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The impact of interactive discussions on L2 Chinese composition writing

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THE IMPACT OF INTERACTIVE DISCUSSIONS ON L2 CHINESE COMPOSITION

WRITING

by

Jianling Liao

An Abstract

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Second Language Acquisition
in the Graduate College of
The University of Iowa

May 2010

Thesis Supervisors: Associate Professor Judith Liskin-Gasparro
                      Adjunct Associate Professor Sue E. K. Otto

ABSTRACT

Grounded in both interactionist and collaborative learning theories, this study empirically investigates the effects of interactive second language (L2) practice on subsequent individual L2 Chinese composition writing. In L2 classrooms, the learning of writing is often treated as an individual act. However, researchers (Hamdaoui, 2006; Susser, 1994; Weissberg, 2006) have argued that writing should be socially situated, and collaborative learning of L2 writing may generate the cognitive skills needed for the development of L2 writing ability. Two forms of interactive discussion were investigated: online text chat communication and face-to-face (FTF) oral discussion.

Six third-year Chinese L2 learners participated in this study. The participants conducted five online-chat and five FTF pair discussion tasks. Upon completing each interactive task, students immediately wrote a 350-character composition independently on the topic that was addressed in the interactive session. Interviews were also conducted individually with the participants to elicit learner perception data.

The primary results indicated that both mediums had benefits for the development of L2 Chinese writing in both cognitive and social dimensions, including improving L2 composition writing fluency and heightened motivation for learning Chinese writing. The collaborative pattern and the transfer process, however, differed between the two mediums. The collaborative pattern in the online chats was relatively equal, whereas the collaborative pattern in the FTF conversations was relatively unequal. The transfer process from the online chats to post-chat composition writing was more of a parallel process, whereas a more selective transfer pattern was seen from the FTF sessions to the post-FTF composition writing. The FTF conversations also stimulated a deeper thinking process and activated higher-level cognitive skills. In summary, the findings in this study support the integration of interactive practice in the learning of L2 Chinese writing.

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THE IMPACT OF INTERACTIVE DISCUSSIONS ON L2 CHINESE COMPOSITION

WRITING

by

Jianling Liao

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Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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To my parents

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure

LIST OF EXAMPLES

Example

CHAPTER I: INTRODUCTION

1.1 Introduction

Interactive and collaborative activities are commonly used in second language (L2) learning, L2 writing being no exception. Such collaborative writing activities, however, are used to different degrees in different L2s. Specifically, the application of collaborative activities is most common in English as a second language (ESL) and English as a foreign language (EFL) writing, typically in the format of peer response on writing drafts (e.g., Berg, 1999; Liu & Hansen, 2002; Lundstrom & Baker, 2009; Mendonca & Johnson, 1994; Miao et al., 2006; Villamil & de Guerrero, l998; Zhu, 2001). In contrast, collaborative writing activities are less commonly used in other L2s, and rarely used in Chinese as a second language (CSL). L2 Chinese writing is commonly deemed an individual act. Interactive and collaborative writing is still a fairly novel teaching strategy in CSL.

Nevertheless, L2 researchers argue that writing is essentially a social act and that it is fundamental to make writing an interactive social activity (Ferris & Hedgcock, 1998; Hamdaoui, 2006; Susser, 1994; Weissberg, 2006). Some researchers even point out that learners may experience unusual concern and difficulty when they write in isolation (Al-Ahmad, 2003). Interactive and collaborative writing, on the other hand, may increase learners' general cognitive skills and interest in writing, and writing skill can also "best be acquired by L2 learners when it is embedded in the dialogue of social interaction" (Weissberg, 2006, p. 2).

In contrast to the collaborative focus on peer response on writing drafts in ESL writing, the aim of this dissertation project is to explore the impact of interactive planning on the acquisition of L2 writing skills. It empirically investigates the effects of L2 collaborative planning on subsequent individual L2 Chinese composition writing. Two forms of interactive discussion are investigated: face-to-face (FTF) oral discussion and

discussion by means of synchronous computer-mediated communication (S–CMC). FTF communication is a common practice in CSL classrooms, used primarily to promote L2 Chinese oral skills. The use of speaking-to-writing activities is restricted in CSL classrooms. In general, the impact of speaking-based activities on L2 writing also remains unclear. Little research has investigated the interplay between L2 speaking and writing skills. The current study investigates the impact of FTF oral discussion on subsequent individual L2 Chinese composition writing.

In the past two decades, computer-mediated communication (CMC) has also become commonplace in the L2 classrooms. There are two types of CMC tools: synchronous (S–CMC; e.g., online chat) and asynchronous (A–CMC; e.g., e-mail, message boards, blogs). Language instructors use CMC tools to facilitate L2 learning mainly in the areas of writing, speaking, communication strategies, and fluency. L2 researchers have conducted numerous studies to investigate the effects of CMC on L2 acquisition. Most L2 CMC studies, however, were conducted within the CMC environment itself, that is, with a focus on performance within the CMC environment per se. There are few empirical studies on the cross-modality transfer of learning, even though enhanced speaking and/or writing skills are often expected outcomes of many usages of L2 CMC activities. Without such studies, the ultimate effect of CMC on language skills outside the CMC environment remains speculative. The current study focuses on one use of CMC tools, text-based S–CMC, because it provides a unique mode for learning L2 writing, that is, real-time interactive writing with an immediate audience. In particular, the study examines the impact of L2 Chinese abilities as acquired in computer chat on subsequent individual L2 composition writing.

Text-based S–CMC and FTF oral discussion are compared in this study because they share both similarities and differences. They are different in that S–CMC is in the written mode, while FTF oral discussion is in the oral mode. The two mediums resemble each other in that both involve multiple learners and are real-time communication. The

discussions both in online chat and in FTF are interactive and collaborative. In this study, interactive discussion is defined as a communicative process where L2 learners exchange and share information or explore each other's ideas. Collaborative discussion is defined as a communication co-constructed by two or more learners. In this study, two learners co-generate ideas and thoughts for an assigned topic in online chat or through FTF oral discussion. This study adopts both interactive and collaborative learning theories to bring a more accurate understanding of the learning process involved in the two interactive mediums and their effects on the subsequent individual composition writing.

In summary, the impact of S–CMC on L2 Chinese writing is explored in the current study because it is a promising and relatively new L2 writing technology and its impact on L2 Chinese writing has not been studied. On the other hand, FTF oral communication is investigated in this study because the impact of interactive oral planning on L2 Chinese composition writing remains unknown. It will provide knowledge regarding the relationship between L2 Chinese speaking and writing skills.

The rest of this chapter is organized into the following sections: (a) statement of the problem, (b) research questions, (c) statement of hypotheses, (d) significance of the study, (e) terminology, and (f) organization of the dissertation.

1.2 Statement of the Problem

The large conversation that this research joins is about the role that interactive and collaborative learning play in the acquisition of L2 writing ability. This study contributes to the conversation by looking into two types of interactive planning: online chat and FTF oral conversation.

As mentioned above, L2 Chinese writing is commonly practiced as an individual act. Pair or group L2 Chinese writing activities have been restricted both pedagogically and theoretically. Interactive and collaborative writing is still a fairly novel teaching strategy in CSL classrooms. On the other hand, the sociocultural aspect of L2 writing has

received increased attention (Hamdaoui, 2006). It is believed that without exception, interactive and collaborative learning may also benefit the acquisition of L2 writing ability.

In recent years S–CMC has emerged as a promising interactive tool for learning L2 writing and has attracted research interest. S–CMC enables learners to communicate in real time by text, voice, or video. The present study investigates the role of Chinese L2 online text chat on subsequent individual L2 Chinese writing.

Online text chat has been described as possessing the characteristics of both oral and written modalities. Online chat resembles FTF communication in that participants in online text chat "continuously take turns to relay their messages, and unlike in other writing tasks (e.g. diary, letter or essay writing), are not given much time to review their written message" (Iwasaki & Oliver, 2003, p. 62). On the other hand, unlike FTF communication, in online text chat learners are engaged in writing in the L2 to communicate. Different from other writing modes, learners in online chat write with the goal of immediate communication. The multi-channel opportunities that online chat provides constitute a unique dynamic for L2 learning. It is even claimed that online chat has given rise to a new type of L2 language that exhibits difference from both spoken and written language (Chun, 1994; Kern, 1995). Darhower (2002) declares that the chat room environment is theoretically interesting because it "combines the textuality of written communication with the real-time interactivity of face-to-face communication" (p. 250).

Until recently, studies have investigated the characteristics of L2 computer chats in the dimensions of the nature of L2 production (Abrams, 2003; Chun, 1994; Warschauer, 1996); negotiation of meaning (Blake, 2000; Blake & Zyzik, 2003; Fernández-García & Martínez Arbelaiz, 2002, 2003; Fidalgo-Eick, 2001; Lee, 2001; Mali, 2007; Pellettieri, 2000; Smith, 2004); communication strategies (Lee, 2001; Mali, 2007; Smith, 2003b); learner participation (Beauvois & Eledge, 1996; Darhower, 2007; Kern, 1995; Smith, 2003a); learning effects (Abrams, 2003; Kelm, 1992; Kern, 1995; Smith,

2004; Warschauer, 1997); affective factors (Beauvois & Eledge, 1996; Chun, 1994; Darhower, 2002, 2007; Kern, 1995); and culture learning (Darhower, 2007). In general, online chats have been found to yield the following benefits: amplifying students' attention to linguistic forms (Warschauer, 1997); improving grammatical accuracy (Kelm, 1992); increasing time on task (Sotillo, 2000); enhancing the amount of L2 production (Abrams, 2003; Kern, 1995); enhancing the complexity of L2 production (Kern, 1995); causing positive effects on students' writing or speaking abilities (Abrams, 2003; Kern, 1995); allowing increased and equitable student participation (Beauvois, 1998; Kelm, 1992; Kern, 1995; Warschauer, 1996, 1997); providing a low-stress environment for L2 practice (Chun, 1994; Warschauer, 1997); and enhancing motivation for language practice (Beauvois & Eledge, 1996; Jurkowitz, 2008; Kelm, 1992; Sotillo, 2000).

The online-chat communication also has drawbacks. First, learners with certain personality types may not perceive S–CMC as effective as other learners, for example for learners with the personality type of INTP (refers to characteristics of introversion, intuition, thinking, perception) in Beauvois and Eledge's (1996) study. Second, not all communications during S–CMC can be attended to due to the need to catch up with the ongoing flow of communication (Jurkowitz, 2008), thus making the communication less interactive.

Therefore, we know a lot about the kinds of learning taking place in online chat; but we do not know much about the ways such learning may affect L2 ability in general. Most L2 S–CMC research has been situated within the chat environment itself, although some studies have also compared the learning effects of computer chats with those of traditional non-electronic L2 learning environments (Abrams, 2003; Bearden, 2001; Fernández-García & Martínez Arbelaiz, 2003; Jones et al., 2006; Sotillo, 2000). Minimal research has been dedicated to exploring the impact of interactive L2 planning in computer chat on general L2 ability, despite the fact that such learning is often the objective of using computer chat. To warrant pedagogical initiatives to incorporate

technological tools, such as online chat, it is meaningful to conduct studies to understand what language abilities a learner transfers from computer chat to their overall L2 ability. One aspect of the current study is to explore the impact of interactive and collaborative learning that occurred in online chat on subsequent individual L2 Chinese composition writing.

On the other hand, FTF communication has been widely used in CSL classrooms for improving L2 Chinese aural and oral abilities, but has rarely been employed for the benefit of learning L2 Chinese writing. L2 Chinese learners are often not given the opportunity to articulate their ideas orally before they write. The tacit assumption underlying this pedagogical phenomenon is that writing needs to be promoted by practice in writing. It is argued that the distancing of speaking from writing can be partially attributed to the eagerness to promote L2 writing as a legitimate field of study and practice in its own right (Matsuda, 2001), and it may also be the legacy of a large body of research on the distance between orality and literacy (e.g., Halliday, 1989).

In contrast to those views, the social nature of L2 writing has been defended. Weissberg (2006) asserts that social interaction plays a fundamental role in the development of writing skill. Hyland (2002) points out that:

> The effectiveness of a written text does not depend on removing readers [interlocutors] from it, but on correctly identifying an audience and employing the communicative conventions to which they are most likely to respond. (p. 52)

Furthermore, according to sociocultural theory, higher-order mental functioning occurs first in the social interaction and the resulted internalized talk, or inner speech, plays a fundamental role in the development of L2 skills (Vygotsky, 1978, 1986), L2 writing being no exception. Roebuck's (2000) study found that Spanish L2 writers made greater use of inner speech as the difficulty of the writing tasks increased. Social interaction also provides learners with scaffolding within their zone of proximal development (ZPD) (Vygotsky, 1978). Thus, FTF oral planning is likely to be an

effective medium for cultivating the cognitive and social skills that are necessary to generate good writing. Up to this point, little research can be found that provides information on the relationship between L2 Chinese speaking and writing skills. Thus, the other focus of this study is to look at how FTF oral planning preceding writing may affect L2 Chinese writing performance.

In addition to the lack of knowledge about the relationship between L2 Chinese writing and interactive learning, writing skill is also a weak link in L2 Chinese teaching and research. In CSL classrooms, writing has received the least attention as compared to speaking, reading and listening skills, especially at the early stage of L2 Chinese learning. It is common that the Chinese language curriculum in American universities generally does not have a significant focus on writing until students' third year of Chinese study. Frequently, learning to write in Chinese is left to students themselves, a learning task for after-class hours. The assumption for these situations is that learning L2 Chinese writing entails relatively high Chinese language proficiency; teaching writing also tends to consume a lot of class time. In recent years, however, there have been calls for change. The need for Chinese learners with proficient and balanced Chinese language skills is growing, primarily because Chinese has been treated as a critical and strategic foreign language in the United States for various reasons. As a result, it has become crucial to devote increased research effort to teaching and learning L2 Chinese writing.

