack of trust, unhappiness, and frustration. Positively, negative emotion diminished while the group members took a more collaborative stance in Task 2. The group members in Group 4 displayed their agency in a harmonious manner. Positive expression of emotion occurred, including trust, content, and happiness.

Of particular note, the results of the study echoed that agency is flexible and "constantly co-constructed and renegotiated with those around the individual" (Lantolf & Thornes, 2006, p. 239). For instance, Group 3, through renegotiating the social relationship, constructed agencies in a more favorable manner when conducting the second writing task. Also, the results revealed

that emotions, being social constructed, mediated learning and participation. The social nature of emotion was reflected in small group interactions in this study. To take Group 2 as an example, the "experts" help the "novice" to construct positive emotions while assisting the novice to co-construct the task by employing scaffolding strategies and performing such language functions as encouragement and acknowledgement.

Moreover, the participants' cultural/L1 background and their previous experiences in small group work and use of technology all mediated wiki collaborative writing interaction and behaviors. Members of Group 1 believed that working with people of different cultural/L1 background provided opportunities to adapt to globalization in the projected community. Members of Group 2 stated that different cultural/L1 background brought more writing perspectives. For Group 4, the same cultural/L1 background helped creating comfortable working environment, but meanwhile decreased the opportunities of communicating in the target language. The group members in Group 3 had different viewpoints about the role of cultural background. Gao argued the difficulty in collaborating with people from different cultural/L1 origin because of the different communication styles: specifically Asian being implicit, while westerners beings explicit. However, the other Chinese student Chuan and Russian student Vitaly did not believe that cultural/L1 background influenced their wiki-based collaborative writing activity. Rather, language proficiency, frankness and confidence counted, in their opinions.

In addition, students' prior experiences in small group work and technology use partly shaped their wiki collaborative writing behaviors. For instance, Group 2 members' prior experience in team work using Google docs resulted in the group members' synchronous use of the asynchronous tool wikis. In Group 4, Vitaly's bad experience in previous group work led to

his little trust in his group partners, and his successful experience of using Google docs for a team project discouraged him from exploring a different tool (the wiki) for the small group project in this study.

In summary, this chapter discusses three main areas of sociocultural factors that mediated small group interactions in wiki-based collaborative writing. They are motives/goals, agency and emotions, and prior experiences including cultural/L1 background, small group work and technology use. The next chapter will examine whether/how the patterns of small group interactions influenced the collaborative writing products.

Endnotes:

[5] The member(s) of all the four groups pointed out they did not discuss their wiki writing tasks by using merely the wiki. While predominantly using wikis, they either communicated face-to-face, via email, or through a chatting application at certain occasions.

[6] Google docs is a collaborative tool for creating and editing documents in real time. Different from the wiki, Google documents can be shared and edited by multiple users simultaneously.

CHAPTER SIX: INFLUENCE OF SMALL GROUP INTERACTIONS ON WIKI WRITING PRODUCTS

The previous chapters have revealed that the small groups of ESL students formed distinct patterns of interactions when they worked on collaborative writing tasks using wikis, and several sociocultural factors mediated their wiki-based collaborative writing activity. This chapter explores the influence of small group wiki interactions on wiki writing products. In the face-to-face collaborative writing context, Storch (2001a, 2002) reported that different interactional patterns led to different writing outcome in ESL pair work. In Storch's study, the collaborative pattern and expert/novice pattern yielded more instances indicating a transfer of knowledge than the dominant/dominant pattern and dominant/passive pattern. Extending this inquiry, I am interested in examining whether interactional patterns have influence on small group writing products in the wiki task environment. The present chapter answers the third research question: In which ways do the distinct interactional patterns influenced the quality of small groups' writing products in relation to two writing tasks?

I examined small group writing products according to instructors' grading and written feedback. As discussed in Chapter 3, my cooperating instructor in this study and the other cooperating instructor in the pilot study graded wiki essays constructed by the four small groups independently according to the course rubrics for two writing tasks: a research proposal and an annotated bibliography. They assigned a score to each essay in terms of different assessing categories, i.e., task-related skills, application of course content knowledge, and language use,

and meanwhile left comments regarding these categories. The inter-rater reliability reached 0.94, which suggested a high degree to which these two instructors gave consistent estimates of the participants' essays. I averaged the two groups of scores assigned by the two raters and then compared the scores that each small group received with regards to two wiki tasks. Further, I presented salient features of writing products drawing on the descriptors included in writing rubrics and referring to wiki essays based on the two raters' comments. I discuss below the differences of the four small groups' writing products in relation to the research proposal and annotated bibliography, and explain the influence of small group interactions on the quality of writing products.

Task 1: Research proposal

I begin with the discussion of findings about the four small groups' performance in Task 1: Research proposal. The two raters scored small groups' wiki essays individually according to the course writing rubrics. The course rubrics (Appendix 7) indicated the writing requirements and expectation of a research proposal. As noted in the earlier discussion, the rubrics consisted of three categories: task-related skills, application of course content knowledge, and language use. Task-related skills involved rhetorical structure/moves, such as background, research questions, methods and key sources, timeline, and goal/significance of the research. Application of course content knowledge included relevant incorporation of ideas from the course unit and appropriate style and tone for the genre of proposals, such as present tense and paragraph form. Language use mainly addressed correct use of grammar, spelling, and punctuation, and use of academic register. Below I show the quality of the essays composed by the four groups.

Score differences among the four cases

First, I show the average scores of small groups' research proposals (writing assessment from one rater was accessed on 3/19/2013 and the other on 4/5/2013). Table 22 shows both the total score and sub-scores in terms of three categories.

Table 22

Four Small Groups' Scores in Research Proposal

	Task-related skills (20 points)	Application of course content knowledge (30 points)	Language use (10 points)	Total (60 points)
Group 1	13.5	23.5	8	45
Group 2	11	23.5	7.5	42
Group 3	9.5	23	8	40.5
Group 4	10.5	21.5	6	38

As Table 22 indicates, Group 1 that showed a collective pattern in this task obtained the highest total score, i.e., 45 points out of 60. Specifically, this group got the highest scores in all the three assessing categories, namely, 13.5 points out of 20 in task-related skills, 23.5 points out of 30 in application of course content knowledge, and 8 points out of 10 in language use. Group 2 that demonstrated an expert/novice pattern also received a relatively high total score, 42 points out of 60. Group 2 got the same score (23.5 out of 30) with Group 1 in application of course content knowledge, but lower scores in task-related skills (11 out of 20), and language use (7.5 out of 10). Group 3 that displayed a dominant/defensive pattern in this task received a lower total score (40.5 out of 60). Although they got relatively good scores in language use (8 out of 10), the score in application of course content knowledge (23 out of 30) and the score in task-related skills (9.5 out of 20) were low. Group 4 that demonstrated a cooperating in parallel pattern received a

lowest total score (38 points out of 60), lowest scores in language use (6 out of 10) and application of course content knowledge (21.5 out of 30). The score in task-related skill was also relatively low (10.5 out of 20).

Salient textual features of the four cases

Based on the two raters 'comments, particularly critical feedback, I present specific features and qualities of research proposals completed by the four small groups in Table 23.

Table 23

Four Small Groups' Salient Textual Features of Research Proposals

	Task-related skills	Application of course content knowledge	Language use
Group 1	More background needed	Connections to course ideas not clear enough; Not all in paragraph form	A few errors
Group 2	Timeline missing	Ideas from course not incorporated; More formal tone needed	Errors with articles; Academic register missing at times
Group 3	Good introduction to background; Series of question not identified clearly; No sources named; Timeline missing	Awkward tone, "like instructor's guidelines;" Inappropriate style for the genre of research proposal	A few errors; overall comprehensible
Group 4	More background needed; Key sources not given; Research methods not identified clearly; Significance missing	Tone not appropriate at times; Paragraph form needed	Many errors, texts not proofread

As Table 23 shows, Group 1 had a good performance in Task 1. It would have been of even higher quality if the group members had included more research background and clearer connection to course ideas. Similar to Group 1, Group 2 needed to better incorporate the course ideas. Group 2 did not get as good a score as Group 1 in task-related skills, because their essay missed the rhetorical move of the timeline. Also, they should have been more attentive to

academic genre; they used some informal style, such as “What do I already know about?”(Wiki “Page,” Ali, 3/3/13). Some errors with articles were identified, as well. Group 3 did not have a good performance in task-related skills. Some rhetorical moves were missing. For instance, research questions were not identified clearly. Also, they did not follow the style of research proposal. As one rater commented on the texts “it doesn't seem like a proposal but more of a report of what they should do.” At some points, “It is like instructors’ guidelines” (Rater assessment, 4/5/2013). Also, neither the timeline nor the sources were evident. The rater added that “The style and tone are awkward and does not seem like a proposal” (Rater assessment, 4/5/2013). In addition, the essay had a few grammatical errors. Group 4 did not have a good performance either. In the research proposal they completed, rhetorical moves such as sources and significance were missing. The tone/style was not appropriate at times. One rater instructed in the comment, “proposal genre requires a paragraph form” (3/19/2013). In addition, the essay had many errors, and there was no evidence of proofreading.

Influence of small group interactions on writing products

The four small groups that demonstrated different patterns of interaction in this wiki task produced research proposals of different writing quality. Below I link each small group’s interaction to the essay quality to explore the influence of small group interactions on writing products.

Group 1 achieved a highest total score, particularly the high score in task-related skills. This result originated from their active negotiation of the writing task in the wiki. Evidences were that the group members discussed the topic and research questions collectively, and also explicitly discussed about the rhetorical moves they would be adopting in the essay. Specifically, Dong posted in the wiki, “Our proposal structure will be divided into topic, resources, method

and problems. How you think about that?" (2/24/2013). Later, Feng responded and extended the rhetorical moves they needed to cover, posting in the wiki: "Sure, and rhetorical stance should be presented, and explain the significance of the research. we need a timeline for investigating the topic, possible sources for investigation"(2/24/2013). Consequently, Dong composed texts involving the topic and sources, Abdul devoted to methods, and Feng added texts regarding significance and the timeline. Also, they engaged with each other's writing contribution. In this way, group members' collective efforts exerted to the essay structure enabled them to produce a research proposal which demonstrated their good task-related skills.

Group 2 also obtained a relatively high score in task-related skills, because the group members were actively involved with task negotiation. Particularly, much evidence showed that the expert Hai scaffolded the novice Ali in exploring the research topic of Disney using wiki "Discussion." However, their informal tone was not satisfactory. This finding may partly result from their interactional pattern. The two experts tried to create a relaxed atmosphere of learning for the novice. In the wiki modules, they used conversational language to encourage the novice to participate. Their attempt to create a comfortable online learning environment, however, shadowed the course requirements of this academic task such as the use of academic register. In the interviews, both Xia and Hai indicated the "informality" they felt in the wiki project. Xia stated in the post-task interview that wiki is an informal tool, and Hai commented, "On the wiki site, we can make some jokes […] We do not have to be that formal" (3/7/2013). Thus, the members of Group 2 subconsciously ignored the criteria of formality required for academic writing while constructing a relaxing communication and learning environment.

Group 3 had relatively low scores in task-related skills and application of course knowledge in the research proposal. This finding stemmed from their low degree of mutuality in

the wiki writing activity. The group members held different ideas on the research topic and did not reach consensus on the task orientation. The following was an illustrative example. Vitaly suggested that the research topic be outsourcing strategies used by different companies. However, Gao suggested that they focus on one company Apple. Vitaly responded negatively, “if we take Apple we can talk only about USA and China, Do you know that we have Korean "Hyundai", German "BMW" and "Volkswagen" factories in Russia? We do and it's also one of the examples of globalization” (2/10/2013, wiki “Page”). Although the group members did not come to a clear final decision about the research topic, they divided the labor for the writing stage. With the belief that his writing contribution would be of great help to his group writing, Gao took initiative to write a couple of paragraphs in the wiki “Page” addressing the research purpose, research questions, and methods, Vitaly criticized in the wiki “Page,” “there are lots of information witch [which] is not related to your part. Your job is to write about the purpose and goal of our research. [Chuan] is supposed to identify questions. I wrote about background” (2/23/2013). Ironically, Chuan subsequently posted texts regarding how to write research questions under “research questions,” which were irrelevant to their research proposal. Vitaly was a little mad with Chuan’s post and assumed a domineering role just as a demanding instructor, “Don't you remember that last time we already defined the series of questions. […] I identify a series of questions that will inform your research. It should be a kind of overview of our research but not a paragraph with concepts of writing a research paper” (2/24/2013). However, Chuan took a defensive stance and did not make changes as Vitaly suggested. Actually, since this is a collaborative writing task, group members should take joint responsibility over the texts. Vitaly could have improved the section of research questions, but he did not, since he considered it the task that Chuan needed to be responsible for. Therefore, lack of co-ownership,

low degree of engagement with each other's ideas, and missing jointed efforts in text construction led to the low score in this task.

Group 4 got a lowest total score in research proposal, which was linked to the cooperating in parallel pattern they displayed. As revealed in the post-task interview, the group members divided this task into several sub-tasks for each member to conduct. The members each just completed their individual part assigned to them and barely engaged with each other's texts, as reflected in few instances of writing change functions directed at other-composed texts. The total number of writing change instances was low and the function of correcting was barely identified, which led to the low score in language use. Also, the lack of negotiation at multiple writing stages resulted in the low scores in task-related skill and application of course content knowledge. In short, Group 4 did not have a good performance in research proposal largely due to the fact that they assigned each member a designated task with equal labor, and they did not make full use of the wiki to collaboratively produce the essay. Their writing was a mere combination of the parallel work.

Task 2: Annotated Bibliography

The above discussion revealed that Group 1 and Group 2, with a more collaborative approach to wiki writing, performed better than Group 3 and Group 4 in Task 1: Research proposal. However, different observations occurred when it came to Task 2 Annotated Bibliography, which required clearly division of labor. In Task 2, Group 3 and Group 4 that attached importance to individual accountability and meanwhile turned cooperative/collaborative turned out to perform better writing products.

Identical to the assessment of research proposal, the two instructors rated the small groups' annotated bibliographies independently according to the course writing rubrics. For this

task, task-related skills focused on the format of an annotated bibliography, including correct number of sources/annotations, appropriate length of each annotation written as a paragraph, accurate bibliographical information with MLA style formatting, and alphabetized sources. Application of course content knowledge addressed the contents of the sources and annotations. It focused on the correct selection of sources and rhetorical moves of descriptive annotations, including a brief discussion of type, genre and intended audience, summary of authors' main points and supporting facts, and their relevance to the research project. Below I compare the essays produced by the four small groups, based on raters' grading and comments, and then explain in what ways small group interactions influenced writing products.

Score differences among the four cases

Table 24 displays the scores that each small group obtained in terms of three categories in the annotated bibliography.

Table 24

Four Groups' Scores in Annotated Bibliography

	Task-related skills (30 points)	**Application of course content knowledge** (65 points)	**Language use** (5 points)	**Total** (100 points)
Group 1	19.5	52	3	74.5
Group 2	22.5	46	3	71.5
Group 3	25.5	58	4.5	88
Group 4	18	56.5	4	78.5

Table 24 shows, Group 1 and Group 2 did not perform as well in Annotated Bibliography as they did in Research Proposal. In contrast, Group 3 that did not have a good performance in the

research proposal produced an annotated bibliography of relatively high quality. Group 3 obtained the highest total score, i.e., 88 points out of 100, and specifically the highest scores in three categories, i.e., 25.5 points out of 30 in task-related skills, 58 points out of 60 in application of course content knowledge, and 4.5 points out of 5 in language use. Group 4 also received a relatively high total score, 78.5 points out of 100, with good scores in application of course content knowledge (56.5 point out of 60) and language use (4 out of 5), but relatively a low score in task-related skills (18 out of 30). Group 1 received a lower total score (74.5 points) than Group 3 and Group 4, with the fair scores in application of course content knowledge (56 out of 65) and language use (3 out of 5), and low score in task-related skills (19.5 out of 30). Group 2 received a lowest total score (71.5 points out of 100), with fair scores in task-related skills (22.5 out of 30) and language use (3 out of 5), and lowest score in application of course content knowledge (46 out of 65).

Salient textual features of the four cases

According to the two instructors' comments, I present the salient features and qualities of annotated bibliographies that the four small groups produced in Table 25.

According to Table 25, Group 3 had a nice performance in this wiki task. They did a good job in all the categories, and the only element missing in the annotations was the type of sources, and some minor errors were detected. Group 4 performed relatively well in application of course content knowledge and language use. What was missing in the description of citation was the relevance to their research project. However, Group 4 did not demonstrate good task-related skills. Specifically, the title was not centered at the top, and the annotations were not alphabetized. No hanging indent was identified and the annotations did not conform to the MLA format. Group 1 did not show good performance, particularly in task-related skills. The

annotated bibliography was not alphabetized, and the title was not centered. No hanging indents were found, and annotations were missing. In terms of application of course knowledge contents, some elements were missing from each of the annotations, such as audience, purpose, relevance to their research. Also, the raters commented on their use of incorrect tense, informal register, and some grammatical errors. Group 2 made similar mistakes as Group 1 did. The title was not centered, and one annotation was missing. No hanging indent was detected and some information was missing from citations. The group members did not use the required present tense when referring to sources, and they also made some language errors.

Table 25

Four Small Groups' Salient Textual Features of Annotated Bibliographies

	Task-related skills	Application of course content knowledge	Language use
Group 1	Title "Annotated bibliography" in italics and not centered; Not alphabetized; No hanging indent	Annotations missing; Some elements missing from annotations	Incorrect tense; Informal register; Language errors
Group 2	"Annotated Bibliography" italicized and not centered; No hanging indent	One annotation missing; some info missing from citations	Many errors; Not using required present tense when referring to sources
Group 3	"Annotated Bibliography" italicized and not centered	Nice description of sources and annotations; Relevance of sources to their research project missing	Good language use in general
Group 4	"Annotated Bibliography" italicized and not centered; Not alphabetized but numbered; No hanging indent, not in MLA format	Good description of sources and annotations	A few errors, overall comprehensible

Influence of small group interactions on writing products

In Group 3, the three group members took full responsibility over the three annotations. Also, different artifacts scaffolded their writing processes. As revealed from the post-task interviews of Gao and reflection paper of Chuan, they closely followed the guidelines of writing annotated bibliography and used Refworks to manage their references, so they scored high in both "task-related skills" and "application of course knowledge." As Chuan commented in the post-task interview, he carefully read the exemplary annotated bibliography posted under the "Wiki resources" module before writing the three annotations. Both Gao and Chuan also stated the usefulness of Refworks. Moreover, this group's high score in language use may result from group members' attention to language points. For instance, wiki "History" logs revealed that Gao made several rounds of revision to his own texts, via adding, expanding, deleting, and correcting, as discussed in Chapter 4. Furthermore, the group members moved their own annotations as needed to display an alphabetic order.

Also, the group members demonstrated a collaborative approach to Task 2, as depicted in the following scenario about source sharing. Chuan was assigned the task of writing annotations regarding counter-arguments. When Chuan completed two annotations and was searching the third source, Vitaly suggested a useful source to Chuan by posting on the wiki "Page," "Hey, I found a useful link for you: http://www.workforce.com/article/20120206/BLOGS05/120209974/bad-apple-could-the-era-of-exploitation-outsourcing-be-near-its-end" (3/8/2013). Chuan accepted Vitaly's suggestion and wrote an annotation about the above source. The three members' individual accountability and collaborative stance enabled them to nicely perform the annotated bibliography.

Likewise, Group 4 that did not get a good score in Task 1 performed well in Task 2. They clearly divided their tasks, and each took responsibility for their own three annotations. The group members made better use of the wiki, and conducted several rounds of revisions throughout the writing process. Thereby, they gained relatively a high score in language use and the application of course content knowledge. However**,** as the division of labor was quite evident, they numbered the annotations as (1) to (9), which did not conform to the MLA style. Their annotated bibliography was a reflection of the combination of individual work, in which the annotations were not arranged in an alphabetic order.

Group 1 did not achieve as well in Task 2 as they did in Task 1. The main reason was that Abdul did not complete his task of writing three annotations. Feng attempted to elicit Abdul's fair share using the wiki "Comments," "Can you find one more source to add?" (2/28/2013) and unfortunately this suggestion was not reacted to by Abdul. According to the course instructor, Abdul was not present in class toward the end of the wiki writing project because he had to spend much time preparing for an important test, i.e. GRE test. Abdul's absence greatly affected the quality of the group writing. As one requirement of annotated bibliography was that each group member wrote three annotations and it was impossible for other members of this group to write more annotations for others. Although Dong and Feng actively participated in this task, Abdul's withdrawn damaged their group performance.

The low score of Group 2 in this task was partly due to the fact that the group members were not able to arrange an accurate MLA format using the wiki, as revealed by Xia in the post-task interview. Moreover, they did not use the present tense as required to describe sources. As the wiki "History" log revealed, after Xia posted her annotations using the past tense, Ali made the same mistake in his composing. As Ali recalled, his group members' texts could be a model

for him. Although his partners' texts sometimes scaffoded his writing, such model, however, did not take a good effect all the time. Also, one annotation was missing from Ali. In addition, despite the group members' engagements with others' texts, the revisions did not focus on meaning or language. For instance, not as he did in Task 1, Hai made changes mostly on others' formats. There were few occasions that group members discussed problems in language points, thus leading to relatively low score in language use.

Discussion and Summary

This chapter illustrates that the four small groups produced wiki essays of different writing quality across two tasks due to different interactional process. The results are summarized in Table 26 below. These results supported the links between the wiki interactional ways and the quality of wiki writing products, which extended Storch (2004)'s findings about the connection between interactional patterns and writing outcome in the ESL face-to-face pair work.

In Task 1 Research Proposal, Group 1 and Group 2 that demonstrated a collaborative approach and a higher degree of mutuality produced essays of better quality than Group 3 and Group 4 that exhibited a non-collective approach and a lower degree of mutuality. However, in Task 2 annotated bibliography that explicitly required a division of labors, that is, each group member wrote three annotations, Group 3 and Group 4 that focused on individual effort/contribution seemed to benefit from the task, and both groups approached the task more cooperatively/collaboratively than in the previous task and achieved higher scores than Group 1 and Group 2 that involved decreased efforts on the writing tasks and reduced participation from one or two group members. The findings, therefore, suggested that the interactional patterns influenced writing products in the CMC writing context. The task that emphasized cooperation

other than collaboration benefited the small groups that attached great importance to individual accountability.

Table 26

Influences of Interactions on Qualities of Writing Products

		Interaction	Product
Group 1	Task 1	Collective, mutual scaffolding	High quality
	Task 2	One member's withdrawing Non-interactive response	Mid-low quality
Group 2	Task 1	Collaborative, Scaffolding (directional and bilateral)	Relatively high quality
	Task 2	Two members' reduced writing efforts	Low quality
Group 3	Task 1	Non-collaborative, Inactivated scaffolding	Mid-low quality
	Task 2	Collaborative, Peer scaffolding (directional and bilateral), Artifact scaffold	High quality
Group 4	Task 1	Cooperative in parallel, Little scaffolding	Low quality
	Task 2	Cooperative, Artifact scaffold	Relatively high quality

Also, as Donato (2000) posited, "Tasks do not manipulate learners to act in certain ways because participants invest their own goals, actions, cultural background and beliefs into tasks and thus transform them" (p.44). In this study, participants brought to small group interactions their assumptions, beliefs, duties, and obligations when working on the wiki collaborative writing project. This may, to some extent, account for why Group 1 and Group 2 produced better essays in Task 1, while Group 3 and Group 4 produced better essays in Task 2. As this EAP course was pass/fail, and no specific final grade would be recorded in their course transcripts. Group 1 and Group 2 performed well and achieved good scores in Task 1, and the extrinsic

motivation (i.e. the grades) did not stimulate their participation as in the previous task, and they might draw less attention to Task 2 if they considered another personal task a priority (e.g., Abdul in Group 1). In contrast, Group 3 and Group 4 did not get good scores in the Task 1 Research Proposal, and they realized that they were obliged to work hard on Task 2 Annotated Bibliography so as to pass the course. To this end, they posted and constructed texts in the wiki site much more frequently, involving a variety of writing change functions.

Moreover, this study suggested that good writing performance within small groups entails simultaneously the group's collaborative stance and group members' individual accountability. Both elements are indispensable to a productive interaction. On one hand, collective approach to joint writing tasks is significant. As we can see in this study, Group 3 failed to act as a cohesive group, and their interaction in Task 1 was featured with overt lack of agreement and disputation. Despite the fact that each member took responsibility over the task, this group did not produce a paper of high quality. In Task 2, however, the group members took a more cooperative stance to joint writing and they produced an annotated bibliography of a high quality. On the other hand, individual accountability is essential in collaborative writing tasks. To take Group 1 as an example, the group members displayed a high degree of collectiveness and individual accountability in Task 1, and they produced a high-quality research proposal. However, in Task 2, one group member Abdul did not invest sufficient individual effort, and did not complete his part of writing three annotations as the task required. As a result, the annotated bibliography Group 1 composed was not satisfactory. The finding reinforced that one group member' lack of participation had negative impact on wiki-based collaborative writing activities, as discussed in Li and Zhu (2013).

As noted in earlier discussion, participants' scaffolding in small groups facilitated collaborative writing and learning. As Donato (2000) argued, "Learners are afforded opportunities to assist each other in the creation of zones of proximal development" (p.46). It is also important to note that "the expert other during a ZPD need not be animate but can be cultural artifacts as well" (Swain, et al., 2010, p.21). One reason why Group 3 and Group 4 produced the annotated bibliographies of high quality was that they sought scaffolding from resources such as the exemplary annotated bibliography posted under "Resources" in the wiki site, and the Refworks in the website of the university library. For instance, a member of Group 4 Mei commented about the scaffolds of resources in the post-task interview, explaining that her group did well in Task 2 because they learned from the exemplar texts, and she would like to see more examples posted in the wiki site, for instance, an exemplary research proposal. The findings reinforced that such artifacts as online resources mediated students' learning and subsequent development during the ZPD (Swain et al., 2013).

To summarize, this chapter reported the writing products that the four small groups completed in relation to two wiki tasks, i.e., a research proposal and an annotated bibliography, and then discussed in what ways the small group interactions influenced the writing products. I argued that as in the face-to-face writing context, students' interactional patterns are closely linked to writing products in the wiki task environment. The interaction with both collectiveness and high individual accountability leads to high-quality writing product. The next chapter will explore the connections between small group interactions and students' reflections about wiki-based collaborative writing.

CHAPTER SEVEN: CONNECTION OF INTERACTION PATTERNS TO STUDENT REFLECTIONS

Chapter 6 discussed the influences of small group interactions on students' writing products. This chapter answers Research Question 4: "What are ESL graduate students' reflections on wiki-based collaborative writing? In what ways do these reflections connect to small group interactions?" I investigated the participants' perceptions by analyzing the post-task questionnaires from members of the four small groups as wells as the interview data from the four small groups. First, I averaged the points that three group members from each small group assigned as to each of the 5-point Likert-scale questionnaire items. Second, I conducted a primary analysis of post-task interview, complemented with secondary analyses of reflection papers, responses to short-answers in post-task questionnaire, and follow-up interview, to identify students' reflections about wiki affordances and learning experiences and discussed the connection of student reflections to the ways they interacted within their small groups.

Holistic views of student perceptions

In this section, I provide a general picture of students' perceptions of wiki-based collaborative writing by presenting the average score from each group as to every 5-scale items, as illustrated in Table 27. I then discuss students' responses to some items related to their general experience with the wiki project and their perceptions of using wikis for academic writing and highlight differences and similarities in students' perceptions among the four groups.