The present dissertation aims to investigate the impact of an interactive and collaborative approach to learning Chinese L2 writing, because it provides advantages that are unavailable in traditional learning of L2 Chinese writing (Al-Ahmad, 2003). Learning collaboratively and individually are both common in L2 learning. Collaborative activities are believed to bring benefits to the development of individual L2 ability. The bond between collaborative and individual learning of L2 Chinese writing, however, is weak in both theory and practice. The goal of this research is to examine the effect of interactive and collaborative planning as it occurs in computer chat or FTF

communication on subsequent individual-based Chinese L2 composition writing. In other words, can composition writing performance be facilitated as a result of participating in online chat or FTF oral communication? If yes, in what respect? Furthermore, does the impact of S–CMC differ from that of FTF oral communication? If so, in what aspects?

The current study is designed primarily as a qualitative study. In this qualitative study, the effects of online text chat or FTF oral communication on individual L2 Chinese writing are investigated by asking participants to perform a series of in-class online text chat or FTF oral discussions and a subsequent individual writing task on the same topic, following each interactive session. This research design allows for an exploration of what language knowledge learners transfer from an interactive session to their individual writing. In other words, how much can the development of L2 Chinese writing benefit from interactive planning? To address these issues, four research questions are posed. A discussion of the questions follows in the next section.

1.3 Research Questions

The present study begins with the question of whether either online text chat or FTF oral conversation, or both, have an effect on subsequent individual-based L2 Chinese composition writing. If so, in what respects, and how does the impact differ between the two different types of interaction? Thus, the study includes one independent variable: mode of interactive discussion. L2 Chinese learners' perceptions of using computer chat medium or FTF conversation for learning Chinese writing are also explored. The following four research questions guide this study:

1. Does interactive L2 Chinese online text chat have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?
2. Does interactive L2 Chinese face-to-face oral conversation have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?

3. Do interactive online chat and face-to-face oral conversation differ in their impact on subsequent individual L2 Chinese writing?

4. How do L2 Chinese learners perceive the use of the online interactive chat medium or face-to-face oral conversation as means of planning for writing compositions in Chinese?

In the next section, hypotheses related to the four research questions are presented in light of the pertinent literature.

1.4 Statement of Hypotheses

Research question 1: Does interactive L2 Chinese online text chat have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?

According to the previous literature, L2 online chat, when engaged in over a long period of time, may promote grammatical accuracy, enhance the amount and complexity of L2 production, improve L2 writing and speaking abilities, allow increased student participation, provide a low-stress environment for L2 practice, and facilitate motivation for L2 learning. But the current study differs from previous chat studies in that, instead of looking at the L2 performance within the chat environment, it looks at what knowledge an L2 Chinese learner can carry forward from an online chat session to his or her L2 Chinese writing afterwards. Because of this difference, the learning effects identified by previous studies may not directly apply to the design of this study, but will serve as reference points.

The current study takes place over a relatively short 10-week period. For this reason, certain learning effects may be hard to observe, especially for those that entail a longer time to acquire, such as fluency and accuracy. Therefore, among the benefits cited by previous studies (see section 1.2 above), the following positive effects are expected as a result of participating in online chat: enhanced amount and complexity of L2

production, and improved L2 writing abilities in other aspects over the 10 weeks of the study.

Research question 2: Does interactive L2 Chinese face-to-face oral conversation have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?

No former research has been found that investigates the effect of FTF oral planning on L2 Chinese composition writing. Nevertheless, given that FTF interaction has been shown by extensive research to be beneficial for L2 development, it is expected that FTF oral interaction will also help improve L2 Chinese composition writing in various aspects. Yet due to the lack of pertinent research, the specific impacts cannot be postulated at this point.

Research question 3: Do interactive online chat and face-to-face oral conversation differ in their impact on subsequent individual L2 Chinese writing?

Because online text chat and FTF communication differ fundamentally in modality, their impacts on subsequent L2 Chinese writing are therefore hypothesized to be different. The paucity of pertinent research evidence does not support a more specific hypothesis. But previous studies did report certain advantages of online chat over FTF conversation environment in certain dimensions; for instance, more opportunities for learner attention to form (Warschauer, 1997), a less stressful environment for L2 practice (Chun, 1994), and a more equitable and non-threatening forum for L2 discussions (Warschauer, 1996, 1997). These benefits, however, have been found only within the online-chat environment. Whether these benefits can extend beyond online chat to general L2 ability still remains a question for investigation. On the other hand, Jones et al.'s (2006) findings contradict the assumption that online chat allows opportunities for focus on form. The study demonstrated that the L2 online peer-tutoring writing sessions focused more on global writing concerns such as content and process, but little on

sentence structure. By contrast, the FTF L2 writing tutoring sessions focused more on grammar, vocabulary, and style.

Research question 4: How do L2 Chinese learners perceive the use of the online interactive chat medium or face-to-face oral conversation as means of planning for writing compositions in Chinese?

According to interactive and collaborative learning theories, pair-based L2 learning activities may enhance grammatical accuracy as well as fluency and complexity of L2 production. They may also provide a less threatening environment for L2 practice, allow scaffolding between peers, and facilitate motivation for L2 learning. Positive perceptions of using interactive tools to learn L2 Chinese writing are therefore expected from the Chinese L2 learners in this study. Due to the lack of relevant research, more specific hypotheses related to each respective medium will not be made at this point.

To summarize, the following hypotheses are given to the four research questions in this study.

1. As a result of the practice in online chat, there will be enhanced performance in Chinese L2 learners' individual-based composition writing on the aspects of enhanced amount and complexity of L2 production, and improved L2 writing ability in other aspects over the 10 weeks of the study.

2. As a result of the oral practice in FTF conversation, there will be enhanced performance in Chinese L2 learners' individual-based composition writing in a variety of aspects. No specific aspects will be hypothesized due to the lack of previous research.

3. The online-chat practice and FTF conversation will have different impacts on Chinese L2 learners' individual writing performance.

4. Chinese L2 learners will perceive both the computer chat medium and FTF conversation as beneficial tools for learning Chinese writing, likely in the aspects of enhancing grammatical accuracy, fluency and complexity of L2

production, providing a low-stress environment for L2 practice, and facilitating a

higher motivation for L2 learning.

1.5 Significance of the Study

This study helps to bring knowledge to three areas: second language acquisition

(SLA) writing research with respect to Chinese composition writing, L2 writing

pedagogy, and CSL. The following three reasons make undertaking the present research a

meaningful endeavor.

First, this study contributes to SLA writing research with respect to Chinese

composition writing. Among the four language skills—listening, speaking, reading, and

writing—the writing skill is the least studied (Matsuda et al., 2003). Harklau (2002)

asserts that L2 writing research was marginalized as the "result of the historical

development of the field of second language acquisition" (p. 332). The limited L2 writing

research was also distributed unevenly among languages. Reichelt's (1999) study stated

that the study of L2 writing in the United States was devoted mostly to ESL writing.

Research on CSL writing is particularly scarce. A review of several primary Chinese L2

research journals (e.g., *Journal of the Chinese Language Teachers Association*, *Hanyu

xuexi*, *Yuyan yanjiu*) since the 2000s found few publications on Chinese L2 writing. The

scarcity of L2 Chinese writing research might be due to the fact that the Chinese writing

system presents difficulty for L2 Chinese learners (He, 1999) and currently receives less

attention. Given the challenge that writing in Chinese presents for speakers of Western

languages and the fact that writing skill has been a weak focus in many Chinese programs

in the United States, effective research on Chinese L2 writing may inform scholars in

SLA regarding how Chinese writing skill may be acquired. This study provides empirical

evidence of effects of two types of interactive discussion on subsequent Chinese

composition writing. Such information also allows a deeper understanding of the

interplay between the acquisitions of different L2 skills.

Second, this study also provides useful knowledge for L2 writing pedagogy. The current research investigates the effects of using two types of interactive planning to assist the learning of Chinese L2 writing. One aspect of it examines the relationship between online interactive planning and individual composition writing. The other aspect of it explores the relationship between interactive L2 oral planning and individual composition writing. Such knowledge may provide implications for language teachers when structuring the instructional activities in the L2 classrooms.

Third, the current study also makes a contribution to CSL. The Chinese language is one of the fastest growing foreign languages in the world as a result of the Chinese economic boom and increased economic and cultural exchanges between China and other countries. The present research on CSL, however, is still far from well developed in both quality and quantity when compared to the research on the more commonly taught languages in the United States. In recent years, computer-assisted language learning (CALL) has also been widely adopted, and it has been proven beneficial for L2 learning in many aspects. However, there has rarely been empirical research on computer-assisted L2 Chinese learning. Such studies, nevertheless, are critical to expand knowledge and ensure continued healthy growth in Chinese language study in the United States. The current research is an effort to meet this need.

1.6 Terminology

Below is a list of terms used in the present study, presented alphabetically.

Chinese sentence: A string of words with a word at the beginning and a period at the end. It often expresses a complete idea.

Collaborative discussion: Communication co-constructed by two or more L2 learners. In this study, it takes place in online chat or FTF environment.

Composition: A writing format in which learners are provided with a prompt and are asked to write one piece of continuous text within limited time frame. Learners can respond in different ways.

Computer chat: Written communications between two or more people in a networked environment that takes place in real time. Messages are typed, sent, and received instantaneously (Smith, 2005; Tudini, 2002). In this research, other terms including online chat, networked exchange, and synchronous computer-mediated communication (S–CMC) are also used alternatively to refer to the same medium.

Dyad: Two L2 learners form a pair to communicate with each other. In this study, the communication occurs in online chat or FTF environment.

Free-discussion task: Learners are provided with a topic and are asked to conduct discussions about the topic within a limited time frame. Learners can discuss in different ways.

Individual-based writing: One person takes responsibility to produce a written document.

Interactive discussion: A communication process where L2 learners exchange and share information or explore each other's ideas.

Noticing: Paying attention to a linguistic feature from input or output, via L2 learners' short-term memory (Batstone, 1996; Qi & Lapkin, 2001; Schmidt, 1990).

Stimulus: Input or output that arouses a learner's attention (Qi & Lapkin, 2001; Schmidt, 1990).

1.7 Organization of the Dissertation

The current chapter, i.e. Chapter I introduces the theoretical and pedagogical background that stimulates this study. The main issues to be dealt with in the study, contributions of the study, research questions asked, and hypotheses to the research

questions are presented. A glossary of terms is also given. This dissertation also consists of four other chapters.

Chapter II is the literature review chapter which is centered on the focus areas of the research. First, the L2 Chinese writing constructs are explored. Second, characteristics of L2 composition writing and the role of planning are discussed. Third, it illustrates the two theories of interactive and collaborative learning, which point out the benefits of learning L2 writing in an interactive and collaborative learning environment. Forth, based on previous literature, it summarizes the characteristics of two learning environments from the perspectives of interactive and collaborative learning theories: L2 computer chat and FTF conversation environment. Studies that deal with the impacts of online chat or FTF oral conversation on L2 ability are also explored. Gaps in research are identified that lead to the current study. The task type and proficiency level variables in relation to the performance in L2 online chat or FTF conversation environment are also discussed.

Chapter III explains the methodology of the research. It outlines the context, research design decisions, data collection procedure, and data analysis techniques of the study. The following aspects of the research design are elaborated: participants, tasks, topics, data collection procedure, and data analysis techniques.

Chapter IV presents the research findings. This chapter presents the analysis of the data collected and corresponding results. The results are organized into sections based on the research questions.

In Chapter V, the research findings are interpreted within the theoretical frameworks of interactive and collaborative learning. The discussion is organized around the four research questions. Implications for research and teaching practice are also pointed out.

CHAPTER II: LITERATURE REVIEW

2.1 Introduction

Chapter I laid out the main facets of the study: current second language (L2) Chinese writing research and pedagogy, the synchronous computer-mediated communication (S–CMC) L2 environment, and the face-to-face (FTF) oral conversation environment. The theoretical framework that underpins the current research was also presented, that is, collaborative and interactive learning theories. Gaps in current second language acquisition (SLA) research were identified to explain the necessity of the current study.

Chapter II more fully presents the context of this study, and delves more deeply into the above issues by reviewing pertinent literature. This chapter is aimed at obtaining an up-to-date understanding of using an interactive and collaborative approach to learn L2 writing, in particular, through computer chat or FTF oral discussion. This chapter reviews literature in four main areas: L2 writing constructs; L2 composition writing and the role of planning; interactive and collaborative L2 learning; learning environments in online chat and FTF conversation. The discussions are sequenced from a general discussion of L2 writing constructs and relevant L2 learning theories, to more specific discussions of the main facets of the design in this study. The chapter is organized as follows: (a) L2 writing constructs, (b) L2 composition writing, (c) role of planning in L2 writing, (d) theoretical framework: interactive and collaborative L2 learning, (e) learning environments in L2 online chat, (f) learning environments in FTF conversation, (g) variables contributing to interactive performance: task type and proficiency level, and (h) summary of literature review.

2.2 L2 Writing Constructs

To investigate the effect of interactive discussions on the development of L2 writing ability, it is first essential to understand what L2 writing ability generally consists

of. According to L2 writing research, the building blocks of L2 writing proficiency generally include linguistic accuracy, linguistic complexity, content quality, textual structure, and fluency (Chiang, 1999; Cohen & Brooks-Carson, 2001; Hawkey & Barker, 2004; Housen & Kuiken, 2009; IGCSE ESL, 2005; Ortega, 2003; Paulus, 1999; Polio, 1997; Way et al., 2000). These aspects are regarded as important indices of L2 writing development. Previous literature defined these aspects at the lexical, syntactic, and holistic levels. The aspect of linguistic accuracy concerns features of spelling and lexical or syntactic accuracy (Polio, 1997). Linguistic complexity looks at lexical and syntactic variety and diversity (Housen & Kuiken, 2009). In particular, it examines whether there is a good range of lexical items or expressions used in the writing, and whether there is a good range of grammatical features, including tenses, structures, modals, and auxiliaries, and degree of sophistication of such grammatical features in the writing (IGCSE ESL, 2005; Ortega, 2003). The aspect of content quality focuses on content clarity and complexity (Hawkey & Barker, 2004). The feature of textual structure examines the coherence and cohesiveness of writing, and the appropriateness of the use of cohesive devices (Cameron et al., 1995). Fluency refers to the speed and ease learner may write in L2 (Housen & Kuiken, 2009).