Table 27

Likert-Scale Questionnaire Results from Four Cases

Questionnaire items	G1	G2	G3	G4
1. I enjoyed using wikis for collaborative writing.	4	4.33	3	4
2. Wiki is suited for the collaborative writing of research proposal.	3.67	4.33	2.67	4
3. Wiki is suited for the collaborative writing of annotated bibliography.	3.67	3.67	2.33	4
4. My experience with the wiki project is positive.	3.67	4.67	3.33	3.67
5. I prefer conducting the team research project using wikis to doing through traditional way.	3	4.33	3	4
6. Wiki-based collaborative writing improves my writing skills.	3	3.67	2.67	4
7. Wiki collaborative writing helps me attend to content development.	3.67	4	2.33	4.33
8. Wiki collaborative writing helps me attend to language use.	4	4	2.67	3.67
9. Wiki collaborative writing helps me attend to essay structure/organization.	3.67	3.33	3	3.33
10. I was able to use the genre knowledge we learned in class in this wiki project.	4	4.33	3.67	4
11. I used the group wiki “History” module to view changes before I revised/edited the group writing.	3.33	4	2.67	3.33
12. I found the group wiki “Discussion” module useful for negotiating language with group partners.	3.67	4.67	3.67	4.33
13. I found the group wiki “Comment” module useful for negotiating language with group partners.	3.67	4.67	3	4.33
14. I enjoyed the revision process in the wiki.	3.33	4.33	2	4
15. My degree of involvement varied during the two wiki tasks.	3.67	4	2.33	4
16. My group partners and I engaged in communication/discussion using the wiki.	4	4.33	2.33	3.67
17. My group partners and I often discussed the group writing outside the wiki.	4.33	2.33	3.67	4.33
18. I was able to make important contributions to the wiki collaborative writing project.	3.33	4	3.67	4
19. I do not think my group partners valued my contributions.	2.67	1.67	2.67	2.67
20. I valued the insights that my group partners brought to this project.	4.33	4.33	3.67	3.33
21. My group partners and I did not reach consensus on the final products easily.	3	2.67	3.67	2.33
22. All the members in my group contributed to this project equally.	3	4.67	3.67	3.67

As Table 26 shows, generally members in Group 2 and Group 4 held very positive attitude toward wiki-based collaborative writing, followed by Group 1. Group 3, however, did not reveal positive attitude. Specifically, members of Group 2 (M= 4.33), Group 4 (M=4), and Group 1 (M=4) enjoyed wiki-based collaborative writing, but Group 3 held a neutral attitude (M= 3) (Item 1). Also, Group 2 (M= 4.67) indicated most positive experience with the wiki project, followed by Group 1(M=3.67) and Group 4 (M=3.67) (Item 4). Both Group 2 (M= 4.33) and Group 4 (M=4) agreed that they preferred conducting the team research project using wikis to doing through traditional way (Item 5). Regarding the two writing tasks, the participants perceived that the wiki was more suited for research proposal than annotated bibliography (Items 2 and 3). In terms of wiki affordances, Group 4 (M= 4) and Group 2 (M= 3.67) agreed that wiki-based collaborative writing improved their writing skills (Item 6). The wiki collaborative writing helped them attend to content development, language use, and essay structure (Items 7, 8, 9). Members of all the groups reported that they were able to use the genre knowledge they learned in class in this wiki project (Item 10). Regarding the specific wiki modules, members of Group 2 (M=4.67), Group 4 (M=4.33), Group 1 (M=3.67) and Group 3 (M=3.67) all believed that wiki "Discussion" module was useful for negotiating language with group partners (Item 12). The members of Group 2, Group 4 and Group 1($M \geq 3.3$) also agreed that "Comments" and "History" modules were useful (Items 13 and 11). Table 26 illustrates the overall trend that Group 2 and Group 4 conveyed more positive perceptions about wiki-based collaborative writing than Group 1 and Group 3 did.

Students' reflections about wiki affordances, constraints and their learning experiences

Multiple data sources (i.e., post-task interview, follow-up interview, reflection paper, and post-task questionnaire) offered the participants the opportunity to reflect on their experiences of

using wikis for collaborative writing and learning. By closely examining students' responses to Interview Questions 1 and 7 asking their perceptions of wiki-based collaborative writing and their suggestions for future wiki writing projects, supplemented with analyses of other data sources, I identified eleven major categories involving students' perceptions of wiki affordances, constraints, and their learning experiences, which are briefly presented in Table 28. Afterwards, I discuss students' detailed reflections within each group by applying relevant quotes from multiple data sources.

Table 28

Participants' Perceived Wiki Affordances, Constraints, and Learning Experiences

Perceptions	Group 1	Group 2	Group 3	Group 4
Affordances				
Convenience for communication	Abdul, Dong	Hai Xia, Ali	Chuan	Lan, Mei
More equal participation	Dong	Ali		
Usefulness of wiki modules	Feng Dong	Hai, Xia, Ali	Chuan, Gao	Lan, Ju, Mei
Enhanced motivation		Xia		
Constraints				
Asynchronous tool being not enough	Feng, Abdul		Chuan, Gao, Vitaly	Ju, Lan
Lack of communication with members from other groups	Dong	Hai		
Technical glitches	Feng	Xia	Gao	Lan, Mei
Learning experiences				
Gaining more writing perspectives	Dong, Feng	Ali, Hai		Lan, Mei
Learning academic task-related skills	Dong	Xia	Vitaly, Chuan	Mei
Developing language skills		Ali, Hai	Gao	
Learning the use of wikis for future project		Xia		

Group 1

As Table 28 shows, Group 1 commented on three categories of wiki affordances. Dong acknowledged the convenience of wikis for group work: "Wikis are helpful when three or over three need to collaborate.[…] Wiki gave us the way that we can come to discuss at anytime, anywhere we want […] it is very convenient" (Post-task interview with Dong, 3/9/2013). This perception was echoed by Abdul, who stated that "Wikis are convenient and save time. We do not need to meet with each other" (Post-task interview with Abdul, 3/8/2013). Dong continued to comment on another benefit of using wikis for collaborative writing, that is, more equal participation, as shown in the following.

> At regular group meeting, […] the person who is good at speaking, that person will talk much, maybe that person will influence the whole group much more. But other kind of person do not good at speaking, cannot share their ideas, but wiki can solve this problem. (Post-task interview with Dong, 3/9/13)

Dong's perspective echoed the argument that computer-mediated communication resulted in group members' more equal participation than face-to-face discussion in the collaborative learning tasks (Ware & Warchauer, 2006).

The members of Group 1 also conveyed the usefulness of wiki modules. Feng said that "Wikis are wonderful tools. We worked effectively in wikis" (Post-task interview, 3/8/13). Dong specifically addressed that "Comments" and "Discussion" are useful in that they recorded the group members' discussion, namely the initial posts and responding posts, and the consensus the group has reached. Feng also echoed the collaborative nature of wikis, stating that "We need to combine all our teammates' ideas and reorganized logically and clearly. That could be a tough work if there was no help of wiki" (Post-task interview with Feng, 3/8/2013).

Meanwhile, the group members indicated three categories of wiki constraints. Technical glitches were their complaints. Feng maintained in the post-task interview (3/8/13): “I cannot get the ideal fonts and format I want.” Also, he pointed out that the accidental deletion occurred occasionally in his group. He said that “sometimes group members can delete my writing […] that make me unhappy” (Interview with Feng, 3/8/2013). Although group members believed that the wiki was a convenient tool for collaboration, they suggested that the wiki, as an asynchronous tool, was not enough. In Feng’s opinion, apart from the wiki, face-to-face meeting and emails were both necessary for collaborative writing tasks. This viewpoint was also revealed in group members’ responses in the post-task questionnaire. The group members agreed that “My group partners and I often discussed the group writing outside the wiki” (M=4.33, Item 17). Abdul specifically stated in the short-answer section of the questionnaire that “It is a good place to communicate with your group, but sometimes we need to meet with our partners.” […] facing problems to reach your friends and we are not able to talk immediately” (Questionnaire of Abdul, 3/8/2013). In addition, Dong addressed the lack of communication with members from other small groups in this wiki project. Actually, this is not the constraints of wikis in nature. The wiki page can be private or public, depending on the setting that the organizer of the wiki selected. In this wiki project, each group wiki page was set as a private mode, in the hope that students focused on the joint writing within their own small groups. Consequently, there were no opportunities for students to interact among wiki writing groups.

The group members reported positive learning experiences in the wiki writing project. Dong commented on sharing ideas in the wiki: “When we have some good ideas, we just go on the wikis and consult others’ ideas.” (Post-task interview, 3/9/13).This statement was echoed by Feng: “We worked effectively in wikis. We built on each other’s ideas” (Post-task interview,

3/8/13). Dong also addressed that the group members brought about different perspectives: "That is why I just like to have people from different country in my group. They have different perspectives" (Post-task interview with Dong, 3/9/13). Dong continued to state that they gained more writing perspectives and learned academic task-related skills through the wiki writing project: "Well, at first I have no idea about proposal and bibliography and I don't know how to write about it. Through WiKi, I can talk about that in my group and know some wonderful ideas from my teammates, and that's the point help me a lot indead" (Follow-up interview notes from Dong, 4/30/2013)

Group 2

The members of this group highly acknowledged wiki affordances in four categories. All of them commented on the convenience of wikis for communication. Xia maintained in the post-task interview (3/8/2013) that "Wikis are convenient tools for collaboration. The traditional way is time-consuming. We have to save time and be efficient. […]We do not have to make a schedule when we will be there. When we have ideas, we posted on the wiki, and some other people have idea and time, they come to, we can see." Ali briefly stated the convenience of wikis in the post-task questionnaire (3/8/2013): "anytime anywhere we can work on the wiki, even if some of members cannot be on wiki in the same time." Hai addressed that the wiki is "very good for us to work together. No need to go to meet in the library, just stay at home. […]We always finish the team work, put on our ideas like chats" (Post-task interview, 3/8/13). Interestingly, these perceptions revealed that Group 2 members used the wiki in both an asynchronous and synchronous communication manner.

Both Xia and Hai particularly acknowledged the usefulness of wiki "Comments." As Hai remarked, "I like the "Comment" function. There is some problem with my teammate's work, I

can leave comments. They can see. I can also receive the comments from the instructor […] not only the connection between me and my group partners, but connection with our instructor" (Post-task interview with Hai, 3/7/2013). Hai reiterated the instructor's role in the follow-up interview (4/30/13): "once we meet a problem that we are not able to solve individually, we can put it on wiki and our instructor can help us via wiki." Another group member Xia coincidently shared the identical thought. She stated that "Comment is a good module. The instructor can leave comment: which part to revise, which part to change" (Post-task interview with Xia, 3/8/2013). Ali, on the other hand, communicated the usefulness of the wiki "Discussion" module in the post-task interview (3/8/2013): "If I was not able to participate in time, I could go through what they discussed and I was able to join the conversation via "discussion" module even not at the same time." Also, Ali pointed out that the wiki enabled the group members to have more equal participation. Different from Warchauer's (1997) argument that asynchronous tools provided participants with more time for thinking and expressing their ideas, thus leading to more equal participation, Ali shared his distinct perspective.

> In wikis, I have the opportunity/chance to review all my knowledge, my ability, my participation compared with other group members. […] See my weak points. Revise my participation […] Wiki is transparent. If some member did not do that much, you can see his level of participation in the wiki. You can see the information is valuable or not valuable, you can see your skills and others' skills (Post-task interview, Ali, 3/8/2013).

Ali' perception revealed that the wiki is a good tool of assessment that can reflect each individual's contribution to the group/team project, which was reported in previous literature (e.g., Storch, 2013; Trentin, 2009). For Ali, wiki's transparency spurred him on to equally participate with his group members in this project. In addition, Xia exclaimed that wikis enhanced her motivation in learning; she commented, "Wiki is a new thing for us, so for students,

a new technology can promote their motivation to learn (Follow-up interview notes from Xia, 5/4/13)

As Group 1 did, the members indicated the categories of wiki constraint, such as technology glitches. As Xia commented in the post-task interview (3/8/2013), "The biggest disadvantage is format. Annotated bibliography we needed a certain MLA format, wiki cannot keep the format. […] I cannot solve the problem." She specifically addressed that "Wiki is in a mess if our project needs format such as words count." Thus, she made a suggestion as to the design of Wikispaces that "Add some functions in format to help us organize our academic writing. Google docs can do the job easily" (Post-task interview with Xia, 3/8/13). Hai also indicated the convenience of Google docs for synchronous communication. He told in the post-task interview (3/7/2013), "Asynchronous tool is not so good […] Google doc is also a good platform for group writing. Maybe wiki can learn something from Google doc's function."

In addition, Hai coincidently shared the perspectives of Dong, the Group 1 member, on the lack of communication from the members of other small groups**.** As Hai commented in the post-task interview (3/7/2013), "we only worked together for three people. I really want to see others' project, what they wrote for their project. […] allow us to see the performance from other groups and provide feedbacks among small groups." Hai, as a fan of collaborative learning, proposed a relevant suggestion of combing collaborative writing and peer response in a team project, which would afford more scaffolding from a wider population.

With regards to learning experiences, Group 2 reported four categories of learning. Both Hai and Ali commented that wiki writing enabled them to gain more writing perspectives. They also addressed that they learned language skills in the wiki writing project. As Hai exclaimed in the post interview (3/7/13), "I really learned a lot from their [group partners'] words, language."

He continued to discuss this point in the follow-up interview (4/30/13), “it [wiki collaborative writing] helps me develop my writing skills. For example, when I was writing research proposal on wiki board, my teammates could help me correct my grammar mistake and organize the structure.” Ali concerted in the post-task interview (3/8/13) that “I was able to go through details, including language. I learned from others.” Moreover, Xia commented about learning the academic task-related skills via the wiki project in the post-task interview (3/8/13): “All of us learned. We found the sources, we learned the whole research process.” Xia made an additional note that they learned how to use wikis. She resonated that she would use wikis for her future projects (Post-task interview, 3/8/2013). This viewpoint was further elaborated in the follow-up interview notes (5/4/13) from Xia: “As my major is education, I would like to use new technology during my class. In wiki, students can experience cooperative learning, which is good for English learners.”

Group 3

The members of Group 3 expressed the least positive perceptions of wiki affordances. Vitaly agreed that “People can collaborate from different spaces in wikis.” However, he stressed in the interview (3/8/13) that “All the group members can only combine the information. […] I did not enjoy using wiki at all. It’s too fresh to become a useful utility for collaboration.” Differently, Chuan commented on the convenience of wikis, “We do not need face-to-face meeting everytime. It saves a lot of time. We could post our ideas directly in the wiki.” He added, however, “it is not convenient enough, for example, if there is a notice to my email when a new post comes out, it will be better” (Post-task interview, 3/8/13). Actually, I described the function of “Notification” in the wiki orientation, but did not provide the students with the opportunity to

set “notification” for their group work, because they had not been formed into groups by then. This observation provided pedagogical implication in wiki training.

Regarding the usefulness of wiki functions/modules, Gao and Chuan had some positive reflections. Gao stated in the reflection paper (4/5/2013) that “Wiki is a good tool. Group members can make comments on the wiki, everybody can contribute their work on the wiki. […] It is very useful platform because we can put ideas together and change them. The professor can give us comment on Wiki and gives us some good suggestion about our topic.” Chuan recalled in the reflection paper (4/5/2013) that “I would like to post some useful information on Wiki after meeting […] It was simple, concise and useful. We could […] easily edit the information on it.” He later added, “I even found Wiki could automatically save the draft and reduced the possibility of loss of unsaved information (Reflection paper of Chuan, 4/5/2013)

All the three members indicated that the wiki, as an asynchronous tool, was not good for the group project. As both Gao and Vitaly had a nice experience of conducting a group project using Google docs in their former EAP course, they related to Google docs on several occasions when discussing the wiki tool used for this group project. Gao addressed his preference of Google docs to wikis in the interview (3/8/13): “Google docs is very efficient. In Google docs, everybody can write in the same time. […] The wiki does not allow that everyone writes in the same time. Synchronous tool is better.” Vitaly echoed Gao stating his preference of Google docs, “It was difficult to get together in one time and discuss something through wiki”. […] Take Google Docs as a base for that project.” Vitaly also doubted the helpfulness of wikis, conveying that “I don’t think that wiki can be very kind of helpful tool for this project […] If you want to see others’ ideas, you need to get together actually, like brainstorming you know. We have to get together, and we posted answers on the wiki.” He added that “research proposal is not

appropriate for wiki collaboration at all. It was really difficult for all members of our project to discuss something through wiki pages. […] Chatting application is needed" (Post-task interview with Vitaly, 3/8/2013). Chuan also maintained that synchronous CMC tool such as chatting application was essential for collaborative writing tasks. In addition, Gao pointed out another technical problem that they could not save texts as a word doc using wikis, which is however supported by the Google docs (Post-task interview with Gao, 3/8/13).

In terms of their learning experiences, both Vitaly and Chuan briefly addressed that they learned task-related skills. Vitaly stated in the post-task interview (3/8/13) that "We get some essential knowledge which could be very essential for me in the future" and added in the reflection paper (4/5/13) that "I have the research project, I know all the steps, how to find the source, how to use the source and how to do this research." In the similar vein, Chuan commented in the post-task interview (3/8/2013) that "We did better in Annotated Bibliography. Bibilography made us learn more things: to find source, and learn new format." Additionally, Gao indicated in the interview (3/8/13) that "Others corrected my grammar/language accuracy," which helped develop his language skills. Gao also confirmed that he was able to apply what he learned about task-related skills in the wiki writing project to the following individual project in the follow-up interview.

Group 4

Generally, members of Group 4 showed positive perceptions of the wiki technology. Ju addressed the superiority of wikis to emails for collaborative writing. She stated that "It [the wiki] is good, it is very convenient for the team project. Before, we use emails. We cannot collaborate easily. […] it's convenience and we can exchange our work directly through wiki, rather than email back and forth" (Post-task interview with Ju, 3/8/13). Mei also stated in the reflection

paper (4/5/13) that "Wiki is very useful to discuss with each other. We can communicate with each other frequently. We all share our own opinions on wikis and we enjoy that." Although Lan agreed that communications via the wiki was convenient, she perceived that the wiki is "not as effective as communication by face to face. We cannot get reply as soon as face-to-face meeting" (Post-task interview with Lan, 3/8/13)

In terms of the usefulness of wiki modules, Lan commented in the post-task interview (3/8/13) that "wikis record our discussion. 'Discussion' on the wiki can recorded all information we wrote through the communication and that would be the evidences and supports of our team research. […] 'Comment' is also useful." Ju also highlighted the usefulness of wiki "Comments" in the follow-up interview: "when our team write the annotated bibliography, we first attach our task on the wiki, and let team members go through the whole annotated bibliography, then use the commend[Comments] bottom directly say something to others task, and the commend[Comments] button straightly point at the wrong place, we can see that directly rather than tell other members where is wrong." (Follow-up interview notes wfrom Ju, 5/2/2013). In addition, Mei positively rated the usefulness of "wiki resource" module in which she can receive the scaffolding of exemplary genres.

As some members from other small groups did, the members of Group 4 indicated that the asynchronous tool was not enough. As Lan told in the post-task interview (3/8/13), "We cannot know each other's opinion immediately. I have to wait for them to answer." Similarly, in the study conducted by Lee and Wang (2013), some students complained that they have to wait for a couple of days to receive their group partners' comments on their posts. To solve this problem, the members of Group 4 used synchronous tools for the wiki writing project. Ju elaborated in the reflection paper (4/5/13) on how they used other social media as communication tools in the wiki

project: “We divided our group task for later jobs, and use cellphone Group Chat App as our main contact tool, and assistant with Wiki and email. When we have ideas and different opinions, we can leave our message on the App, and team members can immediately saw the message and give reaction.” In the post-task questionnaire (3/8/13), they agreed that “My group partners and I often discussed the group writing outside the wiki” (M=4.33, Item 17).

The group members also addressed the constraints of wikis. As members of other groups pointed out, format was one of the big technical problems. Mei told in the post-task interview (3/8/13), “To avoid the problem of the format, I like to write on Word first, and copy and paste it on the wiki.” Lan added, “It was not easy to handle functions. Some part is complicated. It is hard to find a certain button. Even the “comment” is not easy to handle” (Post-task interview with Lan, 3/8/2013).

With regards to learning experiences, the group members reported broadened writing perspectives. As Mei put it in the post-task interview (3/8/13), “I learned a lot from my team members. Group members posted useful resources and we can share our ideas in the wikis.” This idea was echoed by Lan, who noted, “Our members enjoyed good experience on wikis. We shared our opinions” (Post-task interview with Lan, 3/8/2013). Also, Mei implied the project’s benefit in developing task-related skills. She maintained that “We can learn more how to do some academic assignments as team work.” (Post-task Interview with Mei, 3/8/13).

Connections between interactions and student reflections

Li & Zhu (2013) pointed out that examining student reflections on wiki affordances and their learning experiences in relation to the ways in which the small group interacted suggests some connections between interactional patterns and student reflections. This study reinforced

this statement. Below I draw on the triangulated data sources and discuss the connections identified in this study.

Group 2, displaying an expert/novice pattern, had most positive perceptions of wiki-based collaborative writing. The questionnaire data (in Table 27) revealed that the members of Group 2 greatly enjoyed using wikis for collaborative writing, and they preferred conducting the team research project using wikis to doing through traditional way. They reported that they very much engaged in communication/discussion using wikis, and they seldom discussed the writing tasks outside wikis. They found wiki "Discussion" and "Comments" modules very helpful, and they enjoyed the revision process in the wiki. Also, they reported four categories of wiki affordances and four categories of positive learning experiences. All the three members believed that the wiki was a convenient collaboration tool; they all believed that wiki modules were very useful. One member highlighted students' equal participation due to the wiki's transparency. In terms of learning experiences, they reported that they gained more writing perspectives, learned task-related skills, developed language skills, and learned how to use the wiki tool for future projects. The only complaint this group had about the wiki technology was that the wiki did not afford accurate formatting as required in the task of annotated bibliography.

Overall, this group's positive reflections about wiki affordances and learning experiences were highly connected with the group members' high degree of mutuality and positive emotion demonstrated in wiki writing processes. As noted in the earlier discussion, both "expert" and "novice" engaged with each other's ideas and writing efforts during collaborative writing tasks. Also, this group exhibited nice collaborative stances through performing multiple language functions such as greeting, encouraging and acknowledging when discussing writing tasks, and contributing numerous instances of writing change functions during the process of text co-

construction. However, they did not interact well in the annotated bibliography, which, in their opinion, was not well suited for the wiki collaborative writing, because the annotated bibliography highly demanded the accuracy of formats (Post-task interview with Xia, 3/8/13). The constraints of the wiki, however, did not alter their positive perceptions of their learning experiences.

Group 4, displaying a cooperating in parallel pattern, also held positive perceptions about wiki-based collaborative writing. Like Group 2, the members of Group 4 also reported their enjoyment in the revision process. As noted earlier in Chapter 4, the three members interacted in a harmonious atmosphere throughout the writing processes; they demonstrated a mid-low degree of mutuality, but they exhibited a high degree of equality, with equal division of labor carried out by each member. Largely due to their equal participation, the members of Group 4 enjoyed using wikis for collaborative writing. As Table 27 indicates, they believed that wiki collaborative writing improved their writing skills, and particularly helped them to attend to content development. This finding supported Lee and Wang (2013)'s argument that an even share of workload is an important factor facilitating wiki collaborative writing. Specifically, the group members reported two categories of wiki affordances, i.e. convenience, and usefulness of wiki modules, and two categories of learning experiences, i.e., gaining more writing perspectives, and learning task-related skills. They also reported two categories of wiki constraints: 1) the asynchronous tool was not enough for collaboration, and 2) formatting in the wiki was a problem. Their reflections of wiki constraints were found to be linked with the ways in which group members interacted, including communicating in Chinese using WeChat, a popular instant messaging application in China, and exchanging MS Word documents in which they produced the formats required of annotated bibliography.

Group 1 displayed a collective approach in Task 1, but one member withdrew in Task 2. Although the members stated positive reflections, they did not rate highly the wiki writing project as Group 2 or Group 4 did in the post-task questionnaires. They collaboratively discussed and constructed the rhetorical moves of research proposal and collectively scaffolded each other's writing efforts while composing the research proposal. Thus, they revealed positive attitude towards wiki-based collaborative writing activities, and believed that the wiki collaborative writing helped them attend to essay structure/organization. Also, they reported three categories of wiki affordances, i.e., convenience, more equal participation, and usefulness of wiki modules, and two categories of learning experiences, i.e., gaining more writing perspectives, and learning task-related skills. However, they showed neutral attitude (3 points out of 5) on the Questionnaire Item 5 regarding the use of wikis for team research project compared with the traditional face-to-face communication manner. One of the reasons was possibly related to one member's reduced participation in Task 2. This finding echoed Li and Zhu's (2013) argument that members' lack of participation in the CMC context can be a serious obstacle for collaboration, and also have negative influence on student's perceptions about wiki-based collaborative writing.

Group 3, which did not have great interaction in wiki collaborative writing processes, particularly in Task 1, stated the least positive perception of wiki collaborative writing. Taken the three group members' perception as a whole as revealed in questionnaire responses (Table 27), they did not quite enjoy using wikis for collaborative writing. They did not believe wikis were suited for collaborative writing of research proposal and annotated bibliography. They did not enjoy the revision process. They did not consider the wiki helpful in improving their academic writing skills. However, it is important to note that variations in the perceptions of wiki

affordances and learning experiences existed among the three participants. In the interview and reflection papers, Chuan agreed on the convenience of the wiki, and Gao and Chuan reported the usefulness of wiki modules. However, Vitaly did not believe that the wiki is a good tool for collaborative writing, and the other two also posited that the wiki is not enough for collaboration. Gao also stated the technical glitch. However, both Vitaly and Chuan reported that they gained the task-related skills, and Gao pointed out that he enhanced language skills additionally. This group's overall negative perceptions about wiki affordances connected with the interactional patterns they exhibited featured by the low degree of mutuality, most evidently in Task 1. Nonetheless, owing to each individual's sense of accountability for the wiki project and a gradually increasing collaborative stance of group members, some positive learning experiences were evident. For instance, Gao were involved with multiple rounds of revisions in the wiki site, and consequently, he believed that his language skills were improved after the wiki writing project.

Discussion and Summary

The analyses of triangulated data sources revealed that the four small groups had both similar and different reflections about wiki affordances and learning experiences. Group 2 had most positive reflections on wiki-based collaborative writing, followed by Group 4. Group 3 reported the least positive reflections. The results highlighted the importance of the nature of interaction, and connections between interactional processes and student reflections (Li & Zhu, 2013). I summarize the connections of wiki interactional processes (indexed with mutuality/equality and emotion) to students' reflections in Table 29.

Table 29

Connections between Interactions and Student Reflections

	Interactions	Reflections
Group 1	High degree of mutuality → One member's withdrawing Positive/neutral emotions	Less positive reflections
Group 2	High degree of mutuality Positive emotions	Positive reflections
Group 3	Mid-Low degree of mutuality Negative emotions	Least positive reflections
Group 4	High degree of equality Positive emotions	Relatively positive reflections

This study revealed that both the group with a high degree of mutuality (Group 2) and the group with a high degree of equality (Group 4) had positive learning experiences. Therefore, this study added to the previous observation that the groups that exhibited higher mutuality tend to have more positive reflections (Li & Zhu, 2013). Aside from "mutuality," equal contribution or even share of workload is also an essential constituent in effective interaction/collaboration (Lee & Wang, 2013; Watanabe, 2008; Zorko, 2009).

As noted in the earlier discussion, cognition and affect interplayed in wiki collaborative writing activities. The positive learning experiences from the groups with either a high degree of mutuality (Group 2) or a high degree of equality (Group 4) may be explained in relation to the emotions emerging from wiki collaborative writing activities. Emotions, as socially constructed, were linked to how the group members interacted. As members of Group 2 continuously engaged with each other's contribution throughout writing processes, positive emotions such as

comfort, confidence, and happiness were co-constructed during the wiki project. The emotional intersubjectivity (Imai, 2010) this group attained led to the group members' positive reflections about wiki collaborative writing activities. Likewise, members of Group 4 persistently participated equally in wiki writing, so positive emotions including friendliness, joy, and satisfaction arose in the mid of the wiki project, which helped generate the students' positive reflections about their wiki writing experience.

In contrast, the groups that demonstrated either a moderate degree of equality (Group 1) or a mid-low degree of mutuality (Group 3) tended to reveal less positive reflections on wiki affordances and their learning experience. Although Group 1 demonstrated a collective approach to Task 1, one member's absence in participation in the mid of Task 2 possibly spoiled the balance of the group members' participation and thus led to group members' less positive perceptions about wiki collaborative writing activities. Conversely, Group 3 exhibited a low degree of mutuality during wiki group writing processes despite a more collaborative stance in Task 2. The group members seemed to lack trust in each other, and frustration and unhappiness underlied the group interaction, particularly during Task 1, so they had less positive reflections about their learning experiences than other small groups. This observation echoed Lee and Wang (2013)'s finding that the group which was unable to build mutual trust or reach an agreement upon different opinions did not report a pleasant collaborative experience.