It is evident that existing L2 writing constructs are mainly based on the western alphabetical languages, and some of the features do not apply to the Chinese language. For example, the feature of spelling in relation to linguistic accuracy and grammatical features of tense and conjugation in relation to linguistic complexity, do not apply to Chinese, which has a character-based writing system. Previous studies also used the measures of subordination, mean length of clause, number of finite and non-finite clauses per T-unit, and dependent clauses per clause to index the linguistic complexity of L2 writing (Abrams, 2003; Foster & Skehan, 1999; Ortega, 2003; Way et al., 2000). These methods of measuring L2 writing complexity are also not suitable for the Chinese language, which does not contain rich features of subordination, finite, or non-finite

clause. Thus, the definitions of L2 writing constructs will need to be adjusted for the Chinese language to match its specific characteristics, which will be elaborated in the Methodology chapter. In this study, the form of writing examined is individual composition writing, which will be discussed in the next section.

2.3 L2 Composition Writing

Composition is a writing format in which learners are provided with a prompt and are asked to write one piece of continuous text (Weigle, 2002). Learners can respond to the prompt in different ways. Composition writing can have a time limit or have no time limit. Timed essays are used widely in L2 writing assessment for administrative and instructional purposes (Barkaoui, 2008). Essays are also frequently used in L2 research as elicitation techniques to investigate L2 writing proficiency and development (Hamp-Lyons, 2003; Weigle, 2002).

This study investigates timed Chinese composition writing. Learners were given a limited time frame of 30 minutes to compose. Dictionaries or other reference materials were not allowed. Thus, the composition writing task in this study is a type of spontaneous writing, which does not allow sufficient time for revision, rewriting, or clarification and elaboration (Breiner-Sanders et al., 2001).

2.4 Role of Planning in L2 Writing

During the process of writing, an L2 learner often needs to go through a planning stage, whether on lexical or grammatical items to be used, ideas, or structure. It is a conscious behavior used by L2 writers (Shin, 2008). The planning may be in individual or collaborative format. From the perspective of sociocultural theory, collaborative planning may function as a scaffolding tool for L2 students who struggle in developing their writing tasks. Collaborative planning may also allow an important resource for helping L2 writers to generate inner speech when it is in the oral discussion format

(Weissberg, 2006). Planning in writing has been implemented in task-based writing pedagogy to promote the learning of L2 writing skills (Shin, 2008).

Shin's (2008) study investigated the impact of collaborative planning on L2 writing performance. The study compared the effects of individual and collaborative planning on L2 English writing with regard to proficiency level and task type among Korean English learners. The study found that learners who engaged in the collaborative planning achieved significantly higher scores in all the analytic features in the expository writing task. The learners' written performance was affected by the planning mode and proficiency level, but to only a small degree by the nature of task type.

Both interactive and collaborative L2 learning theories are adopted in this study to understand the impact of interactive and collaborative planning on subsequent individual L2 Chinese composition writing. The two theories are presented in the next section.

2.5 Theoretical Framework: Interactive and Collaborative L2 Learning

As stated above, the view of L2 writing as a solitary act has restricted the use of pair and group writing tasks in the Chinese as a second language (CSL) classrooms. Nevertheless, researchers argue that writing is essentially a social phenomenon and pair or group learning may generate positive outcomes for L2 writing (Susser, 1994; Weissberg, 2006). Grounded in both interactionist and collaborative learning theories, the current study attempts to understand what effects interactive and collaborative learning in online text chat or FTF conversation may bring to subsequent individual L2 Chinese writing. What follows next is an explanation of the essence of interactionist theory.

2.5.1 Interactive L2 Learning Theory

As a cognitive learning theory, interactionist learning highlights the potential of L2 improvement by exposing learners to comprehensible input, output, and negotiation of meaning. When learners engage in interaction in the L2, they negotiate meaning to make

their messages more understandable to their interlocutors. Negotiation often occurs when there is some recognized asymmetry between message transmission and reception and when both participants are willing to attempt a resolution of the difficulty (Gass, 1997). L2 learners negotiate meaning through language reformulations, such as simplifications, elaborations, confirmation and comprehension checks, clarification requests, and recasts (Long, 1996). These modifications are deemed necessary by some SLA theories, as negative evidence needed for learners' interlanguage development (Blake, 2000; Gass, 1997; Long, 1996; Long & Robinson, 1998). Negotiation of meaning not only enhances learners' comprehension of meaning, but also forces learners to manipulate the form of their language to enhance its comprehensibility (Swain, 1985; Swain & Lapkin, 1995); that is, "to attend to language as object during a generally meaning-oriented activity" (Long, 1996, p. 429). The twofold potential of negotiation of meaning affords it a powerful role in L2 learning.

The process of negotiation of meaning helps to increase input comprehensibility. It is generally accepted in SLA that comprehensible input plays a crucial role in L2 development (Fernández-García & Martínez Arbelaiz, 2002; Krashen, 1985; Pica et al., 1993). Long (1996) also states that "language acquisition entails not just linguistic input but *comprehensible* linguistic input" (p. 414, italics in the original). Krashen (1985) asserts that input is mostly effective for L2 acquisition when it is i +1; that is, the input contains language at the next level of competence. Such input is comprehensible to L2 learner on one hand; on the other hand, learner also needs to exert effort to process the input, which results in a learning process.

In recent years, the importance of output has attracted much attention among SLA researchers. Swain (1995) asserts that output provides three functions: noticing, hypothesis testing, and reflection. Using the language may "force learners to move from semantic processing to syntactic processing" (Swain, 1985, p. 249). Language production also prompts learners to stretch their current interlanguage to fill in the gaps, "enabling

them to control and internalize linguistic knowledge" (Swain, 1995, p. 126). When learners attempt production, they use linguistic knowledge that is available from their interlanguage to test their hypotheses about the organization of the language system. Swain (1995, 1998) further argues that the noticing and triggering function of output can prompt L2 learners to recognize consciously some of their linguistic problems.

Effective output also needs to be bidirectional. Swain (2000) puts forth the idea that output should also incorporate collaborative dialogue. When two learners are engaged in social interaction, they are given the opportunity to see for themselves what gaps are present in their L2 linguistic knowledge. Students are more likely to notice or pay attention to the deficiencies in their developing L2, and thus can attend to these problematic areas more efficiently. Such noticing is an essential first step in the eventual integration of target-like forms into the interlanguage system. This, in turn, can facilitate the process of language acquisition. It is likely that interactive writing practice, such as online chat may prompt learners to better notice the weak points in their writing and improve them accordingly. The next sub-section presents the principles of collaborative L2 learning theory.

2.5.2 Collaborative L2 Learning Theory

The collaborative learning approach emanates from the social constructivist epistemology, which claims that human development is inherently a socially situated activity (Vygotsky, 1978). In a collaborative learning setting, interaction is situated in a social context; that is, a social interaction. The L2 learner is treated as a partner in learning and co-constructs knowledge with other learners.

According to the social constructivist epistemology, learners should be encouraged to participate in activities that foster interaction and co-construction of knowledge (Storch, 2001, 2005). In collaborative learning, L2 learners work in pairs or groups and co-create the language instead of working independently (Freeman, 1992). L2

learners pool their linguistic resources and ideas and also provide feedback to each other, thus composing more linguistically complex and grammatically accurate texts (Storch 2002, 2005). Storch (2005) compared the texts produced by pairs of English as a second language (ESL) students with those produced by individual learners. She reported that the pairs produced shorter but better texts in terms of grammatical accuracy, linguistic complexity, organization, and task fulfillment (p. 168). In such peer interaction, scaffolding may also occur; that is, the more able learner provides the less able one with the appropriate level of assistance to enhance the less-able student's current knowledge level (Donato, 1994; Ellis, 2000; Storch, 2002, 2005). Both online text chat and FTF oral conversation provide a rich collaborative learning environment in allowing group brainstorming, exploring ideas, and the later formal processing of information (Haynes, 1998; Warschauer, 1999).

2.5.3 Comparison between Interactive and Collaborative L2 Learning Theories

It is evident that both interactive and collaborative perspectives look at the process in which L2 learners interact with each other and how that process affects L2 acquisition (Foster & Ohta, 2005). Nevertheless, the two theories are situated in two different dimensions: one in the relationship between individual learner and the language (i.e., input/output produced by all participating learners); the other in the relationship between individual learner and other participating learners. In spite of the different learning dimensions, Ellis (2000) argues that both interactionist and collaborative theories can inform L2 classrooms. Interactionist theory may provide important guidance for designing the specifics of classroom activities, for example selecting tasks within appropriate language level, creating opportunities to allow learners to use the new grammatical patterns, and so on. Collaborative theory on the other hand can provide useful knowledge for administrating the activities and managing classroom dynamics.

Using both interactionist and collaborative theories allows a more accurate understanding of the relationship between pair/group learning and individual learning growth (Abrams, 2003).

Simply put, interactionist theory allows an observation of what L2 learners learn from the language to which they are exposed, whether the language is from themselves or other learners. Collaborative theory is conducive to understanding what an L2 learner learns from the social environment consisting of the learner himself or herself and other learners. The learning taking place may be language-related or beyond. The next two sections elaborate on the learning environments in online chat and FTF conversation from both interactionist and collaborative learning theoretical perspectives.

2.6 Learning Environments in L2 Online Chat

Both interactionist and sociocultural theories have been employed in L2 S–CMC studies to bring understanding of L2 online chat from different angles. For instance, the proponents of interactionist theory examined the effectiveness of computer chat as an environment for interaction, input, output, and negotiation of meaning (Blake, 2000; Blake & Zyzik, 2003; Fernández-García & Martínez Arbelaiz, 2002; Jurkowitz, 2008; Lee, 2001; Mali, 2007; Oskoz, 2003; Pellettieri, 2000). On the other side, Warschauer (1997) adopted the sociocultural perspective to investigate the role of online communication in the collaborative language learning environment. Beauvois (1997b) and Darhower (2002) examined the functions of computer chat as mediator of language learning from the viewpoint of sociocultural theory.

The following subsections first describe the nature of computer chat in promoting negotiation of meaning and comprehensible input and output from an interactionist view. These are followed by a discussion of L2 online-chat environment from the perspective of collaborative learning theory.

2.6.1 Negotiation of Meaning: An Interactionist

Perspective

As a comparatively new medium, computer chat offers a new means of interaction for L2 learners. Text chat is unique in that it allows writing-based real-time negotiation of meaning. Unlike the usual time pressure existing in oral communication, in online text chat learners can negotiate for meaning at their own pace due to the reduced immediacy of communication flow (Fernández-García & Martínez Arbelaiz, 2002), thus allowing them to benefit more fully from the interaction.

A variety of studies have investigated the effectiveness of online chat in allowing opportunities for negotiation of meaning (Blake, 2000; Blake & Zyzik, 2003; Fernández-García & Martínez Arbelaiz, 2002, 2003; Fidalgo-Eick, 2001; Iwasaki & Oliver, 2003; Jurkowitz, 2008; Lee, 2001; Mali, 2007; Oskoz, 2003; Pellettieri, 2000; Smith, 2004). Findings suggest that L2 learners in online chat continue to negotiate for meaning in ways similar to those found in oral discussion (Blake, 2000; Fernández-García & Martínez Arbelaiz, 2003; Iwasaki & Oliver, 2003; Oskoz, 2003; Pellettieri, 2000). The online chat is able to "provide many of the alleged benefits ascribed to the Interaction Hypothesis, but with greatly increased possibilities for access outside of the classroom environment" (Blake, 2000, p. 132). Other studies, however, presented contradictory results. Bearden (2001) found that negotiation of meaning was minimal when the fourth-semester university Spanish learners in her study engaged in a jigsaw task in online chat (as cited in Oskoz, 2003). She explained that it was because the learners were concerned with accomplishing the task and did not pay much attention to incorrect usages on the part of their interlocutor as long as they understood the meaning.

The contradictory findings suggest that online chat does not automatically generate opportunities for meaning negotiation. The potential for negotiation of meaning may depend on factors such as task type, instructions given for the task, amount of time on task, participants' proficiency levels, or other factors. To fully understand the potential

of online chat to promote meaning negotiation, studies need to be conducted within a diversity of contexts, including a variety of task types, learners at different proficiency levels, and different online-chat settings.

Effort has also been allocated to identify the main triggers of meaning negotiation in the online-chat environment. Lexical deficiency was identified as the main trigger of negotiation of meaning in L2 networked exchanges. Blake (2000) invited 50 university-level Spanish learners to participate in three types of tasks in a synchronous chat environment, including information-gap task, jigsaw task, and decision-making task. He reported that vocabulary triggered the majority of negotiation of meaning events, in contrast to a paucity of syntactic negotiations. Fidalgo-Eick (2001) compared the interaction patterns of university intermediate Spanish learners in two types of tasks, a jigsaw task and a decision-making task, in an online-chat program. She found that lexical problem was the most significant trigger type for the instances of negotiation of meaning identified in her study. Pellettieri (2000) examined negotiation of meaning among 20 university intermediate-level Spanish students in five online-chat tasks. She discovered that non-understanding of lexical items was the most frequent trigger of the negotiation instances. In Tudini's (2003) study, a group of intermediate Italian learners interacted with native Italian speakers in dyads on a web-based Italian native speaker chat program. The learners negotiated for meaning and modified their interlanguage when engaged in open-ended conversation tasks with unfamiliar interlocutors, with lexical and structural difficulties triggering most negotiations.