In this study, I mainly analyzed students' responses to the Likert-scale questionnaire items in the unit of small groups by averaging the scores assigned by three group members. It is important to note that variations occurred among individual members. For example, in Group 3, Gao revealed quite a few positive perceptions toward wiki affordances, whereas Vitaly held a negative attitude. Also, connections existed between an individual member's reflections and his

or her behaviors in wiki-based collaborative writing. For instance, Gao in Group 3 believed that wiki writing helped him attend to language use, and enabled him to improve language skills. This perception was linked to his behavior of recursive writing and revisions in the wiki. Also, Xia in Group 2 did not attend much to formats in the task of annotated bibliography, which was highly related to her reflection that the wiki was an informal tool, and its formatting problem discouraged its use for such academic writing task as Annotated Bibliography. To take an another example, Vitaly in Group 3 seldom used wiki "Discussion" and "Comments" modules in the wiki project, which connected with his negative responses to the questionnaire items stating that wiki "Discussion" and "Comments" were helpful for language negotiation.

In summary, this chapter discussed in detail student reflections about wiki affordances, constraints, and learning experiences from the four small groups. By comparing the results among the four groups, I explored the ways in which interactional processes (including individuals' wiki writing behaviors) were connected to students' reflections. The next chapter will conclude this dissertation, by synthesizing and explaining the findings with regards to four research questions, and discussing theoretical contributions and pedagogical implications.

CHAPTER EIGHT: CONCLUSION AND IMPLICATIONS

In this final chapter, I summarize the research results regarding four research questions and discuss the findings in relation to previous research studies in wiki collaborative writing. I also address the theoretical contributions of the study, and present pedagogical implications on the use of wikis for collaborative writing in the L2 classroom. The chapter concludes with suggestions for future research on computer (wiki)-based collaborative writing.

Summary and Explanation of Research Findings

This study investigated small group interactions as ESL graduate students jointly discussed and constructed two collaborative academic writing tasks. I explored student-student interactions through the lens of sociocultural theory, which highlighted the social engagement and scaffolding among peers. I adopted a multiple-case study approach and closely examined four small groups that had variations in group composites. Data sources included wiki "Discussion," "Comments," and "History" records, questionnaires, interviews, reflection papers, instructor assessments of wiki writing, the course instructor's email message and my research logs. I predominantly adopted a qualitative approach to analyze the data, supplemented with descriptive analyses such as frequency count and average scores.

Below I first provide a brief summary of main research findings, and then discuss these findings by referring to previous relevant studies.

Main findings

1) Four small groups demonstrated four characteristic patterns of interaction. The patterns were not static across two wiki writing tasks. Mixed patterns were found in Group 1 (Collective— Active/withdrawn) and Group 3 (Dominant/defensive— Collaborative). Group dynamics were also evident in Group 2 (Expert/novice) and Group 4 (Cooperating in parallel).
2) These interactional patterns were defined with the degrees of "equality" and "mutuality" and the stances/roles that each group member took. These four patterns were specifically featured with different language functions, writing change functions, and scaffolding strategies occurring in wiki small group writing.
3) Multiple factors mediated wiki-based collaborative writing and they may account for variations in interactional patterns. These factors included motives/goals, agency and emotion, and previous experience in such aspects as L1/cultural background, group work and technology use.
4) The patterns of interaction had influences on small groups' writing products. In Task 1, Group 1 and Group 2 that demonstrated a collaborative approach produced writing of better quality than Group 3 and Group 4 that demonstrated dominant/defensive and cooperating in parallel, respectively. In Task 2, Group 3 and Group 4 that exhibited a cooperative approach and high individual accountability produced better quality of writing than Group 1 and Group 2 that had reduced degree of participation from a group member / group members.
5) Student reflections about wiki affordances and their learning experiences were connected with group interactions. The groups that exhibited a high degree of mutuality or a high

degree of equality and positive emotions during wiki writing processes had many positive reflections about wiki-based collaborative writing.

In the following section, I synthesize research findings with regards to four research questions, and interpret the results relating to previous literature.

Patterns of interaction

I identified four distinctive dynamic patterns of interaction when small groups of ESL graduate students negotiated writing tasks and co-constructed texts on the task of Research Proposal and Annotated Bibliography using wikis. Group 1 exhibited a *collective* pattern in Task 1, in which group members made collective contributions and they were willing to offer and engage with one another's ideas through discussion and text construction. This pattern shifted to *active/withdrawn* with one group member's absence during Task 2. Group 2 exhibited an *expert/novice* pattern, in which expert(s) took more control over writing tasks, and the expert(s) encouraged the novice to participate, and the novice was responsive to their ideas/behaviors. Group 3 exhibited a mixed pattern, i.e., *dominant/defensive* pattern in Task 1, in which two group members took control over writing tasks in different ways and one member demonstrated a defensive stance as the assigned group leader. They were unwilling or unable to engage with one another's contribution, which shifted to the *collaborative* pattern involving a higher degree of mutuality in Task 2. Group 4 exhibited a *cooperating in parallel* pattern, in which group members made equal contributions to text construction, but no sufficient evidence showed group members' engagement with one another's contribution.

The four groups exhibited some distinguishable features in language functions, writing change functions, and scaffolding strategies. In Group 1, elaborating on others' texts was a unique language function. The group members extended on each other's ideas, stated and

justified their own ideas, and gradually reached shared understanding. The interaction in Group 2 was featured by instances of acknowledgement, encouragement, and contingent responses, as group members negotiated writing tasks and social relationship. In Group 3, suggestions were put side by side, but were either not responded to or reacted positively. Disagreeing was a unique function. The cooperating in parallel pattern that Group 4 demonstrated was featured with group members' posting in sequence, in which they made suggestions, and expressed and justified their own ideas.

In terms of writing change functions, adding, rephrasing, correcting directed at *self* and *other* texts were evident in Group 1. Adding, reordering, rephrasing and correcting directed at self and other texts were also obvious in Group 2. In Group 3, participants were highly involved with writing change functions, including adding, deleting, reordering and correcting, but only a small portion of changes pointed to others' texts. Group 4 was featured with the adding function and the equal text contribution. In terms of scaffolding strategies/occurrences, *intersubjectivity* and *collective scaffolding* were visible in Group 1. *Recruiting interest*, *direction maintenance*, and *affectivity* were visible in Group 2. Group 3 started with the interaction characterized with the *lack of intersubjectivity* and *instructing unresponded to* and then occurred *scaffolding* and *instructing*. In Group 4, there was a lack of mutual scaffolding but obvious empathy among the group members.

The patterns of wiki-based interaction in small groups witnessed in this study bore similarity to the ways of pair/group interactions identified in previous research studies on collaborative writing. Specifically, the collective pattern that Group 1 demonstrated resembled in some degree the *collective* in Donato (1989, 1994), *collaborative* in Storch (2002), and *collectively contributing/mutually supportive* in Li and Zhu (2013), in that group members took a

jointed and collective approach to group/pair writing, reflected in relatively high equality and high mutuality and occurrences of collective scaffolding. However, the degree of group members' collectiveness was not as stable as that of their counterparts reported in previous studies. I found dynamic and mixed patterns of interaction: the interactional pattern switched to active/withdrawn with one group member's absence towards the end of the second wiki writing task. Second, the *expert/novice* pattern that Group 2 demonstrated was similar to the *expert/novice* in Storch (2002) and *authoritative/responsive* in Li and Zhu (2013). In all the patterns, one or two members took more control over the writing tasks, made greater contribution to text construction, and group members demonstrated a high degree of mutuality. Dissimilarly, the expert and novice in Storch (2002) were defined by students' language proficiency levels while the "expert" and "novice" in this study mainly referred to the different degrees of familiarity with the research topic. This result indicated that expertise, not confined to that in terms of language proficiency, can be reflected at different dimensions and enabled ZPD to occur. Third, the findings of the *cooperating in parallel* pattern echoed the *cooperating* pattern emerging in Bradley et al. (2010), where individuals worked in parallel fashion and seldom engaged with each other's writing contribution. The findings in this study confirmed some students' unwillingness to engage with others' written texts, and students' sense of co-ownership needs to be fostered for collaborative projects.

Innovatively, this study delved into wiki-based interaction from a comprehensive perspective, including both task negotiation and text co-construction processes. Different from Bradley et al. (2010) that analyzed the archived records of wiki history pages to reflect group members' interaction during text construction, and Li and Zhu (2013) that focused on small groups' negotiation of writing tasks, this study presented a full picture of interaction via analyses

of multiple aspects, i.e., language functions performed during task communication in wiki "Discussion" and "Comments," writing change functions performed during text co-construction reflected in wiki "History," and scaffolding strategies adopted throughout the writing processes.

In line with previous research on collaborative writing (e.g., Li & Zhu, 2013, Storch, 2002), the results of this study suggested that group members scaffolded one another's performance when they made joint efforts to conduct group work and actively engaged with one another's contributions, as observed in the collective and expert/novice patterns in this study. This study confirmed that social interaction characterized by mutual engagement and intersubjectivity allowed for the creation of ZPD (Villamil & de Guerrero, 1996). However, unfortunately, group members' language negotiation in terms of LREs was seldom identified in wiki records in this study. It was not quite clear how the students in small groups pooled together their linguistic resources in meaning negotiation and collectively solved the language problems, as discussed in previous collaborative writing studies (e.g., Donato, 1994; Li & Zhu, 2013; Ohta, 2000; Storch, 2002). I partly attributed this observation to the nature of the two wiki writing tasks which emphasized the learning of new genres.

Worthy of note, group dynamics were manifested when the small groups interacted across two academic writing tasks. For instance, members of Group 1 demonstrated a highly collective approach to Writing Task 1 Research Proposal, but their engagement decreased in some degree with Abdul's participation at a reduced level when working on Task 2 Annotated Bibliography. Group 3, however, demonstrated a low degree of mutuality and even a clash when working on Research Proposal, but they exhibited a collaborative stance and engaged with each other's ideas in the task of Annotated Bibliography. I explained these observations by discussing the mediating factors in wiki-based collaborative writing.

Mediating factors

This study confirmed the role of motives in mediating student participation and behaviors when conducting writing tasks (Donato, 1994; Storch, 2004; Zhu & Mitchelle, 2012). Specifically, dynamic motives of group members led to dynamic group interactions (Jin & Zhu, 2010). Also, individual member's perception of the motives/goals vis-à-vis his or her group partners' perception had impact on the patterns of interaction (Storch, 2002, 2004). In this study, the members of Group 1 showed converged perceptions of motives: Collaborating well and getting a good score. The interaction of intrinsic and extrinsic motivational factors positively mediated wiki collaboration. Also, the motive was dynamic; for instance, after having a good group performance in Task 1, the goal of obtaining a good course score for Abdul was leveled down by his emergent goal of passing the GRE test during Task 2. In Group 2, the three members revealed complementary views of their motives: working together as the course required, practicing writing in the online community, and collaborating equally, which positively mediated the group interaction. Members of Group 3 had overlapping yet differing opinions of motives. They shared the goal of completing the writing task. To achieve this goal, motives varied from conducting the teamwork to leading the group work. The motive to control the writing direction inevitably resulted in unsatisfactory interaction when members had conflicting ideas. However, instead of leading the group work, the motive to collaborate and successfully complete the task dominated in Task 2; therefore, the group interaction shifted to a positive side. Group 4 members had the identical goal of equally doing the assignment; thus, they equally divided labors and worked on writing tasks in a harmonious way.

Agency and emotion were two other important mediating factors emerging from the study. From a sociocultural lens, agency is considered as an awareness of the responsibility for one's

own action vis-à-vis the environment (van Lier, 2008). Emotions are socially constructed acts of communication that can mediate one's thinking, behavior and goals (Imai, 2010). Members of Group 1 all exhibited a sense of agency. The first person plural pronoun "we," "our," as well as endeared noun "my friends," that they used indicated their joint ownership or "collaborative agency." In Group 2, Hai's intrinsic motivation originating from his interest in writing via computer and collaboration in online community led to his high sense of agency. Xia demonstrated her agency by overseeing the group work, and Ali exhibited his agency by acting responsively. Also, the gradual development of positive emotion, such as confidence, joy, happiness, particularly in the novice Ali, facilitated wiki collaborative writing activity in this group. In Group 3, Gao exhibited a high sense of agency, reflected in his initiation to make frequent postings in the wiki and his great contribution to text construction. Vitaly carried out his agency by demonstrating leadership and giving instructions in an authoritative manner. Chuan exhibited his agency by defending his leadership assigned. However, the group members barely demonstrated collaborative agency, and negative emotions, i.e., lack of trust and unhappiness were evident, particularly when they constructed their research proposal. Interestingly, agency was relational, and the three members of Group 3 adjusted their agency vis-à-vis the environment (van Lier, 2008), and re-constructed their agency towards a favorable manner when working on Task 2. In Group 4, the three members persistently carried out their agency evenly and positive emotions, e.g., trust and happiness, surfaced in their writing processes.

This study brought to fore other mediating factor, e.g., L1/cultural background. Group 1 was composed of members of different L1/ cultural background, and group members' open-mindedness toward cultural diversity fostered their positive interactions. In Group 2, members' respect for group partners of different cultural origin also positively mediated their group

interaction. Conversely, in Group 3, members' little acknowledgement of cultural diversity had negative impact on their interaction. In Vitaly's viewpoint, different culture implied competition. He worked against his "minority" status by assuming the leadership. Gao believed that people from different cultural background had different communication style, which may impede interaction in some degree. Specifically, Gao appreciated the implicit ways of communication complied in the oriental culture, but did not like the direct way underlied in the western culture. Ironically, from the same L1 and cultural background, Chuan did not appreciate the implicit way of speech/behaviors that Gao complied to; what he emphasized was expressing ideas directly rather than keeping the group harmony. In Group 4, the three female students from the same L1/cultural background participated equally and cooperated harmoniously on wiki writing tasks. Moreover, participants' previous experience in small group work and technology mediated their wiki writing processes. For example, Vitaly's unsuccessful experience in group work in his previous course partly led to his lack of trust in the group members. His nice experience of using Google docs for a former team project discouraged him from exploring a different tool (the wiki) for the group project in this study. To take another example, Hai's positive prior experience in small group work and technology use enabled him to carry out the wiki group writing in an active and collaborative manner.

Writing quality

This study also discussed the quality of small groups' writing regarding the two tasks, and the influence of interactional patterns on writing products. Different from previous wiki research (e.g., Elola & Oskoz, 2010) using T-unit textual analysis to compare the accuracy, fluency, complexity of essays, I used instructors' assessments of wiki essays as the main tool to analyze the writing quality due to the nature of the course assignments.

This study revealed that small group interactions influenced writing products. The four small groups produced wiki essays of different writing quality across two tasks. Group 1 and Group 2 that demonstrated a collaborative approach and a higher degree of mutuality produced essays of better quality in Task 1 Research Proposal. However, in Task 2 Annotated Bibliography that explicitly required a division of labor, Group 3 and Group 4 that showed a cooperative stance and emphasized individual effort/contribution achieved higher scores. The nature of Annotated Bibliography as a cooperative task seemed to benefit the small groups that attached special importance to individual accountability, i.e., Group 3 and Group 4, in this study.

Group 1 achieved a highest score in Task 1 due to their active negotiation of the writing task, including the scope of research, research questions, and essay structure in the wiki. The relatively high score Group 2 obtained was due to group members' active involvement with task negotiation, particularly the fact that the expert Hai scaffolded the novice Ali in exploring the research topic of Disney. However, a relaxed and comfortable online learning environment that they attempted to create led to their use of informal tone and lack of academic register. Group 3 had relatively low scores because of group members' low degree of mutuality in wiki writing tasks. They held different ideas on the research topic and did not reach consensus on the task orientation. Group 4 got the lowest total score in Research Proposal, which was linked to the paralleling pattern of interaction they displayed, in which the members each just tried to complete their individual part, and they barely engaged with each other's texts.

Differently, in Task 2 Annotated Bibliography that required each member to write three annotations, Group 3 and Group 4 outperformed the other two groups due to their attention to individual accountability and their increasing degree of mutuality. In Group 3, the three group members took full responsibility over the three annotations assigned to them individually. Also,

both Gao and Chuan stated the scaffolding of the artifact Refworks. Group 4 also had good performance as the members clearly divided their tasks, with each taking responsibility for their own three annotations, and conducted several rounds of revisions. Group 1 did not achieve as well as in Task 1, mainly because Abdul did not complete his part of writing three annotations. In Task 2, it was almost impossible for other group members to write for their partner, even though they displayed high degree of mutuality in Task 1. Similarly, Group 2 did not produce a writing of high quality, mainly because the constraints of wikis discouraged two group members' participation in wiki writing. Consequently, members of Group 2 were not able to produce an annotated bibliography with an accurate MLA format and one annotation was missing in their group wiki site.

The results revealed that dynamic interactions influenced wiki products, and writing tasks also mediated group interactions. Not fully supporting the previous claim (Li & Zhu, 2013) that the existence of high mutuality in group interactions may be more important than a relationship which emphasizes high equality, this study suggested that good writing performance within small groups entails simultaneously the group's collaborativeness and group members' individual accountability. Both "equality" and "mutuality" are indispensable to guarantee a productive interaction. As Witney and Smallbone (2011) posited, ''group working is facilitated by equal levels of commitment and good rapport between team members and undermined if people have disparate goals or there are free riders'' (p.107).

Student reflections about using wikis for collaborative writing

The participants reported the affordances and constraints of wikis for collaborative writing and their learning experiences from multiple aspects. Most of their viewpoints about the wiki affordances were in line with the findings in previous wiki-based collaborative writing

studies (e.g, Chao & Ho, 2011; Ducate et al., 2011; Zorko, 2009). The students believed that wikis are convenient collaboration tools, which enable them to contribute at any time anywhere at their own pace. Also, wikis encouraged more equal participation. For one thing, wikis offered opportunities for those who were not talkative in the face-to-face context to equally contribute to the group work. For the other, the transparency of wikis allowed peers and instructors to view each individual's contribution in comparison with their peers' contribution, hence motivating the students to participate in the group project. Many students in this study also reported the usefulness of wiki modules, particularly "Discussion" and "Comments." In their opinion, "Discussion" hosted all the group members' posts, which reflected their writing and communication processes. "Comments" enabled the students to discuss and comment on their group partners' texts, and also enabled the instructor to provide feedback on group writing.

The constraints of wikis the students stated mainly lied in the nature of asynchronous communication and technical glitches, as reported in previous studies (e.g., Lee & Wang, 2013; Li & Zhu, 2013; Zorko, 2009). For some students, the asynchronous discussion in the wiki hindered their attempt at simultaneous communication, especially at the pre-writing stage. Consequently, most of the small groups met face-to-face or used other synchronous CMC tools in this wiki collaborative writing project. The other concern for the students was the technical problem with wikis. The students reported that they could not save the version with the formats and fonts they needed. In particular, some students failed to produce an accurate MLA format in the wiki as the task of Annotated Bibliography required. Some of them, therefore, conveyed their preference of Google docs that would allow them to easily edit the texts in both contents and formats. In terms of the learning experiences, many students maintained that they gained more writing perspectives after communicating with group partners, which echoed the findings in

previous studies (Chao & Lo, 2011; Li & Zhu, 2013). Some students reported that they benefited from the recursive way of writing in the wiki and developed language skills. Others commented that they enhanced their academic task-related skills by applying what they newly learned about the genre knowledge, which was in line with Hirvela (1999). This result of this study also confirmed the positive role of wikis in academic writing instruction (Elola & Oskoz, 2010; Kuteeva, 2011).

Moreover, this study discovered connections between small group interaction and student reflections. Group 2, displaying an expert/novice pattern, had most positive reflections, followed by Group 4 and Group 1 that displayed a Cooperating in parallel pattern and Collective—Active/withdrawn pattern, respectively. Group 3, displaying a Dominant/defensive—Collaborative pattern reported the least positive reflections. Specifically, Group 4, although exhibiting a low to moderate degree of mutuality, demonstrated a high degree of equality, in other words, an even share of workload. The group members achieved a state of mutual emotion, and attained positive reflections about the wiki affordances and learning experiences. The study highlighted the role of affect/emotion in collaborative learning (Swain et al, 2013; Vygotsky, 1978). The small groups that exhibited positive emotions during wiki collaborative writing tasks derived positive perceptions about wiki affordances and their learning experiences, and vice versa. For instance, the emotional intersubjectivity (Imai, 2010) that Group 2 attained led to the group members' very positive reflections. In contrast, such negative affect as lack of trust and frustration occurring in the member of Group 3 resulted in their negative perceptions of learning/collaboration experiences, even though their interaction proceeded to develop in a positive way.

Theoretical Contribution

This study has important theoretical contributions. As Davis (1995) posited, "studies are both informed by and inform theory" (p. 436). This study was guided by sociocultural theory, particularly the constructs of ZPD/scaffolding and activity theory. Sociocultural theory provides window into viewing interactions as "developmental processes in flight" (Ohta, 2000, p.540). The findings of the study, on the other hand, provided support for claims in the sociocultural theory. The study revealed that differing competence/skills among group members allows a ZPD to emerge in groups (Donato, 1994), and "learning in the ZPD affects all aspects of the learner—acting, thinking and feeling" (Wells, 1999, p.33). The study also unpacked learning and activity unfolded in different ways driven by different motives (Donato, 1988). It further supported a viewpoint that language not only reflected cognitive development but also established social relationships between participants (Storch, 2001).

This study added to the growing body of literature on collaborative writing from the lens of sociocultural theory. Particularly, it reiterated the role of sociocultural theory in exploring and explaining interactions in collaborative writing activity in the online mode. It provided a fresh point of view on how to explore and explain interactions in wiki-based collaborative writing. The study presented new coding schemes to analyze students' engagements in task communication and text co-construction in the wiki. No previous study on wiki-based collaborative writing has delved into students' task communication and text co-construction processes in the wiki from the perspective of students' relational behaviors, such as mutual engagement, scaffolding, and agency. This study also initially detected the dynamic group interactions and fluid/dimensional scaffolding occurring in wiki-based collaborative writing.

This study further examined factors mediating the wiki-based collaborative writing activity from a sociocultural theory perspective. For the first time, the variation in interactional patterns in wiki small group writing was explained by student motives for participating in the wiki writing project from Leont'ev's (1978, 1981) activity theory and student agency manifested vis-à-vis the learning environment (van Lier, 2008). Also, in this study, emotion in computer-based collaborative writing was originally viewed from a sociocultural theory perspective. According to Swain et al. (2013), many SLA studies involving emotion and motivation examined the correlation between the affective self and language proficiency, and evaluated the actual linguistic outcomes determined by affect and motivation. This study, from a different perspective, provided food for thought on the role of emotion, as socially constructed factor mediating computer-mediated language learning. Departing from defining success as using language accurately, Swain et al (2013) posed a profound question whether success can be feeling good about oneself as a user of the language and as a member of that language community. Based on the findings of this study, I resonated with the viewpoint that success in language learning involves good emotion about oneself and about the contact with others in the language community.

In summary, this study took a fresh look at computer-based L2 learning as ESL students worked on collaborative writing tasks in small groups using wikis. Different from traditional understanding of second language acquisition, this study took a broader conceptualization of acquisition: acquisition as participation, activity, agency (Block, 2003, Lantolf & Thorne, 2006) and emotion (Swain et al., 2013). This study shed theoretical light on computer-based collaborative writing.

Pedagogical Implication

The study has significant pedagogical implications on computer (wiki)-based collaborative writing. The wiki proved to be a great collaboration tool for group projects in EAP classes, due to its distinctive and evolving functions and features. However, the collaborative nature of the technology cannot automatically lead to participants' collaborative approach to group writing tasks. Multiple aspects such as the participants' life trajectory, instructional context, group dynamics, nature of tasks and technology architect interactively mediated students' participation in computer-based writing projects. Based on the research findings of this study, I provide the following suggestions on implementing wiki-based collaborative writing in L2 classrooms.

Creation of the wiki site

First, teachers need to create the wiki site in accordance with writing tasks and students' needs. In this study, students worked on two academic writing tasks: Research Proposal and Annotated Bibliography. Per the course instructor's request that each small group focus on their own writing and cannot review writing from other small groups, I used the newly-established wiki feature "Projects" to create two wiki assignments, define small groups under each writing task, with each small group having its own unique pages, files, and permissions. I set private permissions for each group so students within their own groups conducted their collaborative writing independently from other groups. In this way, group assignments were well-organized in the wiki sites, and members of small groups focused on their joint writing throughout writing processes. However, as discussed in Chapter 7, a few students in this study complained that interactions occurred only within their own small groups, and they would see other groups' performance and perspectives through the wiki site. For instance, Hai hoped that the writing

product from all groups was accessible to him so that he could view and comment on other groups' writing. This viewpoint was echoed in Zorko (2009), which argued that visibility of all the groups' work afforded more learning opportunities, and knowing their group work was accessible to other groups would also motivate the students to do their best. As the wiki is a popular Web 2.0 tool that is aimed to enhance a sense of audience and foster online learning community, the open permission of group pages would be necessary at some stages in the collaborative writing project. Hereupon, a wise way to take wikis to full advantage may be the combination of two rounds of writing activities: collaborative writing within small groups and peer response among small groups. In that case, the permission of small group wiki pages can be set as private when they construct their joint group essay. After small groups complete their drafts, the permission status switches to "being open" so that all the participants will be able to read the co-products completed by other groups and further conduct peer feedback among small groups. More collective/mutual scaffolding is likely to occur in the second round with a wider learning community.

The research result also informed us that instructors/researchers need to take the wiki outlook into consideration while setting up the wiki site. The outlook needs to fit into writing tasks and the user preference. In this study, two participants revealed that they were not satisfied with the wiki outlook. Gao pointed out in the post-task interviewthat he did not like the "Notebook" style. In his opinion, what the group members jointly worked on were academic writing tasks, and he just wanted a simple page on which they could collaborate easily. In the other way, Xia indicated in the post-task interview that wikis are informal tools for her. The "notebook" outlook might added to the informal tone of wiki writing. Therefore, when

integrating wikis into academic writing tasks, the teachers/researchers need to consider an appropriate outlook of the wiki site that well suits writing tasks.

Also, the wiki site is not merely a space for participants to work on collaborative writing tasks, but also a place to learn task-related knowledge. In this study, I created a navigation link named “resources” that contained exemplar annotated bibliography and writing rubrics, etc. These resources proved to be useful for group writing. While scaffolding from group members was missing, scaffolds of these unanimated resources came into play. Ju, in the interview, acclaimed at the resources posted in the wiki, and suggested including more resources such as exemplar research proposals in future wiki projects. The accessibility and scaffolds of resources posted in the wiki were also discussed in Zorko (2009).

Wiki training

Well-structured training session is essential for wiki small group writing activities (Li, 2013; Li & Zhu, 2013). The wiki is not familiar to most students, and training is an indispensable step to ensure that participants will be able to use the wiki fully. Although I conducted a wiki orientation session in this study, a few students indicated difficulty in using some wiki features. Accordingly, I suggest organizing a collaborative writing practice activity in which the participants are given a small writing task, and required to co-produce an essay in small groups, by using all the wiki modules/functions which would be used in subsequent collaborative writing tasks. In this study, the participants were given time in class to practice using wiki “Discussion,” “Edit,” and “Comments.” However, the small groups were not formed at the period of training session, so the participants were not given the chance to practice setting email “Notifications.” As a result, no groups were found to activate “Notification” function to track the changes on their group pages. Actually, “Notification” is an important wiki function that informed users via

the email whenever pages were updated. This function nicely complemented its asynchronous communication nature. In future studies, teachers/researchers need to provide a small collaborative writing task after the groups are assigned, and require the participants to construct the task using all the possible wiki modules/functions. Consequently, students' confusion about the wiki technology will be largely resolved, and wiki collaborative writing can be conducted more smoothly.

Moreover, if the students had the experience of using other Web 2.0 tools for collaborative writing, the teachers/instructors need to compare the wiki with those tools in the wiki training session. For instance, most of the participants in this study had successful experience of using Google docs for collaborative writing in their previous EAP class. I did not realize this until I received their responses to the pre-task questionnaires after the wiki training session. It would have assisted students to use wikis more effectively if I had compared the wiki and Google docs, and highlighted the distinctive features of the wiki, such as asynchronous communication leading to more thoughtful responses and reflection. In this study, as a few students were accustomed to discussing writing tasks simultaneously using Google docs, they tried to have a synchronous use of the asynchronous tool during task negotiation, only to find the problems of synchronous communication in the wiki. While emphasizing the importance of asynchronous discussion/communication via the wiki, the teachers/researchers may consider embedding a chatting application to the wiki site so that students can have synchronous discussions when needed in the wiki learning community. For example, in Wikispaces, Skype can be embedded in the group wiki page by using the "Widget" feature.