These findings convey an identical message that lexical difficulties caused the most communication problems in the online-chat environment. Few instances of form-initiated negotiation of meaning were found. Researchers inferred that the possible reason for the paucity of form-initiated meaning negotiation in online chat could be that the lexical items carried heavier meaning load, whereas miscommunications caused by grammatical items were few and correspondingly did not call for much negotiation. On

the other hand the L2 participants possibly did not have a strong syntactic base to help or correct peers (Blake, 2000; p. 133). To obtain a more accurate understanding of the ability of L2 online chat for grammatical development, data need to be collected in different L2s, at different L2 proficiency levels, in a variety of task design and online-chat settings. Previous studies also failed to disclose whether there was a link between the phenomenon of negotiation for meaning in online chat and L2 learners' general learning outcome. For example, did the occurrence of lexicon-based meaning negotiations in online chat result in L2 learners' improved vocabulary knowledge? The next sub-section illustrates another important principle of interactionist theory.

2.6.2 Comprehensible Input and Output: An
Interactionist Perspective

Computer chat may provide an ideal medium for students to benefit from comprehensible input because the written nature of the discourse allows greater opportunity to attend to and reflect on the communication's form and content (Warschauer & Kern, 2000). In computer chat, L2 learners are exposed to the written input produced by their interlocutors. Because of the need to generate new output in response to the new input they receive, learners need to process the input appropriately, with the minimal goal of understanding the meaning. When the meaning processing is not cognitively demanding, it is also likely that learners' attention may be directed to the form; that is, focus on form, which is hypothesized to be beneficial for L2 learners' grammatical development (Krashen, 1985; Long & Robinson, 1998). Although this advantage is conceptually widely stated, there is little attempt in empirical research to reveal the mechanism involved in the input processing in online chat. It is consequently unclear in online chat what linguistic aspects L2 learners are able to attend to and in what manner, and what the corresponding outcome may be for L2 grammatical ability. On the other hand, Jones et al.'s (2006) findings contradicted the assumption that online chat

allows opportunities for focus on form. The study demonstrated that the L2 online peer-tutoring writing sessions focused more on global writing concerns such as content and process, but little on sentence structure. In contrast, the FTF L2 writing tutoring sessions focused more on grammar, vocabulary, and style. Whether online chat can provide an effective environment for grammar-focused learning still needs further exploration.

Online chat also supplies an environment for generating a unique type of written output. Compared to the ordinary writing modes, writing in online chat has "unleashed the interactive power of text-based communication" (Warschauer, 1997, p. 472). Each message that learners compose is transmitted to their interlocutors and is read by them. In a sense, learners' output is constantly under evaluation by their interlocutors because this output in turn serves as the input for their interlocutors to elicit further communication. Because learners are engaged in meaningful interactions, they need to integrate meaning and accurate form to be comprehensible, thus pay attention to form, because the accuracy of linguistic forms can directly affect the comprehensibility of the message. When there is a communication problem, learners are notified by receiving implicit or explicit feedback from their interlocutors and need to reformulate their language to solve their communication problems. This allows substantial opportunities for noticing and reflection, thus enhancing learners' awareness of their interlanguage. VanPatten (2004) asserts that the immediacy of juxtaposing one's output with another's input may trigger noticing that is useful for making form-meaning connections (p. 13). It may also prompt learners to attend to their interlocutors' language and discover new knowledge that may be integrated into their interlanguage system. Unlike oral communication, where learners need to retain the information in their working memory, in online chat the textual messages will appear and stay on the screen. The visual aspect of viewing interactions on a computer screen allows learners more opportunities to process the text and benefit more fully from the learning process (Abrams, 2003). In online chat, "the opportunities to freeze a single frame and focus attention on it are greatly expanded" (Warschauer, 1997,

p. 472). The next subsection presents the online-chat environment from the collaborative learning perspective.

2.6.3 The Social Setting in L2 Online-Chat
Environments: A Collaborative Learning Perspective

The computer chat learning environment is deemed positive when considered from the collaborative learning perspective. The online chat presents a social setting that can play a positive role in L2 learning. Sirc (1995) argues that synchronous conferencing allows developing writers to practice writing within a social setting. Kern (1995) asserts that online chat offers "a powerful means of restructuring classroom dynamics and a novel context for social use of language" (p. 470).

Similarly, Sotillo (2000) declares that synchronous discussion exemplifies the ideal environment for language learning because it promotes "the intense social interaction and textual meaning construction and negotiation deemed crucial for human learning and development of higher-order cognitive functions" (p. 102). In online chat, learners also exchange, share and co-construct ideas (Honeycutt, 2001). The input and output in online chat are constructed collectively in a social context rather than in isolation (Lee, 2002, p. 17). L2 writing is "no longer perceived only in its personal dimension, but as an interactive process which may be mediated successfully by computers and groups of learners" (Ciekanski & Chanier, 2008, p. 163).

Online chat also provides a more egalitarian learning environment than traditional L2 learning environments. Selfe (1992) asserts that online environments "offer different conversational power structures" than those of traditional settings (p. 149). Jones et al.'s (2006) study also compared the interactional dynamics between peer-tutor and client at a university writing center in the mediums of FTF and online chat sessions. The study revealed that FTF interactions involved more hierarchal encounters in which tutors

dominated the discourse, whereas online interactions were more equal, with clients controlling the discourse more.

Computer chat may also function as the mediator of language learning. Darhower (2002) treated computer chat as a cultural tool and claimed that computer chats "not only facilitate the achievement of a given task but can also alter the entire process and outcome of task performance" (p. 273).

The characteristics of language production in L2 online chat were also researched through comparisons with other types of language production as well as in its own right.

2.6.4 The Characteristics of Language Production in L2
Online Chat

Previous research has argued that the language produced in text-based L2 computer chat includes characteristics of both oral and written modalities. According to Beauvois (1998), the slowed down communicative process in computer chat seems to fill the gap between oral and written communication. This communication can act as a bridge between speech and writing (Chun, 1994), and it provides a forum where human communication takes a text-based form (Lotherington & Xu, 2004; Warschauer, 1997).

A variety of studies have compared language production in computer chat to that of oral interaction. Researchers have observed that online chat resembles oral communication in terms of the functions performed and the structure and style of the language. For example, Sotillo (2000) discovered that the quantity and types of discourse functions in online chats were similar to those found in FTF conversations. Some researchers call the language generated in online chats "semi-speech" (Fraser, 1999, as cited in Abrams, 2003) or "prespeech" (Abrams, 2003). However, the language produced in computer chats often contains a higher level of lexical and syntactic complexity than oral language and is more similar to written texts in this regard (Warschauer, 1996).

In contradiction to the above findings, other studies found that the messages students produced in S–CMC were short and contained simple sentence structures (Collot & Belmore, 1996; Jurkowitz, 2008; Sotillo, 2000). It was explained that the need to keep up with the pace and flow of messages in S–CMC resulted in fragmented discourse (Jurkowitz, 2008; Kelm, 1992; Sotillo, 2000). Kern's (1995) study also noted a higher proportion of simple sentences over complex ones in networked discussions when compared to oral discussions. He explained that this finding was due to the fact that short, simple messages tended to elicit more responses than long complex ones. He further cautioned that the aspects of formal accuracy, stylistic improvement and global coherence were goals not well served by networked exchanges (p. 470).

Despite the conflicting findings above, some SLA researchers have criticized the approach of comparing the language produced in online chat with that of written or spoken language. Oskoz (2003) argues that "researchers in S–CMC, however, have not emphasized the uniqueness of S–CMC language" (p. 5). Collot and Belmore (1996) also assert this point of view:

> Messages delivered electronically are not 'spoken' nor 'written' in the conversational sense of these words. There is an easy interaction of participants and alternation of topics typical of some varieties of spoken English. However, they cannot be strictly labeled as spoken messages since the participants neither see nor hear each other. Nor can they be considered strictly written since many of them are composed directly on-line, thereby ruling out the use of planning and editing strategies which are at the disposal of even the most informal writer. (p. 14)

According to these researchers, rather than evaluate the language production in online chat by comparing it with the spoken or written language, it is more meaningful to study its characteristics in its own right. This approach will yield a more holistic and accurate understanding of the language skills that can be facilitated by the online-chat environment, and can help us to understand its relationship with conventional language skills, such as speaking, writing, reading, and listening. The current study attempts to understand the relationship between the L2 Chinese chatting skill and L2 Chinese writing

ability. Among the previous online-chat studies, some have researched the impact of online-chat practice on general L2 abilities.

2.6.5 Research on Impact of Online Chat on L2 Skills

The purpose of most current usages of computer chat in L2 learning is to facilitate general L2 skills, in particular, speaking and writing skills (Beauvois, 1997a; Sotillo, 2000). For example, Chun (1994) argues that allowing L2 learners to practice in S–CMC can benefit L2 speaking development. To warrant pedagogical initiatives that involve usage of online chat, an outcome-oriented approach needs to be strengthened in the current SLA research. In other words, can a learner's overall L2 ability be enhanced as a result of participating in networked exchanges? If so, how? Studies on this issue remain rare.

Three studies have made attempts at examining the impact of CMC language practice on speech. Beauvois (1997b) found that students who participated in CMC outperformed the non-CMC students in oral exams with respect to pronunciation, grammatical accuracy, lexical choice and accuracy, and content. Abrams (2003) compared the oral performance of three groups of intermediate German learners (a control group, an S–CMC group, and an A–CMC group) in discussion tasks. In her study she used three oral discussion tasks. Her evaluation criteria included the number of idea units and words, lexical richness and diversity, and syntactic complexity. The findings suggested that students who participated in S–CMC produced the largest quantity of language in the oral discussion tasks. However, the quality of the language produced by the S–CMC group in the oral discussion tasks was not significantly different from the A–CMC group or the control group. Payne and Ross's (2005) study looked into the interaction between individual differences in working memory and language output in online chat and their relation to L2 oral proficiency development among 24 third-semester Spanish learners. The online-chat transcripts were analyzed for occurrences of

repetition and relexicalization, as well as the average number of words, utterances, and turns per chat session. The findings reported a connection between individual differences in working memory and chat room language use, and they provided evidence that online chat had the potential to affect the development of L2 oral proficiency, especially for L2 learners with low working memory.

Another language skill closely associated with language practice in online chat is L2 writing. Yates (1996) states that the language in CMC is slightly closer to written than the spoken modalities, and that CMC discourse possesses lexical density similar to that associated with writing. As a comparatively new medium in L2 learning, synchronous discussion can serve as a novel writing environment for L2 learners where they can make a fresh start at the learning of L2 writing. No study to date, however, has examined the impact of L2 online text chat on L2 Chinese learners' general writing ability. More studies are needed to explore in what aspects the practice in computer chat can improve L2 writing proficiency. The next section addresses the learning environment in FTF conversation.

2.7 Learning Environments in L2 FTF Conversation

This section explores the learning environment in FTF conversation from the perspectives of interactionist and collaborative learning theories. Because FTF conversation environment resembles online-chat environment in many of their interactive and collaborative features, the similar characteristics are not repeated in this section. Instead, this section focuses on the unique features of FTF conversation that are relevant to this study. The characteristics of language production in FTF conversation are also discussed. Research on the impact of FTF conversation on L2 writing is also examined.

2.7.1 Negotiation of Meaning and Comprehensible
Input and Output: An Interactionist Perspective

FTF conversation has been extensively studied in L2 research. To make the discussion more relevant, the contents are organized around a comparison of FTF L2 oral environment to online-chat L2 learning environment.

Similar to online chat, FTF conversation brings interaction into the L2 classrooms. It provides opportunities for oral-based comprehensible input, bidirectional comprehensible output, and negotiation of meaning. Fernández-García and Martínez Arbelaiz's (2003) study also revealed that the non-native and native speakers group negotiated in the FTF oral conversations significantly more than in the online written mode. Different from online chat, in FTF conversation L2 learners are not able to visually see their conversation contents, and thus need to retain all the information in their working memory. The time pressure existing in FTF communication is also greater because learners need to constantly maintain the conversation flow. The lack of visual aspect and fast communication pace in FTF conversation may affect the noticing and focus on form mechanisms that can be potentially applied by L2 learners.

2.7.2 The Social Setting in L2 FTF Environments: A
Collaborative Learning Perspective

FTF conversation also promotes language practice within a social setting. When engaged in FTF discussion, L2 learners exchange, share, and co-construct language and contents through social interaction. The more able learner also provides scaffolding to the less able one and empowers the other within a zone of proximal development (ZPD). FTF oral conversation may also provide important opportunities for L2 learners to generate inner speech that is crucial for the development of L2 skills. In this study, an FTF discussion may help learners to generate useful inner speech than can be utilized in the subsequent individual composition writing. Other benefits that a collaborative discussion

such as FTF conversation may have for L2 learning were already elaborated in the earlier online-chat section in this chapter, and thus are not repeated here. One aspect in which FTF conversation differs from online-chat discussion lies in that in FTF conversation the interaction between participants can sometimes display a hierarchal structure, in contrast to the relatively egalitarian interaction between learners in online-chat discussion. For instance, Jones et al.'s (2006) study found that in the FTF writing tutoring sessions tutors dominated the discourse much more than client students.

Thus, the FTF conversation environment is viewed as beneficial for L2 learning from the perspectives of both interactionist and collaborative learning theories.

2.7.3 The Characteristics of Language Production in L2
FTF Conversation

The language production in FTF conversations may display different language styles, depending on task type and purpose. Therefore, it is difficult to give one definition about the characteristics of language production in FTF conversations. To make the discussion more relevant, the characteristics of language production in FTF conversation is compared to those in online chat.

Although oral conversations tend to have diversified language styles, a common interpretation given to the language production in FTF conversation is that it often contains simple sentences and relatively high level of redundancy, repetition, and fragments. L2 researchers also argued that the language generated in FTF conversation is less formal than that in online chat (Abrams, 2003; Warschauer, 1996). Other L2 researchers, however, disagreed. Kern's (1995) study found that the oral discussion was more formal than the online-chat discussion in terms of the language style, and higher proportion of simple sentences was used in the online-chat discussion. The current study examines the FTF oral conversations between L2 Chinese learners based on free-discussion topics.

2.7.4 Research on Impact of FTF Conversation on L2

Writing

As a traditional medium, in CSL classrooms FTF communication is widely used to practice Chinese oral and listening skills, but rarely employed for the benefits it may provide for L2 Chinese writing. L2 Chinese speaking and writing skills are usually considered separate. Speaking-to-writing activities in CSL classrooms are not common. In general, the connection between L2 speaking and writing skills is not much studied. Nevertheless, SLA researchers (Hyland, 2002; Weissberg, 2006) argue that speaking can be used as an effective medium for developing the cognitive and social qualities needed for L2 writing. Raimes (1992) argues that talking about a subject can be an essential part of the writing process. Whether FTF conversation can be used as a viable tool to support learning of L2 Chinese writing still requires further exploration.

Jones et al. (2006) investigated the effect of L2 speaking-based activities on L2 writing ability. As cited earlier, Jones et al. (2006) compared the effects between FTF and online-chat writing tutoring sessions at a university writing center. The study found that the FTF L2 writing tutoring sessions focused more on grammar, vocabulary, and style, whereas the L2 online peer-tutoring writing sessions focused more on global writing concerns such as content and process, but little on sentence structure. This finding contradicted the assumption that online chat allows more opportunities for focus on form. The study also looked at the interactional dynamics between the two mediums and found that the FTF writing tutoring sessions involved more hierarchal encounters in which the tutors dominated the discourse, whereas online interactions were more egalitarian, with the clients controlling the discourse more. More studies are needed to understand further about the mechanisms involved in speaking-to-writing activities to provide guidance for L2 classroom design.

Learner performance in the interactive sessions also interacts with variables of task type and proficiency level, which are illustrated in the next two sections.

2.8 Variables Contributing to Interactive Performance

2.8.1 Variable of Task Type

The nature of learner performance in online chat or FTF conversation also interacts with variables such as task type. The interactive effects are similar between online chat and FTF conversation, and because computer chat is a comparatively new medium, the variable of task type is discussed primarily in the context of computer chat.

Foster and Skehan (1996) argue that students' performance is related to task type. The types of tasks presented to learners can affect the way they collaborate, negotiate for meaning, use their L2, and so forth (Pellettieri, 2000; Pica et al., 1993; Smith, 2003a). It is crucial that researchers "specify the situational features, or characteristics of the tasks they design as to facilitate the investigation of the degree to which variations in performance are in fact an artifact of the task characteristics" (Bachman & Cohen, 1998, p. 18).

One feature that distinguishes different task types is whether the task is a one-way or a two-way exchange of information. For example, narration and free-discussion tasks often tend to involve one-way exchanges of information, whereas jigsaw and information-gap tasks tend to be two-way exchanges of information. Long (1983) asserts that communication involving a two-way exchange of information will provide more opportunities for negotiation of meaning and comprehensible input than one-way communication. Studies have shown that the greater the opportunity for the information to be bidirectional, the more learners will negotiate for meaning (Blake, 2000; Pica et al., 1993). Bidirectional tasks are also more effective in facilitating a learner's focus on form without losing the predominant focus on meaning.

In recent studies on L2 computer chat, jigsaw, information-gap, decision-making and free-discussion tasks are the four main task types that have been investigated. Other types of tasks, such as problem-solving and narration still remain under explored. Jigsaw

and information-gap tasks have been found to lead the way in promoting more meaning negotiations in the online-chat environment. This confirms Long's (1983) assertion that two-way information exchange tasks will provide more opportunities for negotiation of meaning and comprehensible input. In a jigsaw activity, learners work in dyads to solve communicative tasks. Each partner has half of the information, and both must share their respective parts equally to complete the task (Blake, 2000). Blake's (2000) study, as cited earlier, discovered that as with FTF interaction, negotiations in computer chat were also task sensitive and that the jigsaw task accounted for most of the negotiations. The information-gap activity, in contrast, did not result in much negotiation in his study. Oskoz's (2003) study compared the use of jigsaw and free-discussion tasks in computer chat. The aspects she compared included quantity, syntactic complexity, accuracy, and negotiation of meaning. Her findings suggested that learners who engaged in the jigsaw task produced significantly more accurate language and negotiation of meaning than when they performed the free-discussion task. However, the free-discussion task produced significantly more language than the jigsaw task. Findings, however, are not consistent across studies. Fidalgo-Eick's (2001) study, as discussed in an earlier section, did not find that the jigsaw task resulted in more negotiation of meaning than the decision-making task among the ten chat dyads of university-level Spanish learners. She further argued that the amount of negotiation related more to the specific characteristics of a task rather than to task type. The current study uses the free-discussion task. The rationale for the use of free-discussion task in this study is presented in Chapter III.

2.8.2 Variable of Proficiency Level

Proficiency level is another factor that may modulate L2 learners' performance because different L2 abilities may result in variations in interactive patterns, learning focus, and attention. Again, the interactive effects are similar between online chat and

FTF conversation, and because computer chat is a comparatively new medium, the variable of proficiency level is discussed in the context of computer chat.

The majority of network-based studies used intermediate and advanced L2 learners as participants (Beauvois, 1997b; Blake, 2000; Darhower, 2002; Jurkowitz, 2008; Kelm, 1992; Lee, 2001, 2002; Mali, 2007; Pellettieri, 2000; Smith, 2003b; Sotillo, 2000; Warschauer, 1996). Few studies have used beginning-level L2 learners (Chun, 1994). Leeser (2004) asserts that more proficient learners are able to process grammatical form better than less proficient learners because learners with a higher proficiency level will have a greater ease with meaning processing. Little research has been devoted to studying how the learning effect of L2 computer chat may be contingent on the variable of proficiency level. Few studies looked into the proficiency level variable in traditional L2 classrooms. Williams (1999, 2001) compared the number and types of language-related episodes produced by ESL learners at different proficiency levels in traditional L2 classrooms, and found that the frequency of attention to form increased as the proficiency level increased. Leeser (2004) reported a similar finding among L2 Spanish learners in a content-based course in a traditional classroom.

Further investigation of the proficiency level factor will provide useful knowledge in informing the design of L2 S–CMC or traditional FTF conversation activities at different stages of L2 learning. It will also allow a window through which to observe L2 learners' interlanguage at different developmental stages. The current study looks at how the third-year Chinese L2 learners interact with the two mediums of computer chat and FTF conversation respectively.

2.9 Summary of Literature Review

In CSL practice, writing is commonly treated as a solitary act. Although proven to be beneficial, pair or group learning is deemed less pertinent to L2 Chinese writing. The adoption of S–CMC in L2 practice allows a new opportunity for an interactive way of

learning to write. In L2 practice, S–CMC is often used as a middle step with the ultimate goal of improving L2 learners' general speaking and writing abilities. Computer chat has been claimed to promote negotiation of meaning and comprehensible input and output, which are deemed critical conditions for L2 interlanguage development. Researchers also state that the L2 produced in computer chat falls between the oral and written modalities. Other researchers, however, argue that the language generated in S–CMC needs to be treated as a unique modality. Learner performance in computer chat, however, is not constant. It interacts with variables such as type of task and L2 proficiency level. The impact of S–CMC on general L2 ability, however, is rarely researched. As a growing foreign language in the United States, S–CMC study in CSL is barely found.

The practice of using FTF conversation for learning L2 writing is not common in CSL classrooms. Research investigating the effect of L2 Chinese speaking on writing is correspondingly scarce. Researchers however posit the view that speaking may help cultivate the cognitive and social skills that lead to good writing skills.

The current literature review chapter provides an overview of the literature in relation to effects of L2 computer chat or FTF environment on L2 learning. The theoretical framework of interactive and collaborative learning is also illustrated. The nature of the L2 writing skill and L2 writing constructs are also explored. The next chapter is the Methodology chapter, which describes in detail the research design, data collection procedure, and data analysis for the study. The following aspects of research methodology are explained in details: participants, tasks, topics, data collection procedure, and data analysis techniques.

CHAPTER III: METHODOLOGY

Chapter II laid out the theoretical basis for the study. The L2 writing constructs were presented. The characteristics of second language (L2) online chat and face-to-face (FTF) oral conversation as L2 learning environments were explored. The manner in which the learning in online chat or FTF conversation interacted with the two variables of task type and proficiency level was also discussed.

The current chapter specifies details about research design in the study. Data collection procedure, data preparation, and analysis are also discussed. The chapter is organized into the following six sections: (a) introduction, (b) site and recruitment, (c) chatting software, (d) research design, (e) data analysis, and (f) pilot study.

3.1 Introduction

This study investigates the impact of dyadic discussions in Chinese on subsequent individual L2 Chinese writing performance. Two interactive mediums are explored: text-based synchronous computer-mediated communication (S–CMC) and FTF oral communication. Text-based S–CMC provides a unique mode for learning L2 writing; that is, real-time interactive writing. Most previous L2 S–CMC studies were conducted within the S–CMC environment itself. Few have investigated its impact on general L2 ability which, however, is the expected outcome of many L2 S–CMC activities. Without such study, the ultimate effect of L2 S–CMC remains speculative. The other medium examined in the study is FTF conversation. In Chinese as a second language (CSL) classrooms, FTF conversation is used primarily to promote Chinese oral ability. This study examines whether and how FTF oral conversation may also benefit L2 Chinese learners' writing ability. The impacts of the two types of interactive discussions were also compared. Chinese L2 learners' perceptions of using computer chat or FTF oral conversation for learning Chinese writing were also qualitatively examined.

3.2 Site and Recruitment

This study was conducted in a study-abroad program in China during the spring 2009 semester. The study center offered classes and co-curricular activities for undergraduate students from a consortium of American colleges and universities. The Chinese program at the study center integrated the online chat and FTF conversation tasks that were used in this study as part of their Chinese language curriculum.

All students in the third-year accelerated Chinese class were invited to participate in this study. The researcher herself was not the instructor for the class. Students were asked to sign an informed consent form (See Appendix A) upon agreeing to participate in the study. Background information about the participants is presented in the research design section.

To avoid that the two chatting partners in each dyad would see each other while engaged in their online-chat sessions, the sessions took place in two different rooms at the study center. Both rooms had wireless coverage and students brought their own laptops for the chat sessions.

The FTF oral conversation sessions took place in students' regular Chinese language classroom, which was located in a different building. The classroom was equipped with a writing board, a projector, and a computer.

3.3 Chatting Software

During the online-chat sessions, MSN messenger was used as the chat interface. MSN messenger allows users to type and edit messages in the box at the bottom of the interface. When a student finishes a message, he or she clicks the Send button, and the message appears in the main box at the top. Below is a screen capture of a typical MSN messenger interface (see Figure 1). The chat logs were saved automatically in a designated folder in the computer.

Figure 1. Screenshot of MSN messenger interface
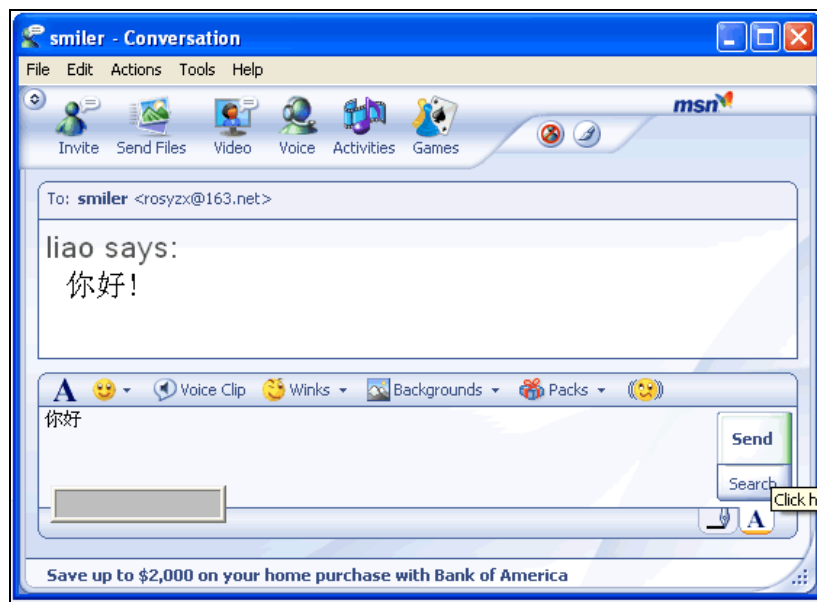
The Microsoft Word system was used as the Chinese word processor to allow students to input Chinese characters. The participants used the Chinese Romanization system; that is, *pinyin*, as the input method for Chinese characters (see Figure 2). The participants in the current study received training during their first year of Chinese study on how to use pinyin to type Chinese characters. Using pinyin to type Chinese characters was also a frequent component of students' out-of-class assignments. Thus, participants in the current study were familiar with the use of pinyin to type Chinese characters on a computer. Because the Chinese language has a large number of homophones, when a student types a word in pinyin, he or she receives a list of homophone characters and then needs to identify the desired one from the list. Therefore, to obtain a correct character, a student will not only need to know the sound of the character, but also its form, as shown in Figure 2 below.

Figure 2. Input method for Chinese characters
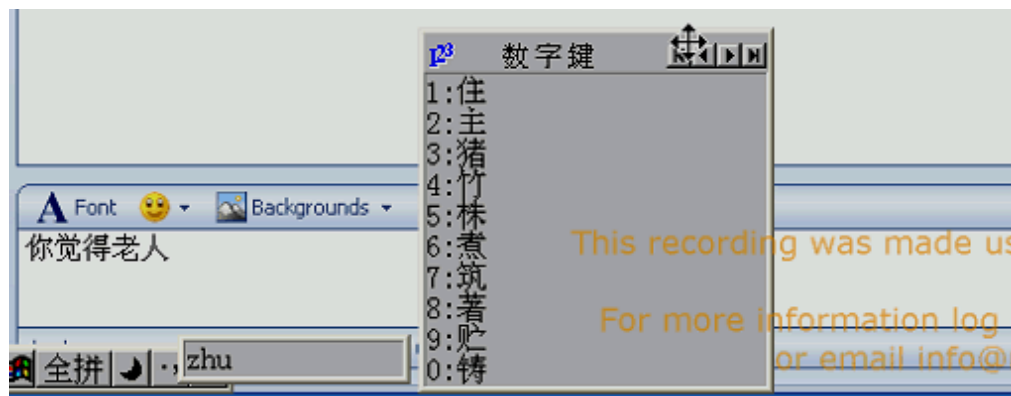
3.4 Research Design

In the following subsections, the data collection procedure is first introduced and the sources of data are identified. Each aspect of the study design is then illustrated in order: the participants, pairing of participants, type of task, amount of time allowed for tasks, type of instructions, and length of study. Relevant literature that has affected the design of the study is cited.