Task design

Previous studies (i.e., Lee, 2010; Lund, 2011) have suggested the important role of tasks in collaborative behaviors in the wiki environment. Lund (2008) posited that it is the task, not the technology itself, that may promote the high degree of collaborative exchange. It is, therefore, quite necessary for instructors to carefully design the tasks to be applied in the wiki project. In this study, students did not comment positively on constructing the annotated bibliography in the wiki, because this task required accurate formats, which are difficult to achieve in the wiki page. This observation may partly account for a few students' preference of Google docs to wikis, as Google docs afford writing on Word docs in which editing is easy for students, and the writing can be saved as a Word document. The study revealed that the students in Group 1 and Group 2 did not provide as much scaffolding in Annotated Bibliography that involves a combination of individual work as they did in Research Proposal, a genuine collaborative task. As Ducate at al. (2011) suggested, teachers/researchers need to create demanding tasks that require collaboration, not just cooperation.

As to what collaborative writing tasks to use in class, and how to take the wiki collaboration to full advantage, instructors/researchers may consider the tasks involving not merely texts, but also hyperlinks and pictures. The task of picture book creation used in previous studies (Ducate et al., 2011; Lee & Wang, 2013) is a good example. Also, if one important component of wiki collaborative writing project is language accuracy, instructors may design the tasks that require a specific use of certain grammar points and structures, as reported in Lee (2010).

Group formation

Moreover, teachers/researchers need to consider how to form groups so as to foster scaffolded performance among participants. In this study, the students were assigned into small groups of three or four, and only one participant was found to withdraw toward the end of the wiki project. It may be wise for teachers to limit the group size to three or four, because a group consisting of three or four members has been found to work successfully (Morgan, Allen, Moore, et al, 1987; Dobao, 2012), while larger groups are likely to have one or more "social loafers" or "free riders" (Piezon & Donaldson, 2005). Also, the group composing in terms of language proficiency and L1/cultural background deserves consideration. Although the research findings were not sufficient enough to suggest sound recommendations, this study implied that instructors/researchers may allow the students to form groups by their own and then make necessary adjustments based on students' language proficiency level and L1/cultural background. To avoid students of equally low language proficiency being assigned into small groups where scaffolding seldom occurs, teachers need to consider mixed language proficiency levels when forming groups. Further study may also examine the necessity to mix the L1/cultural background or gender in small groups.

L1 allowed or not in the wiki

In this study, the course instructor did not allow the use of L1 in the wiki site. As a result, the three Chinese female students in Group 3 resorted to other CMC tools to discuss their writing tasks in Chinese outside the Wikispaces site on a few occasions. In some sense, the requirement of using merely the target language for wiki writing assignments decreased group members' participation levels in the wiki. Previous studies of L2 writing processes (e.g., Lally 2000) argued that the use of L1 during the pre-writing and planning stages of L2 writing may be

beneficial in the organization of a composition. Also, L1 encourages a relaxed, cooperating, learning environment (Li, 2013). Therefore, I suggest L1 be allowed in the future wiki-based collaborative writing project.

Assessment and teacher involvement

Assessment is another essential element to consider when implementing wiki writing tasks. In this study, the small group writings in relation to the two wiki tasks, i.e., a research proposal and an annotated bibliography, were assessed according to course writing rubrics. The rubrics for both tasks addressed three categories: content knowledge, task-based skills, and language, with the language accounting for a very small portion of assessment. The scarce language-related episodes (LREs) identified in this study might partly result from less importance attached to as reflected in the rubrics. Also, the rubrics missed the portion of each student's wiki participation. To encourage students' even share of workload and persistent participation in the wiki, I consider it necessary to assign a certain portion of the score to each individual member's wiki contribution. I would echo Lee and Wang's (2013) suggestion that each group share a common score for their joint writing product to emphasize the quality of final work, and meanwhile, the students evaluate their own and their peers' efforts throughout the wiki collaborative writing project. The evaluation results and the quality and quantity of wiki entries from each individual student are together counted into their academic performance.

In addition, this study revealed that students favored teacher involvement in the wiki writing project. The role of teachers needs to be considered, therefore. In this study, the course instructor played a role of facilitator, and provided constructive feedback on small groups' work at appropriate time period to facilitate groups' writing, without interfering peer-peer interaction.

Future research

This study investigated computer-mediated interactions in small groups when ESL graduate students worked on collaborative academic writing tasks, including examining the patterns of interactions, factors mediating the interactions, the influence of interactions on writing products, and the connection between interactions and student reflections. This study supported that Web 2.0 technologies such as wikis provide new windows for researchers into examining how students interacted/collaborated, and individually contributed to and jointly constructed the collaborative writing outcome (Kessler et al., 2012; Li, 2013). This study also suggested the promise of researching small group writing using wikis in the EAP context. Although the study bridged much gap in the literature of online collaborative writing as discussed in Chapter 2, many other aspects await further investigation.

First, it is significant to examine the links between wiki interactions and learning outcome. Informed by sociocultural theory, learning is a socially situated activity; interaction in the interpersonal plane will contribute to internalization in the intrapersonal plane. As Ohta (2000) posited, "what a learner at first accomplishes only in a social setting, she or he will eventually be able to do independently" (p.53). This study revealed that interactions influence the collaborative writing products and students' perceptions of their learning experiences, but the examination of the influence of interactional patterns on individual learning/writing outcome was out of the scope of this study. Further research, therefore, can explore the links between data showing development in individual writing to the episodes of interactions, particularly where ZPD occurred via scaffolded performance, during wiki-based collaborative writing. To make a broader sense, if (collective) scaffolding occurred in wiki collaborative writing activities,

research needs to elucidate whether and how the scaffolding helps enhance future writing and linguistic development in the individual student (Donato, 1994; Li, 2013).

Next, in the EAP/ESP context, it is a critical task to examine how students' interactions in wiki collaborative writing influenced their acquisition of genre knowledge. In this study, I attempted to get the answers through interviews and reflection papers, but few students explicitly stated how their group interactions facilitated their acquisition of genre knowledge, although many reported that they believed wiki collaborative writing helped them to learn genre knowledge in the post-task questionnaire. Future studies may further explore the use of wikis for collaborative writing in ESP instruction, and scrutinize how exactly the wiki platform influences students' learning of genre knowledge and academic writing. In that case, a close examination into linguistic, rhetorical, and discourse features of students' joint wiki essays and the features of individual essays completed after the collaborative writing activity would advance our understanding in this line of inquiry.

Moreover, this study was the first endeavor to explore the factors mediating interactions in wiki collaborative writing from a sociocultural theory perspective. The discussion of motive, agency, emotion, and previous learning experience was far from complete, due to the complicated nature of sociocultural contexts. Accordingly, future studies need to examine more factors such as the institutional context, class ideology, gender, and language proficiency levels which may mediate group interactions in wiki-based collaborative writing.

Regarding interactions during wiki-mediated writing activities, the current body of research has mostly addressed interactions among students, while studies exploring the interaction between students and the teacher are rather scarce. This may result from the research designs of some studies where teachers did not participate in the wiki project; instead, they

played the role of observers/ moderators. In the present study, the course instructor was involved with the two writing tasks in the wiki project. In Task 1, the instructor provided comments/feedback when the small groups completed discussion of their research topic before composing their research proposals. In Task 2, she offered feedback on the first three annotations of each group before the groups continued to work on the remaining six annotations. A few students stated positive attitudes towards teachers' interaction in the interviews, but I did not discuss it in detail, as this study focused on peer-peer interaction rather than teacher-student interaction. Further research study can introduce the teacher's active role in wiki-based collaborative writing activity, and explore how the teacher can scaffold students' learning in the wiki environment. (Li, 2012a)

Furthermore, it is important to note that collaborative writing in online modes is burgeoning due to the development of CMC technologies. In the current body of literature, the wiki is a main online platform for collaborative writing in L2 classrooms. Google docs, also regarded as a good tool for collaborative writing in the L2 context, was discussed in Kessler et al. (2013). The synchronous nature of Google docs will capture more and more L2 instructors' and researchers' attention as they implement a collaborative writing project. Therefore, further research can examine student interactions in collaborative writing tasks using Google docs, and meanwhile explore the affordances of Google docs compared with wikis. Also, more studies need to be conducted that explicate the effects of Web 2.0 tools such as wikis and Google docs in comparison with face-to-face channel in L2 writing classes. With the increasing development of new technologies, the online collaborative writing will become a common activity in a variety of L2 contexts, and the growing research will provide more insights into interactions in computer-mediated collaborative writing and the affordances of technologies for L2 learning.

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APPENDICES

Appendix 1: Course Guide

Course Title: EAP 1851: English for International Students II

Course Description
This course supports the development of academic English for international students, with an emphasis on researching and producing papers and presentations in a variety of academic genres with appropriate academic language use. Prerequisite: EAP 1850 or permission.

Course Objectives
- Students will acquire knowledge and vocabulary related to selected academic content.
- Students will be taught how to analyze genre and discipline variation in research papers and academic presentations.
- Students will be taught how to construct research papers and presentations using a variety of rhetorical structures.
- Students will be taught how to conduct academic research, manage their sources, and produce reference lists and annotations.
- Students will be taught how to paraphrase, summarize, quote, and cite their sources in research papers and academic presentations.
- Students will be taught how to recognize and produce appropriate academic language and register in their research papers and academic presentations.

Student Learning Outcomes
- Students will learn academic content knowledge and vocabulary in three content areas (social media and culture, environmentalism/sustainability, and globalization issues) and will demonstrate understanding of this knowledge by completing in-class activities and discussions, papers, and presentations.
- Students will produce an argument/position paper, a group research project, and an individual research paper & presentation.
- Students will learn how to locate and evaluate academic sources, organize their notes, and will create an annotated bibliography for their individual research paper and a reference list for their group research project.
- Students will incorporate sources into research papers and academic presentations using paraphrasing, summarizing, quoting, and appropriate citation methods.
- Students will incorporate academic language and grammar, discourse transitions, and appropriate register in both their research papers and academic presentations.

Course Assessments
In-class activities and homework – Students will be completing in-class activities and homework assignments throughout the semester to include several reader response writings. Activities and homework are designed to provide students with opportunities to practice and get feedback on their ability to apply learning of the knowledge, skills, and strategies found in the course objectives.

Position paper – Students will write an argument or position paper on a topic from one of the content units, using class sources to support the argument. (Length: 4-5 pages with references).

Team research project – Students work with their assigned team to prepare a 30 minute presentation, 20 minute class discussion, and a bibliography on the research area from one of the content units. A handout with references will be provided for the audience by the team. Teams will submit a research proposal, presentation outline/slides, and handout.

Individual research project – Students will identify an individual research topic, write a draft of a research paper using an appropriate organizational structure for that discipline area, and revise the research paper for a final submission. The individual research project will include a research proposal, annotated bibliography, 8-10 page paper, and a 10-15 minute presentation.

Sample Course Evaluation/Grading

The final grade will be calculated with the following percentages and grading scale:

30% In-class activities and homework
20% Position paper
20% Team Research Project
30% Individual Research Project

A+ 97-100	B+ 87-89.99	C+ 77-79.99	D+ 67-69.99	F below 60
A 93-96.99	B 83-86.99	C 73-76.99	D 63-66.99	
A- 90-92.99	B- 80-82.99	C- 70-72.99	D- 60-62.99	

NOTE: Graduate students completing this course will receive a final course grade of "S" (Satisfactory) or "U" (Unsatisfactory). To receive an "S" for this course, students must complete and submit all required work, earn an overall grade average of 70% or more for the course, attend classes on a regular basis, and attend mandatory meetings with the instructor.

S (Satisfactory) 70% - 100%
U (Unsatisfactory) 0% - 69.9%

Required Materials

- Alfano, C. & O'Brien, A. (2011). *Envision in Depth: Reading, Writing, and Researching Arguments. Second edition*. Boston, MA: Longman. ISBN-13: 978-0205758463

Appendix 2: Team Research Project Guide (in relation to two wiki tasks)

The Research Sketch for the task of research proposal:

Focusing and narrowing your research topic - Complete the following questions in complete sentences, where possible. This will help you to focus and narrow your research topic. It will also help you complete the proposal).
http://wps.ablongman.com/wps/media/objects/10197/10442602/c4EA1_1.pdf

1) Our specific topic is:
2) Our research question or working thesis is (provide complete sentences):
3) The focused aspects of the topic we plan to analyze include:
4) We have tried the following sources and used the following keywords in our searches:
5) These are some specific questions about our research (for our instructor or a librarian):
6) These are the obstacles we think we might encounter in our research:
7) These are the solutions we plan to try to overcome these obstacles:

Research Proposal Guidelines:

1) Give some background on the topic (or, what you know so far). Note: acknowledging how little you know is okay, for it shows you what you still need to research!
2) Identify a series of questions that will inform your research. Explain them in the proposal.
3) Delineate the methods you have already and will use to conduct your research: Library investigation of primary and secondary sources? Interviews with experts on campus or in the community? Field research? Note: Be as specific as possible, providing the names of key sources as the rationale for why these methods will serve your needs.
4) Determine and articulate the purpose or goal of this research: Why are you researching this particular topic? Why do you feel compelled to study this topic further? Whom do you hope to persuade? What is the significance of this work?

Annotated Bibliography Guidelines:

As part of the Team Research Project, you are to produce an annotated bibliography that demonstrates your group's research knowledge of the subject you have chosen. Consider the annotated bibliography as a resource list that the audience/reader could use to find sources for their own research, determine the accuracy of your research, and/or look up additional information on your topic for their own interest.

First, what is an annotation?

Each source listed in an annotated bibliography includes an annotation – essentially a brief description of an article, book, Web site or other type of publication. However, an annotation is more than just a brief summary of a source. An annotation should give enough information to make a reader decide whether to read the complete work. In other words, if the reader were exploring the same topic as you, is this material useful and if so, why?

What is an annotated bibliography?

An annotated bibliography is an organized list of sources - books, articles, and/or electronic - (like a reference list) that address a specific research question or topic. In this case, you are addressing the research question or topic for your project.
It differs from a straightforward bibliography in that each reference is followed by a paragraph length annotation. The kind of information and the amount of information included in each description depends on the audience and purpose that the bibliography is intended to serve.

Depending on the assignment, an annotated bibliography might have different purposes:

Provide a literature review on a particular subject;
Help to formulate a thesis on a subject;
Demonstrate the research you have performed on a particular subject;
Provide examples of major sources of information available on a topic;
Describe items that other researchers may find of interest on a topic

Types of annotated bibliographies –There are two major types of annotated bibliographies: Descriptive or informative and Analytical or critical. This assignment is Descriptive or informative - A descriptive or informative annotated bibliography describes or summarizes a source as does an abstract, it describes why the source is useful for researching a particular topic or question, its distinctive features. In addition, it describes the author's main arguments and conclusions without evaluating what the author says or concludes

Requirements for the Wiki Writing Tasks

Sources:

You must use a minimum of 9-12 sources: 3 sources minimum per team member;
Your sources must be current, i.e., published within the last decade (more recent is better);
You must use at least one source from the textbook;
At least 1/3 of your sources must be academic in nature (a journal article, book, or book chapter) beyond readings have covered in class;
You may use no more than 1/3 general internet sources, which must be determined to be reliable and given instructor approval;
Other non-academic sources such as newspaper and magazine articles and essays read in class can also be used.