3.4.1 Data Collection Procedure

To address the research questions in the study—the impact of L2 online chat or FTF communication on individual L2 Chinese writing and how the impact differs between the two interactive mediums—six third-year Chinese L2 learners at a study-abroad program in China participated in this study. The participants were asked to fill out a demographic questionnaire. All participants completed five online-chat and five FTF free-discussion tasks, for a total of ten task sessions. The ten task sessions were administered in ten consecutive weeks during the spring 2009 semester, and online-chat and FTF sessions alternated.

In the spring 2009 semester, each Thursday morning, the students had their first Chinese class session from 10:00 am to 10:50 am. This class session was a review class, where the instructor helped students review the newly learned content during the week. During each Thursday's second hour class session, which took place from 11:00 am to 11:50 am, the third-year Chinese students were first asked to participate in a 20-minute pair discussion task either via online chat or through FTF conversation (See Appendices C–L). The online-chat and FTF sessions alternated; namely, an online-chat session took place on the Thursday of week 1, an FTF conversation session took place on the Thursday of week 2, an online-chat session took place on the Thursday of week 3, an FTF conversation session took place on the Thursday of week 4, and so on, for a total of 10 weeks.

The topics of the discussion tasks were based on chapters learned during the week. During the online-chat sessions, the students formed into pairs. Each student wrote on a separate computer using Microsoft Chinese word processor to type characters. The chat logs were saved on the computer for later transcription. During the FTF sessions, students also formed into dyads and students were asked to converse for 20 minutes in Chinese based on an assigned topic. The FTF oral conversations were audio-taped as mp3 files for later transcription and analysis.

To observe the impact of interactions on individual writing, upon completing each interactive task (i.e., online chat or FTF oral conversation), students immediately wrote a 350-character composition independently during the same class session on the topic that was addressed in the interactive session, which was designated as the post-interaction writing task (See Appendices C–L). Students were asked to write the composition by hand on a piece of paper provided by their Chinese teacher. A 30-minute timeframe was allowed for each post-interaction writing task. Before students submitted their compositions, each student was asked to proofread his or her writing to ensure that the writing represented the student's intended best version and that errors were not careless

mistakes that could be easily self-corrected. Students were not allowed to use any reference materials in any of the sessions. Students' writings following the interactive discussions were compared between the two interactive types. Differences were analyzed to see how they linked to the type of interactive medium.

Data also came from interview sessions and questionnaires. In the seventh week of the research period, a 30-minute semi-structured interview (See Appendix M) was conducted individually with each participant to discuss his or her perceptions of using online chat or FTF oral conversation to practice writing. There were two focuses for the interviews. First, each student was provided with the transcripts of the recent online chat and FTF interactive session in which he or she had participated—the sixth week's FTF transcript and seventh week's online-chat transcript—as well as the composition he or she wrote following either interactive session. The researcher then invited each participant to talk about their learning process of moving from the interactive session to individual writing. Second, the interviewees also discussed their perceptions about using online chat or FTF conversation as tools for learning Chinese L2 writing. In preparation for interviews, the researcher read the interviewees' interactive and written scripts beforehand and made notes on places that needed to elicit further explanation or clarification during the interview. The interviews were conducted in English and were audio recorded for transcription and analysis.

At the end of the spring 2009 semester, after all the task sessions had been completed, the participants were asked again to complete a questionnaire (See Appendix N) discussing their perceptions of using online chat or FTF conversation to prepare for L2 writing.

Simply put, the dataset in the current study was derived from three sources: transcripts of the paired online-chat and FTF interactions, post-interaction compositions, and transcripts of the demographic questionnaires, interviews and final perception

questionnaires. Both quantitative and qualitative analyses were conducted and data were
triangulated. The entire data collection procedure is summarized in Table 3.1.

Table 3.1 Data collection procedure

Timeline	Data collection activities
Thursday of week 1 Task session 1	20-minue in-class online-chat session 30-minute post-chat composition writing
Thursday of week 2 Task session 2	20-minute in-class FTF session 30-minute post-FTF composition writing
Thursday of week 3 Task session 3	20-minute in-class online-chat session 30-minute post-chat composition writing
Thursday of week 4 Task session 4	20-minute in-class FTF session 30-minute post-FTF composition writing
Thursday of week 5 Task session 5	20-minute in-class online-chat session 30-minute post-chat composition writing
Thursday of week 6 Task session 6	20-minute in-class FTF session 30-minute post-FTF composition writing
Thursday of week 7 Task session 7	20-minute in-class online-chat session 30-minute post-chat composition writing
Monday and Tuesday of Week 7	Interview all participants about their perceptions of using online chat or FTF conversation to practice writing
Thursday of week 8 Task session 8	20-minute in-class FTF session 30-minute post-FTF composition writing
Thursday of week 9 Task session 9	20-minute in-class online-chat session 30-minute post-chat composition writing
Thursday of week 10 Task session 10	20-minute in-class FTF session 30-minute post-FTF composition writing
Friday of week 10	End-of-study questionnaire, asking about learner perceptions of using online chat or FTF conversation to practice writing

The data collected in this study is summarized in Table 3.2.

Table 3.2 Summary of the total data collected in this study

Data type	Data collected
Online-chat transcripts	5 chat sessions *3 dyads/session − 2 = 13 chat transcripts (2 lost due to technical problems, i.e. dyad A/B's and dyad C/D's chat session 2)
FTF conversation transcripts	5 FTF sessions *3 dyads/session − 2 = 13 FTF transcripts (2 not used to match the data number in online chat, i.e. dyad A/B's and dyad C/D's FTF session 2)
Post-chat compositions	5 chat sessions * 6 participants/session – 4 = 26 post-chat compositions (4 not used due to technical problems in the preceding chat sessions, i.e. learners A's, B's, C's, and D's post-chat composition 2)
Post-FTF compositions	5 FTF sessions * 6 participants/session – 4 = 26 post-FTF compositions (4 not used to match the data number in post-chat compositions, i.e. learners A's, B's, C's, and D's post-FTF composition 2)
Demographic questionnaires	6 demographic questionnaire responses
Interview transcripts	6 interview session transcripts
Final questionnaires	6 questionnaire responses

3.4.2 Description of the Participants

Most of the previous L2 S–CMC studies used intact classes in their research for practical reasons. The numbers of participants in previous studies ranged from eight to 50. Bearden (2001), Lee (2001), Smith (2003a), Blake and Zyzik (2003), and Pellettieri (2000) used 50, 40, 28, 22, and 20 Spanish learners, respectively, in their studies to investigate negotiation of meaning. In Abrams's (2003) study, 32 intermediate German students were invited to participate in S–CMC discussion to examine its effect on oral performance. Darhower's (2002) study observed 33 Spanish learners over a nine-week

period to explore the social interactive features in chats. Jurkowitz's (2008) study explored the linguistic accuracy and interactional features of 32 university-level French students in S–CMC over a 16-week period.

Because the study has primarily a qualitative design, a relatively small number of participants were used. There were six participants in this study. As in previous studies, an intact class was used for practical reasons. The six participants comprised the third-year Chinese language class at the study center in the spring 2009 semester. The six participants were all undergraduate college students from the United States and were studying Chinese as a second language in China, all with English as their first language. The L2 proficiency of the six learners was all in the mid-high intermediate range. Therefore, they were placed into the same class level as the result of the on-site placement exam. The students had four hours of Chinese class each day from Monday through Thursday every week, with two hours in the morning and two hours in the afternoon. The class was part of a six-credit Chinese language course. The data collection sessions took place during the second hour of the Thursday morning classes.

The participants were also asked to fill out a demographic questionnaire (see Appendix B). This questionnaire was used to determine participants' (a) length of study of Chinese, (b) Chinese study experience in a Chinese-speaking country, (c) goals in studying Chinese, and (d) experience in Chinese L2 writing in particular. Table 3.3 is a summary of the demographic information for the participants. As can be seen in the table, the mean age of the participants was 21.5 years old. The mean length of their time in China was 6 months. Three were female and three were male. Four of the participants planned to major or minor in Chinese. Two were learning Chinese simply out of personal interest. All participants rated their skill in writing Chinese composition as fair. None of them had ever taken a Chinese writing course. The six participants in this study were identified by the English letters A, B, C, D, E, and F respectively.

Table 3.3 Summary of demographic information on participants (N=6)

Category	Response
Mean age (years)	21.5
Gender	3 female; 3 male
Mean length of stay in China (months)	6
Goals in studying Chinese	a) Major or minor in Chinese: 4 b) Personal interest: 2
Self-rating of Chinese composition writing skill	Fair: 6
Previous experience in taking Chinese writing course	None

The next four subsections discuss the four aspects of the pairing method, task type, topics, and time given for tasks in this study. Because the conditions for these four aspects are similar between the online-chat and FTF conversation medium, and online chat is also a comparatively new medium, the discussion of the rationale of study design in these four aspects is situated primarily in the online chat medium.

3.4.3 Reasons for Using Pre-defined Student Pairs

Some S–CMC studies did not specify their methods of student pairing (Blake & Zyzik, 2003; Darhower, 2002). Most S–CMC studies, however, employed random pairing for their online tasks (Fidalgo-Eick, 2001; Mali, 2007; Oskoz, 2003; Smith, 2005). In Fernández-García and Martínez Arbelaiz's (2003) study, pre-defined student pairs were also used. An attempt was made to control for the variable of gender during the pairing. Given that the current study had only six participants, the method of random paring used in studies with a large number of subjects was not possible. Instead, pre-defined student pairs were used. The pairs were decided by the participants' Chinese teacher and the variable of gender was also controlled during the pairing. Thus, each dyad consisted of one male and one female student, which also allowed the researcher to more

easily distinguish different voices during the FTF data transcribing process. To make the comparison conditions between the two interactive mediums more accurate, the same dyads were kept for all of the interactive sessions. In specific, participants A and B formed a dyad, participants C and D formed a dyad, and participants E and F formed the third dyad.

3.4.4 Reasons for Using Free-Discussion Tasks

As mentioned in Chapter II (Literature Review), in previous L2 S–CMC studies, jigsaw, information-gap, decision-making and free-discussion tasks were the four main task types investigated. Other types of tasks, such as narration and problem-solving, still remain under explored. Some L2 S–CMC studies employed several types of tasks. In Blake's (2000) study, negotiation of meaning by Spanish learners was studied in three types of online tasks: information-gap task, jigsaw task, and decision-making task. Oskoz's (2003) study compared jigsaw and free-discussion tasks in computer chat using scales of quantity, syntactic complexity, accuracy, and negotiation of meaning. Fidalgo-Eick's (2001) study compared the interaction patterns of university intermediate Spanish students between a jigsaw and a decision-making task in an online-chat program. Another four studies employed the same two task types for different research purposes. Both Pellettieri's (2000) and Smith's (2003a) studies examined negotiation of meaning in jigsaw and decision-making tasks among 20 university Spanish students and 28 English as a second language (ESL) learners, respectively, in online chat. Smith's (2004) and Smith's (2005) studies employed the same two task types. Smith (2004) investigated the effect of negotiated S–CMC interaction on lexical acquisition among 24 intermediate-level ESL students. Smith's (2005) study, however, explored the relationship among negotiated interaction, focus on form, and learner uptake in the online Chatnet program.

Other L2 S–CMC studies employed single task type to investigate various features in online chat. A number of studies used open-ended discussion tasks to

investigate negotiation of meaning (Fernández-García & Martínez Arbelaiz, 2003; Lee, 2001; Tudini, 2003) or interactional features (Darhower, 2002; Mali, 2007) or linguistic features (Jurkowitz, 2008) in online chat. Jigsaw tasks, however, were also used in other studies to investigate negotiation of meaning (Bearden, 2001; Blake & Zyzik, 2003).

As can be noted from the above studies, the reason that the jigsaw task was most frequently used in L2 S–CMC studies was that most of the studies had a research focus on negotiation of meaning or interaction patterns. The jigsaw task is believed to promote more negotiation of meaning and richer interactions than other types of tasks because it is a two-way exchange of information (Blake, 2000; Blake & Zyzik, 2003; Long, 1983; Pica et al., 1993).

Nevertheless, the present study has a different research focus. The purpose of this study is to examine the impact of dyadic discussions in online chat and FTF conversation on Chinese L2 learner's individual writing performance. In L2 writing, the typical writing tasks that L2 learners engage in include description, narration, and argumentation. Intermediate L2 learners write about concrete topics, such as family, school, home town, hobbies, and so forth. More advanced learners write about abstract topics, such as economics, politics, education, environmental issues, etc. The present study simulates the typical writing situations that L2 learners experience in L2 learning. The current study also contains both individual writing components (i.e., individual post-interaction writing) and interactive writing components (i.e., online-chat discussion). Consequently, the tasks used in this study need to suit both individual and interactive writing. These factors suggest that jigsaw and information-gap task types might not be suitable for the current study because they are neither common in L2 writing practice, nor are they appropriate for individual-based writing. Given these factors, the task type of free-discussion was selected as the means to observe L2 writing practice. A free-discussion task is often open-ended in nature. In a free-discussion task, learners do not need to reach a common goal, which makes it suitable for individual writing. Ten free-discussion tasks were

assigned. In each free-discussion task, the learners in a dyad had access to the same task prompt and communicated with each other about opinions on the assigned topic. In the post-interaction individual writing, the learners wrote about their opinions on the same topic. According to Pica et al. (1993), free-discussion task is comparatively less conducive to promoting negotiation of meaning because participants do not need to converge on a common goal. The advantages of free-discussion task, however, lie in that they allow freer learner participation and discussion and more learner control of the content.

3.4.5 Topics

In some previous S–CMC studies, the researchers created their own topics (Abrams, 2003; Darhower, 2002; Lee, 2001; Mali, 2007), whereas others used topics adapted from textbooks or previous studies (Blake & Zyzik, 2003; Thoms et al., 2005). In this study, topics were created in accordance with students' proficiency level. The participants' Chinese instructor's opinions were also sought for appropriateness. The topics chosen were related to the chapters that students learned during the week. These topics were accessible and relevant to students. The topics were unknown to the participants in advance. Topics were presented in English to make them as clear to participants as possible. The ten topics undertaken in this study are listed as in Table 3.4 below (see Appendices C–L for detailed topic information). These topics are considered appropriate for the third-year Chinese language learners because one of the learning focuses for the third-year Chinese study is to develop abilities in discussing a wide variety of social issues and abstract topics. During the interactive sessions, both students in the pair had access to the same stimuli and were asked to exchange and share their opinions on these topics spontaneously. During the post-interaction composition writing, students wrote independently on the same topic that was discussed in the interactive session. The interactive sessions were not formally assessed by the instructor, while the

individual compositions were formally assessed by the instructor and students received a
score for it.

Table 3.4 Topics used in the ten task sessions

Task sessions	Topics
Online chat task 1	Differences between Chinese and Western education
FTF task 1	How could Chinese students survive better in American culture?
Online chat task 2	Pressures on the Chinese single-child generation
FTF task 2	The views of American and Chinese college students on love, marriage, and family
Online chat task 3	How does commercialism affect the traditional festivals in China and the United States?
FTF task 3	Spending habits of American and Chinese college students
Online chat task 4	How has the Internet affected people's lives?
FTF task 4	The level of urbanization in China and the United States
Online chat task 5	Morality and economic development
FTF task 5	Cultural icons in China and the United States

3.4.6 Time on Tasks

Previous L2 S–CMC studies varied in the amount of time allowed for their
online-chat tasks, ranging from 20 to 60 minutes. In Blake and Zyzik's (2003) study, 60
minutes were allotted for dyads to complete a jigsaw task. Abrams's (2003) study
allowed 50 minutes for participants in her online discussion tasks to examine their impact
on oral ability. Similarly, Blake (2000) gave the students 50 minutes for each online task
to investigate negotiation of meaning. Smith's (2005) study assigned the intermediate
ESL learners 30 minutes for each chat session. Thirty minutes were also allowed for the
L2 isiZulu learners in Mali's (2007) study to carry out free-discussion tasks in online chat.

In Fernández-García and Martínez Arbelaiz's (2003) study, the Spanish participants were given 20 minutes for each chat task in the Chatnet program. Thus, the literature did not provide much guidance regarding how much time should be allotted for the online-chat tasks.

In the present study, the computer chat tasks were scheduled during the participants' regular class time, typically a 50-minute session. Given the time constraints, 20 minutes were allotted for each interactive session (i.e., the FTF conversation or online chat), and 30 minutes were given for each post-interaction writing task, thus timed composition writing. Five minutes were allowed for the transition from the interactive session to post-interaction writing. Thus, the total amount of time spent for each task session was around 55 minutes, which extended a little beyond students' regular class time, that is, from 11:00 am to 11:55 am. Because students did not have immediate tasks after the class ended, the extra five minutes were accommodated.

3.4.7 Instructions for Tasks

Previous L2 S–CMC or FTF studies used instructions that were specific to their task types and research purposes. The instructions were presented either in the target language or students' native language. In the current study, instructions were needed for three types of activities: FTF oral discussion, chat discussion, and post-interaction writing. General directions were provided according to the topic and task type. Common pedagogical considerations, such as language accuracy and task concentration, were stressed in the directions. Below is a sample of the instructions that were used for one of the chat sessions. For instructions on other tasks and activities, see Appendixes C–L. Participants were given a task handout for each activity containing the task, topic, and instructions to facilitate the process. Students were also informed of the two-part task procedure before the task sessions started; that is, the interactive session followed by an individual writing session on the same topic.

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

3.4.8 Interview and Questionnaire

As mentioned above, during the seventh week of the study, all participants were interviewed individually regarding their learning experience of moving from the interactive session to individual L2 Chinese writing, as well as their perceptions about using online chat or FTF conversation in preparation for Chinese L2 writing (see Appendix M). Each interview lasted approximately 30 minutes. During the interview, the sixth week's FTF session and seventh week's online-chat session transcripts and the corresponding post-interaction written products were presented to the interviewees for reference. The interviews were conducted in English to allow interviewees to clearly express their ideas. The interview data obtained helped to illuminate other quantitative and qualitative data and allowed a more accurate account of the process involved in the interactive sessions and individual writing tasks.

At the end of the spring 2009 semester, after all task sessions were completed, the participants were asked again to complete a questionnaire discussing their perceptions of using online chat or FTF conversation to practice writing (see Appendix N).

3.5 Data Analysis

This study set out to investigate the impacts of two different types of interactive planning, online text chat and FTF conversation, on L2 Chinese learners' individual writing performance. The impacts were also compared between the two interactive mediums. Learners' perception data of using the two mediums to learn Chinese L2 writing were also sought. The current section provides details of the data preparation and analysis techniques needed to answer each research question. The analysis process

involved two steps. The first step of analysis looked at the quantitative and qualitative data for each individual research question. The second step of analysis was an in-depth case study, focusing on two particular participants—learners C and D. All of the data sources were drawn upon for an integrated analysis, including the online chat and FTF conversation transcripts, post-interaction compositions, as well as interview and questionnaire data. The goal was to disclose more detailed information about how learners interacted and collaborated in the interactive sessions and how those interactions affected the subsequent composition writing. Before the data analysis methods are introduced for the four research questions, the transcription convention used in this study, rater information, and rating reliability are first introduced.

3.5.1 Data Transcription

The audio-recordings of the FTF oral conversations and interviews were transcribed. Effort was made to faithfully transcribe the conversations. However a close transcription of pauses, overlaps, or intonation changes was not made in this study, because such features only affected the nature of the current data to a minimal degree. The table below lists the three primary transcription conventions that were applied in this study.

Table 3.5 Transcription conventions in this study

Category	Transcribing indication
Laughing particles	Hah
Inaudible portions	(***)
Words spoken with emphasis	Italics

3.5.2 Raters and Rating Reliability

In this sub-section, who the raters were, what the rating goals and scope were, what the rating procedure was, and how the rating reliability was established are outlined.

There were two raters in this study: the researcher and an independent rater. Both raters are native speakers of Chinese and have a background in teaching college-level Chinese language courses and experience in L2 Chinese composition scoring. Both raters were not the instructor for the participants in this study. The independent rater did not know any of the participants in the current study and had no other connection to any one of them.

In this study, the independent rater served two different purposes. First, the independent rater rated 20% of the interactive transcripts and post-interaction compositions on a variety of measures to establish inter-rater reliability with the researcher rater. Measures that involved purely mechanical analysis were rated by the researcher herself, including number of characters, number of turns, and mean turn length in the interactive transcripts, as well as number of characters and lexical richness in the post-interaction compositions. The evaluation of these measures primarily involved character, word, or turn counting; thus it was unnecessary to obtain a second rater's ratings. Specifically, the independent rater rated 20% of the online-chat and FTF interactive transcripts in the measures of focus of discussion, lexical quality, grammatical quality, and content quality. The independent rater also rated 20% of the post-interaction compositions on the measures of character accuracy, lexical accuracy, syntactic accuracy and richness, content richness, organization, and holistic assessment.

Second, the independent rater was also asked to rate 100% of the interactive transcripts and post-interaction compositions for measures that involved relatively high subjective judgment. Specifically, the independent rater rated 100% of the online-chat and FTF interactive transcripts for measures of lexical quality, grammatical quality, and content quality. The independent rater also scored 100% of the post-interaction

compositions for measures of organization and holistic assessment. The evaluations of these measures were based on holistic rating scales (see Table 3.14 and Appendix O respectively), and thus tended to involve higher subjective judgment. The independent rater's ratings were then averaged with the researcher's ratings to derive the final ratings. Using averaged ratings helped to make the measuring more objective. To ensure the intra-rater reliability, the researcher re-scored 20% of the sample data in each category one week after scoring them for the first time. The two raters' rating responsibilities are summarized in the table below.

Table 3.6 Summary of two raters' rating responsibilities

Data category	Measure	Independent rater	Researcher rater
Interactive transcripts	Focus of discussion; lexical quality; grammatical quality; content quality	Rate 20% to calculate inter-rater reliability	Rate 100%; re-rate 20% one week after the first rating to calculate intra-rater reliability
Post-interaction compositions	Character accuracy; lexical accuracy; syntactic accuracy and richness; content richness; organization; holistic assessment	Rate 20% to calculate inter-rater reliability	Rate 100%; re-rate 20% one week after the first rating to calculate intra-rater reliability
Interactive transcripts	Lexical quality; grammatical quality; content quality	Rate 100% to obtain average score	Rate 100% to obtain average score
Post-interaction compositions	Organization; holistic assessment	Rate 100% to obtain average score	Rate 100% to obtain average score

Before the actual scoring began, the independent rater participated in a training session organized by the researcher. During the training, the rater was first introduced to the task of rating the interactive transcripts and compositions. Second, the independent

rater was trained on how to use the scoring method and rating scales designed by the researcher to rate interactive transcripts and compositions. The rater practiced rating data by using sample interactive transcripts and compositions from the pilot study to see if her understanding of the rating schemes was accurate. The rater also asked questions to clarify issues that she did not understand. The practice allowed the independent rater to become familiar with the scoring procedure and rating scales. Third, the independent rater and researcher scored two sample interactive transcripts and two sample compositions independently according to the rating scales developed by the researcher. The two raters discussed their coding and rating decisions for each measure until they reached a common understanding of the scoring criteria and procedure. The next part outlines the details of how the inter-rater reliability check procedure was carried out for this study.

To obtain the inter-rater reliability, all of the scripts were first coded by the researcher. The independent rater was then given a randomly selected subset of 20% of the samples from each data category to code independently according to the data analysis procedure established by the researcher. In total, the independent rater rated six interactive transcripts and ten post-interaction compositions. The independent rater did not know students' identifying information and was also blind to conditions and experience. In other words, the independent rater did not know whether a composition was written following an online-chat or FTF session. The inter-rater reliability was calculated by following the method in Miles and Huberman (1994). The inter-rater reliability was derived by dividing the number of agreements divided by the total number of ratings. The inter-rater reliability coefficients were calculated for the ratings of the interactive transcripts as well as the post-interaction compositions.

For the interactive transcripts in this study, the inter-rater reliability for measure of focus of discussion was calculated by the number of agreed instances of focus areas divided by the total number of instances of focus areas identified. The inter-rater

reliability for the ratings of lexical quality, grammatical quality, and content quality was calculated by the number of agreed scores divided by the total number of scores. A summary of the inter-rater reliability results for the interactive transcripts is presented in Table 3.7.

Table 3.7 Inter-rater reliabilities for the interactive transcripts

Measure	Data sample	Agreement %
Focus of discussion	20% , i.e. 6 interactive transcripts	97.84%
Lexical quality	20%, i.e. 6 interactive transcripts	66.7%
Grammatical quality	20%, i.e. 6 interactive transcripts	66.7%
Content quality	20%, i.e. 6 interactive transcripts	50%

The data above indicate that the inter-rater reliability for the interactive transcripts, calculated out of the randomly selected 20% of the sample data, reached a high agreement of 97.84% for focus of discussion. In this study, satisfactory agreement has been set at 90%. Therefore, the researcher was satisfied with the inter-rater reliability for the measure of focus of discussion. For the lexical quality and grammatical quality ratings, the percentage of agreement was both 66.7%. The percentage of agreement for the content quality ratings was 50%. The ratings for the three quality measures were based on holistic scales, thus raters tended to apply their subjective judgment during rating. Discrepancy between the two raters was therefore expected. Because the average scores of the two raters were used as the final ratings, it helped to improve the objectivity of the ratings.

For the post-interaction compositions in this study, the inter-rater reliability for the character accuracy was calculated by the number of agreed incorrect characters divided by the total number of incorrect characters identified. The inter-rater reliability

for the lexical accuracy was obtained by the number of agreed incorrect lexical items divided by the total number of incorrect lexical items identified. The inter-rater reliability for the syntactic accuracy was derived by the number of agreed incorrect syntactic usages divided by the total number of incorrect syntactic usages identified. The inter-rater reliability for the syntactic richness was obtained by dividing the agreed number of different syntactic structures by the total number of different syntactic structures identified. The inter-rater reliability for the content richness was obtained by dividing the agreed number of different idea units by the total number of different idea units identified. The inter-rater reliability for the ratings of organization and holistic assessment was calculated by the number of agreed scores divided by the total number of scores. A summary of the inter-rater reliability results for the post-interaction compositions is presented in Table 3.8.

Table 3.8 Inter-rater reliabilities for the post-interaction compositions

Measure	Data sample	Agreement %
Character accuracy	20%, i.e. 10 compositions	91.89%
Lexical accuracy	20%, i.e. 10 compositions	92.86%
Syntactic accuracy	20%, i.e. 10 compositions	91.67%
Syntactic richness	20%, i.e. 10 compositions	93.90%
Content richness	20%, i.e. 10 compositions	94.5%
Organization	20%, i.e. 10 compositions	50%
Holistic assessment	20%, i.e. 10 compositions	60%

The data above indicate that the inter-rater reliability results for 20% of the samples were over 90% between the two raters for the measures of character accuracy, lexical accuracy, syntactic accuracy, syntactic richness, and content richness. In this

study, satisfactory agreement has been set at 90%. Thus, high inter-rater reliability was achieved for these measures. For the organization and holistic assessment scores, the percentage of agreement between the two raters was 50% and 60%, respectively. The ratings of these two measures were based on holistic scales and often involved subjective judgment. Thus, discrepancy between the two raters was expected. Because the average scores of the two raters were used as the final ratings, it helped to improve the objectivity of the ratings.