Research Proposal:

You will write a detailed research proposal that discusses your topic, planned method, and purpose in depth. Be sure to cover your topic, your hypothesis, your potential sources and problems, your method, timeline, and, most importantly, the significance of the proposed project.

The final proposal will be 2-3 pages, typed.

Annotated Bibliography:

As part of the Team Research Project, your group will produce an annotated bibliography that demonstrates your research knowledge of the subject you have chosen for your research project.

You will be producing ONE annotated bibliography documents with 9 or 12 sources. Each source will have a short, descriptive MLA style annotated bibliography. Each annotation should be approximately 50-100 words long.

Appendix 3: Informed Consent Form

Informed Consent to Participate in Research
Information to Consider Before Taking Part in this Research Study

IRB Study # Pro00009575

You are being asked to take part in a research study. Research studies include only people who choose to take part. This document is called an informed consent form. Please read this information carefully and take your time making your decision. Ask the researcher or study staff to discuss this consent form with you, please ask him/her to explain any words or information you do not clearly understand.

We are asking you to take part in a research study called: "Small Group Interactions in Wiki-based Collaborative Writing in the EAP Context."

The person who is in charge of this research study is Mimi Li. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. Mimi Li is being guided in this research by Dr. Wei Zhu and Dr. Deoksoon Kim.

The research will be conducted in a course entitled EAP1851 at INTO, University of South Florida, Tampa, USA.

Purpose of the study

The purpose of this study is to explore the wiki-based collaborative writing for international college students in an EAP course. This study is expected to highlight how the wiki technology may open up great possibilities for small group academic writing in the EAP context.

Study Procedures

For the course requirement of the team research project, you will be trained how to write collaboratively on the Wikispaces site. You will then work on two course assignments, i.e., research proposal and annotated bibliography, jointly with two/three other group members on the Wikispaces site, which will last two to three weeks. You will also be asked to write a reflection paper once you complete this team research project. If you take part in this research study, you will be asked to complete a 20-minute pre-task questionnaire concerning your background information. After finishing the two assignments, you will be asked to complete a 20-minute post-task questionnaire regarding the use of wikis for group work and collaborative writing. Your archived wiki records and your reflection paper addressing your group dynamics and individual contribution will also be collected. You may be invited to participate in the individual

interviews based on your willingness. The interviews will only be asked of some students. They will be conducted in English and audio-recorded, lasting a total of one hour.

Alternatives

You have the alternative to choose not to participate in this research study.

Benefits

The potential benefits to you are:
You will have an experience in collaborative writing through the CMC technology "Wiki". The interactions and discussion with the peers will help you broaden your writing perspectives and enhance your writing skills/strategies. The use of the Web 2.0 technology will also expose you to the learning dynamics, which will be beneficial to your future learning. Every participant will receive a delicate Chinese handcraft as a reward.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Confidentiality

We must keep your study records as confidential as possible. The recording files will be confidentially kept in the Principal Investigator' personal computer for 5 years before it is deleted, as USF policy requires.
However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator (PI), and the PI's faculty advisor
- The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight, including the Dept. of Health and Human Services can also review all research records.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research staff. You are free to participate in this research or withdraw at any time. Your decision to participate or not to participate will not affect your student status in the EAP course.

Questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, contact Mimi Li at mli3@mail.usf.edu or 201-285-9229.

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Division of Research Integrity and Compliance of the University of South Florida at (813) 974-5638.

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you want to take part, please sign the form, if the following statements are true.
I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

_____ _____
Signature of Person Taking Part in Study Date

_____
Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What procedures will be used.
- What the potential benefits might be.
- What the known risks might be.

_____ _____
Signature of Person Obtaining Informed Consent Date

_____
Printed Name of Person Obtaining Informed Consent

Appendix 4: Questionnaires

A. Pre-task questionnaire survey

Participant ID:_____ Date:_____

The following questionnaire is designed for my dissertation study on wiki-based collaborative writing in the EAP class. I would like to invite you to answer the following questions concerning your background information and your learning experiences. Please provide your information as truly as possible. All the data collected will be highly confidential and will be used for this research only. Thank you very much for your kind help!

1. Gender: ☐ Male ☐ Female
2. Age: _____
3. Home country:_____
4. Academic program/field of study/major: _____.
5. How many years have you studied English? _____.

   What are your goals of learning English?_____

   _____.
6. Your experiences of learning English is ☐very positive; ☐ positive; ☐neutral; ☐negative; ☐very negative.
7. Your English proficiency is ☐low; ☐intermediate-low; ☐ intermediate; ☐intermediate-high; ☐ high.
8. How often do you use the computer? _____ hours per day.

   You use the computer for ☐ study; ☐ fun; ☐social networking (Please choose all that apply.)
9. Are you comfortable using computer programs? ☐ very comfortable; ☐ comfortable;

☐ neutral; ☐uncomfortable; ☐very uncomfortable.

10. Your experience in using wikis: _____.

    Have you worked on a group project using wikis before? If yes, briefly comment on the wiki project(s).

    _____.

11. Your experience in using other Web 2.0 tools (e.g., blogs, twitter, google docs, facebook)_____.

12. Your classroom work style:

    Your attitude toward individual work is ☐very positive; ☐positive; ☐ neutral; ☐negative; ☐ very negative.

    Your attitude toward small group work is ☐ very positive; ☐ positive; ☐neutral; ☐negative;☐ very negative.

13. Are you familiar with your group partners in this wiki project?

    _____.

    For the partner(s) you have met before, how long have you known this person?

    _____.

B. Post-task questionnaire

Participant ID: _____ Date:_____

Wiki Writing Questionnaire

Thank you very much for participating in my dissertation study. The following is a questionnaire concerning your perceptions about the wiki-mediated collaborative writing task. A number of statements are provided. Please carefully read them and honestly indicate the extent to which you agree or disagree with each statement by putting an "X" on the 5-point scale. Thank you again for your time and sincere responses!

The scale: ***1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5= Strongly agree***

		SD	D	N	A	SA
		1	2	3	4	5
1.	I enjoyed using wikis for collaborative writing.	○	○	○	○	○
2.	Wiki is suited for the collaborative writing of research proposal.	○	○	○	○	○
3.	Wiki is suited for the collaborative writing of annotated bibliography.	○	○	○	○	○
4.	My experience with the wiki project is positive.	○	○	○	○	○
5.	I prefer conducting the team research project using wikis to doing through traditional way.	○	○	○	○	○
6.	Wiki-based collaborative writing improves my writing skills.	○	○	○	○	○
7.	Wiki collaborative writing helps me attend to content development.	○	○	○	○	○
8.	Wiki collaborative writing helps me attend to language use.	○	○	○	○	○
9.	Wiki collaborative writing helps me attend to essay structure/organization.	○	○	○	○	○

10.	I was able to use the genre knowledge we learned in class in this wiki project.	◯	◯	◯	◯	◯
11.	I used the group wiki "History" module to view changes before I revised/edited the group writing.	◯	◯	◯	◯	◯
12.	I found the group wiki "Discussion" module useful for communicating tasks with group partners.	◯	◯	◯	◯	◯
13.	I found the group wiki "Comment" module useful for negotiating language with group partners.	◯	◯	◯	◯	◯
14.	I enjoyed the revision process in the wiki.	◯	◯	◯	◯	◯
15.	My degree of involvement varied during the two wiki tasks (research proposal & annotated bibliography).	◯	◯	◯	◯	◯
16.	My group partners and I engaged in communication/discussion using the wiki.	◯	◯	◯	◯	◯
17.	My group partners and I often discussed the group writing outside the wiki (e.g. via face-to-face conversations, emails, online chat, etc).	◯	◯	◯	◯	◯
18.	I was able to make important contributions to the wiki collaborative writing project.	◯	◯	◯	◯	◯
19.	I do not think my group partners valued my contributions.	◯	◯	◯	◯	◯
20.	I valued the insights that my group partners brought to this project.	◯	◯	◯	◯	◯
21.	My group partners and I did not reach consensus on the final products easily.	◯	◯	◯	◯	◯
22.	All the members in my group contributed to this project equally.	◯	◯	◯	◯	◯

II Short-Answers:

1. What is your overall impression of small group writing using wikis?
2. What did you like about writing in small groups using wikis?
3. What did you not like about writing in small groups using wikis?
4. What would you suggest to better the activities of wiki-based small group writing?

Appendix 5: Interviews

The interviews in this study include the post-task interview and follow-up interview with student individuals. Below I present post-task interview protocol (A), and follow-up interview protocol (B).

A. Post-task interview protocol

(1) What do you think of the wiki-based collaborative writing tasks within the team research project?

(2) What do you think is the purpose of the wiki-based collaborative writing tasks? What is your aim in these tasks?

(3) What do you think is your role in the wiki-based collaborative writing tasks?

(4) According to your experience, what are the advantages and disadvantages of working on a team project using wikis compared to the traditional way of doing a team project?

(5) What do you think of your group interactions in the wiki-based collaborative writing tasks? Do you enjoy it? Why or why not?

(6) What do you think influence the ways your group members interacted on the wiki writing tasks?

(7) What suggestions would you have to make the wiki-based collaborative writing tasks more effective for the students in the future EAP classes?

B. Follow-up interview protocol

(1) Based on your experiences of the team research project and the individual research project, can you please share with me to what extent the wiki-based collaborative writing tasks help you develop your individual writing of academic papers, i.e., research proposal and annotated bibliography? Please give some detailed examples.

(2) Please read the brief report about your group interaction/dynamics. Does my interpretation accurately describe the situation/phenomenon? Please correct/comment on the statement(s) that you feel are inappropriate.
(Report omitted)

(3) What additional comments do you have regarding wiki-based collaborative writing tasks?

Appendix 6: Reflection Paper Prompts

(1) How did you feel about working on the wiki-based collaborative writing tasks in small groups?

(2) How did you/your group approach the two wiki writing tasks i.e., research proposal and annotated bibliography?

(3) Did your group divide group tasks and labor? Did each group member play a distinct role? If yes, in which ways?

(4) What do you think influence the ways the group members interacted on the two wiki writing tasks?

(5) What do you think about your contribution to the group work regarding the two wiki writing tasks?

(6) What do you think about your partners' contribution to the group work regarding the two wiki writing tasks?

Appendix 7: Rubrics for Two Wiki Tasks

A. Research Proposal Rubric

Task Related Skills	**Score**	**Comments**
• Gave background on topic • Identified a series of questions to inform research • Delineated the methods that will be used for research	**20**	
• Included key sources • Articulated the purpose/goal of the research • Appropriate length		
Application of Course Content Knowledge	**Score**	**Comments**
• Topic is clearly related to "Crossing Cultures" chapter • Ideas from course unit are incorporated where relevant • Style & tone are appropriate to the genre of proposals	**30**	
Language Use	**Score**	**Comments**
• generally correct use of spelling, grammar, punctuation (evidence of having been proofread) • ideas are comprehensible to reader • use of academic register and appropriate language	**10**	
Score:	**__/60**	**= __%**

B. Annotated Bibliography Rubric

Task Related Skills	**Score**	**Comments**
• The correct number of sources/annotations were included (3 per team member, minimum) • Each annotation was written as paragraph and is approximately 50 words • MLA page layout was used correctly (typed, 12 pt Times New Roman, 1 in margins, no extra spaces, Full MLA heading, title) • Sources are alphabetized & citations appear above annotations	**10**	
• The bibliographic information of each source (the title, author, publisher, date, etc.) was accurately written in MLA style formatting for all entries.	**20**	
Application of Course Content Knowledge	**Score**	**Comments**
• All sources are recent, relevant to the topic, and credible. • The appropriate proportion of academic articles, general periodicals, and web-sources was applied.	**15**	
• Annotation was descriptive in nature and included the following: o The form or genre, the length, depth, and intended audience o A summary of the authors main points and key supporting facts o How it is relevant and useful for the research project / What makes it special	**50*** *Each annotation is worth 50/N. N = minimum required number of annotations)*	
Language Use	**Score**	**Comments**
• generally correct use of spelling, grammar, punctuation (evidence of having been proofread) • Annotations are easily comprehended • use of academic register and appropriate language	**5**	
Score:	**__/100**	**= __%**

Appendix 8: Email Communication Prompt Questions with the Instructor

(1) What do you think of your students' English language proficiency levels and writing skills?

(2)What knowledge and skills are required to complete each of the two wiki writing assignments (i.e., research proposal and annotated bibliography)? Did you attach importance to language use in relation to the two assignments?

(3)What and how did you teach the students regarding research proposal and annotated bibliography in class?

(4) What are your reflections/comments on the wiki project and your students' performance in the wiki collaborative writing?

ABOUT THE AUTHOR

Mimi Li received her Bachelor's degree in English Language and Literature from Sichuan Normal University and Master's degree in Foreign Linguistics and Applied Linguistics from Sichuan University in China. She had taught English as a Foreign Language for almost six years at Sichuan Normal University before coming to the USA. In the States, Mimi initially worked as a research assistant in the Learning Research and Development Center at the University of Pittsburgh, involved with research projects on Chinese as a Foreign Language Acquisition. Afterwards, she pursued her Ph.D. degree in Second Language Acquisition/Instructional Technology at the University of South Florida (USF). She taught pre-service teachers multiple ESOL courses in the past four years. She also conducted administrative duties at the ESOL office, being an ESOL binder specialist in the College of Education, USF.

Mimi's research interests include computer-assisted language learning, second language writing, and English for academic/specific purposes. She has published over ten research articles in peer-refereed academic publications both individually and collaboratively. Her work appears in journals such as *Computer Assisted Language Learning* (CALL), *Computers & Education*, *System, CALL-EJ*, *IALLT Journal*, and *Asian ESP Journal*. Mimi has also presented papers in international and national conferences, including AAAL, TESOL, SSLW and IALLT. She has been reviewing manuscripts for academic journals, such as *Language Learning & Technology* (LLT), *CALL*, and *System*, as well as conference proposals.