To ensure the intra-rater reliability, the researcher re-scored 20% of the data sample in each category one week after scoring them for the first time, and the intra-rater reliabilities for all the measures examined in the interactive transcripts and post-interaction compositions were higher than 90%, thus were satisfactory.

3.5.3 Data Preparation and Analysis for Research
Questions 1 and 2

Because the research questions 1 and 2 share the same impact issue in relation to two different interactive mediums, their data preparation and analysis are similar and are therefore jointly discussed in this section. To identify the impact of online chat or FTF communication on subsequent individual L2 Chinese writing, a combination of quantitative and qualitative analysis methods were undertaken to understand the learning that occurred in the interactive sessions and subsequent individual L2 composition writing. The following sub-sections first explain the analysis techniques used to understand the learning that occurred in the interactive sessions, followed by a discussion of the methods used in analyzing the post-interaction composition writing. To understand what types of learning took place in the interactive sessions, it is necessary to understand how much language learners produced, what the language production was focused on, and how well learners interacted and collaborated with each other.

3.5.3.1 Quantitative analysis of interactive session transcripts

To understand the impact of interactions on post-interaction writing, the first step is to understand the performance that may have occurred in the interactive sessions. As mentioned earlier, the computer chat logs were saved electronically for subsequent analysis. The FTF communicative sessions were audio recorded and transcribed for analysis purposes. The quantitative analysis looked at four aspects: total number of characters, total number of turns, turn length for individual dyad and interlocutor, and language contribution. All 13 online-chat and 13 FTF transcripts were analyzed for these four aspects. The total number of characters generated per online-chat or FTF session was calculated to reflect length of the conversation and learners' ability to carry on the conversation. The number of turns produced per online chat or FTF session was also counted to measure the frequency of communicative exchange in the interactive sessions. A turn was counted each time when the communication floor was transferred from one participant to the other, regardless of the length. The mean turn length indicated by number of characters per turn was also calculated in each interactive session for both the dyad and individual interlocutor in the dyad to obtain information on the length of communicative exchange during the interaction. The language contribution looked into the proportion of each learner's language contribution to the entire interactive discussion. The proportion data was obtained by having the total number of characters generated by a learner divided by the total number of characters generated in the interactive session by the dyad. Language contribution data reflected the effort each individual in the dyad devoted to the peer collaboration, a collaborative learning perspective.

The above quantitative data were obtained for each interactive session, based on which, the mean number of characters, mean number of turns, and mean turn length was calculated for all online-chat and FTF interactive sessions, respectively. The mean number and standard deviation (SD) were presented for each category. Data were also

calculated for each interactive session across three dyads to observe possible differences or changes across sessions. These quantitative data help to disclose the surface performance (i.e., quantity, fluency) in the interactive sessions, which facilitates an understanding of the connection between the interactive performance and subsequent individual performance.

3.5.3.2 Qualitative analysis of interactive session transcripts

Quantitative analysis, however, is not sufficient. To identify the impact of interactive sessions, it is also important to look at the nature of the performance taking place during the interaction. A qualitative analysis addressed such needs. As discussed in Chapters I (Introduction) and II (Literature Review), the current study is grounded in both interactionist and collaborative learning theories. The manner in which L2 learners benefit from the comprehensible input and output, negotiation of meaning, as well as peer collaboration was explored qualitatively. The salient features of peer interaction were disclosed. The qualitative analysis of the interactive scripts focused specifically on two aspects: (a) focus of discussion, and (b) quality of discussion. Focus of discussion looked at how learners proceeded with the task (Storch, 2005). Quality of discussion examined the lexical, grammatical, and content quality of the interaction. All the interactive session data were subjected to the qualitative analysis. The first part of the qualitative analysis— focus of discussion—concerned the purposes of discussion during the interactive sessions. The online chat and FTF interactive scripts were coded into corresponding focus areas. The total number of instances on each focus area was obtained to reveal the distribution of different discussion purposes during the interaction. Instances of negotiation of meaning were also looked for. Information on focus of discussion facilitated an understanding of the connection between the learning performance involved in the interactive sessions and post-interaction writing performance. Storch (2005) identified

seven focus areas that learners paid specific attention to during the FTF collaborative

writing process, presented as below.

Table 3.9 Seven focus areas as used in Storch (2005), p. 159

Focus areas	Definitions
Task clarification	Episodes where learners read or discuss the given instructions
Generating ideas	Episodes where learners generate and reformulate ideas
Language related meaning negotiation	Episodes in which the learners deliberate over lexical or grammatical choices
Structure	Episodes where learners focus on the organization of ideas
Interpreting graphic prompt	Episodes dealing with clarification of the information in the graph
Reading/re-reading	Episodes in which the learners simply read or re-read the text they had composed
Other	Episodes dealing with issues such as writing conventions and task management

The current research differs from Storch's (2005) study in that Storch (2005)

examined FTF co-writing activity, whereas the current study looks at the online text chats

or FTF oral interactive discussions preceding an independent writing task. Storch's (2005)

study also used a graphic prompt, whereas the current research used text-based task

prompts. Therefore, the focus areas in Storch's (2005) study were revised to meet the

needs of the current study. New focus areas also appeared during the data analysis

process, thus were added to the current list of focus areas. The eight focus areas

examined in this study are presented below. These focus areas were suitable for an

analysis of both online chat and FTF interactive transcripts. Focus area was determined

for each turn, and each turn was categorized into different focus areas, either single or multiple ones.

Table 3.10 Focus areas in the online-chat and FTF interactive transcripts

Focus areas	Definitions
Social greetings	Episodes where learners greet each other
Task management	Episodes where learners discuss how to approach or manage the task
Interpreting task prompt	Episodes where learners discuss the given instructions for the task or topic
Generating ideas	Episodes where learners generate and formulate ideas
Lexicon-related episodes	Episodes in which learners deliberate over lexical usages
Grammar-related episodes	Episodes in which learners deliberate over grammatical usages
Character-related episodes	Episodes in which learners deliberate over character usages
Talking off-topic	Episodes where learners engage in off-topic discussion

The above eight focus areas helped to shed light on whether the online-chat or FTF conversation environment provided a productive L2 learning environment as stipulated by interactionist and collaborative learning theories; for example, allowing opportunities for comprehensible input and output, negotiation of meaning, focus on form, scaffolding, and peer support. The number of instances[1] on each of the above focus areas was identified to uncover the learning performance in the interactive sessions. An independent rater was also invited to code discussion turns into focus areas for 20% of

[1] The word *instance* instead of *turn* is used because one turn may be identified for multiple focus areas.

the interactive transcripts. The inter-rater reliability obtained for focus of discussion was 97.84%.

The second part of qualitative analysis looked at quality of discussion. Specifically, it looked at quality of three aspects in the interactive transcripts: lexical, grammatical, and content features. Holistic rating scales, presented in Table 3.11, 3.12, and 3.13 below, were used to rate the three aspects and three sub-scores were obtained for the lexical, grammatical, and content qualities, respectively. A 5-point scale was used. The independent rater was invited to rate the interactive transcripts. Both the independent rater and researcher rated 100% of the data sample and their scores were averaged to derive the final scores. The discussion quality information brought a further understanding of the nature of input and output in the interactive sessions.

Table 3.11 Rating scale for lexical quality in the interactive transcripts

Score	Criteria (correctness and appropriateness of lexical items or expressions and their diversity)
5	Accurate word and expression choices; a good range of lexical features
4	Occasional inaccurate word and expression usages that do not interfere with meaning; some range of lexical features
3	Frequent inaccurate word and expression usages that interfere with meaning; limited range of lexical features
2	Mostly inaccurate word and expression usages that significantly interfere with meaning; little range of lexical features
1	Very limited usage of words or expressions, with errors everywhere; or no assessable language

Table 3.12 Rating scale for grammatical quality in the interactive transcripts

Score	Criteria (correctness of grammatical features and degree of richness and sophistication)
5	Accurate grammatical usages; a wide range of grammatical features; a good number of compound and complex sentences
4	Occasional grammatical inaccuracies that do not affect meaning understanding; some range of grammatical features; a few compound and complex sentences
3	Frequent grammatical inaccuracies that disrupt meaning understanding, even for structures that students have learned for a long time; limited range of grammar features; lack of compound and complex sentences
2	Mostly inaccurate grammatical features; little range of grammatical features; no compound and complex sentences
1	Few sentences with inaccurate grammar in each sentence; or no assessable language

Table 3.13 Rating scale for content quality in the interactive transcripts

Score	Criteria (content clarity and richness)
5	Have a good variety of ideas; very clear meaning, with no confusion
4	Have some ideas; clear meaning for the most part
3	Have a few ideas; some confusion in meaning understanding
2	Lack of ideas; a lot confusion in meaning understanding
1	Irrelevant contents; no understandable language; or no assessable language

3.5.3.3 Quantitative and qualitative analysis of post-interaction compositions

The quality of learners' post-interaction writing is at the heart of this study. It is necessary to determine how much and how well a learner may write after being engaged in an online chat or FTF session. An evaluation scheme is therefore needed to assess the

learners' post-interaction writing. The L2 assessment literature asserts that an analytic writing assessment scale allows an effective indication of weaknesses and strengths in student performance and adds knowledge of learners' sub-skills (Gebril, 2006; Hamp-Lyons, 1991). Students' post-interaction writing was therefore assessed using an analytic scale to obtain performance data on a variety of L2 writing constructs. This part of the analysis involves both quantitative and qualitative measures. What follows is a discussion of how the L2 Chinese writing constructs were identified in this study.

According to Turner and Upshur (2002), there are three approaches to developing L2 assessment scales. One approach is to identify characteristics based on theoretical views about L2 development. A second approach is to develop the scale based on the objectives of a curriculum. A third approach is to "derive a scale empirically by eliciting scale developers' descriptions of differences" based on sample L2 data (p. 50). Approaches 1 and 3 are relevant to the current study. Researchers have argued that deriving an assessment scale purely based on certain theories will not effectively reflect learners' true competence. Chalhoub-Deville (1997) asserts that any rating scale based on general theory will not be appropriate for assessing performance on a given task. Turner and Upshur (2002) also argue that the criteria should be relevant to the task and its context. Pollitt and Hutchinson (1987) claim that assessment that accounts for salient features of a particular task can improve measurement of competence in writing. To assess students' writing accurately, the present study combined approaches 1 and 3 to derive the writing assessment scale for the present study. Both relevant L2 writing literature and the specific characteristics of the tasks used in the study were taken into consideration.

As discussed in Chapter II (Literature Review), in the L2 literature the aspects of linguistic accuracy, linguistic complexity, content quality, and textual structure are regarded as important indices of L2 writing development. The illustrations of these constructs, however, are often based on western alphabetic languages. For example, the

construct of linguistic accuracy often looks at the accuracy of spelling, tense, and conjugation. These features do not apply to the Chinese language, which has a character-based writing system and does not contain features of tense and conjugation. Previous studies also used the measures of subordination, mean length of clause, number of finite and non-finite clauses per T-unit, and dependent clauses per clause to index the linguistic complexity of L2 writing (Abrams, 2003; Foster & Skehan, 1999; Kuiken & Vedder, 2008; Ortega, 2003; Way et al., 2000; Wolfe-Quintero et al., 1998). These methods of measuring L2 writing complexity are also not suitable for the Chinese language, which does not contain rich features of subordination, finite, or non-finite clauses. The contents for each of the writing measures therefore need to be redefined towards the characteristics of Chinese as an L2.

On the basis of the previous literature and characteristics of the Chinese language, the following five analytical measures were derived for the current L2 Chinese writing constructs: writing length, character accuracy, lexical quality, grammatical quality, and content quality. These five constructs not only apply to the characteristics of the Chinese language but are also suitable for the type of writing used in this study, that is, composition writing. These five constructs served as the dependent variables and were used to identify points of quality and weakness in learners' post-interaction writing. Examining these five aspects allowed a more detailed and complete assessment of writing and helped to provide more differentiated information. The five constructs are defined as the following.

Writing length was included as a variable to reflect writing fluency (Chenoweth & Hayes, 2001; Way et al., 2000; Wolfe-Quintero et al., 1998). Because each learner was given same amount of time, i.e. 30 minutes for the composition writing, writing length was obtained by counting the total number of characters in each post-interaction composition. Because the character is the writing unit in the Chinese language, character accuracy was presented as the second variable. Characters that deviated from the correct

character form, including missing parts or strokes were considered incorrect character. The lexical quality concerned using lexical items correctly and appropriately and the richness or diversity of such lexical items. The grammar quality looked at the correctness of using grammatical features and the richness or variety of such grammatical usages. The content quality examined the content richness and organization of compositions. In addition to an analysis of individual constructs, each of the compositions was also rated holistically using a 5-point scale. The subsections below elaborate how each individual construct was operationalized in the current study. Each piece of post-interaction composition was rated by the researcher and for certain measures also rated by the independent rater according to the corresponding rating scale or method. Rating details for each measure category are introduced in each respective subsection.

3.5.3.3.1 Writing length and scoring method

Because the character is the writing unit in the Chinese language, the present study counted the total number of Chinese characters per composition to measure the length of writing. The mean number of characters per post-chat or post-FTF composition was calculated for individual participant across sessions, each post-interaction writing session across learners, and the entire group. The mean number and SD were calculated for the entire group.

3.5.3.3.2 Character accuracy and scoring method

Character accuracy is a basic index of language accuracy in Chinese writing. In this study, students were asked to write the compositions by hand in Chinese characters on a piece of paper provided by their Chinese teacher. In the present study, when a character deviated from the correct character form, including missing parts or strokes, it was considered to be an incorrect character. The total number of correct character forms in each post-interaction composition was counted. However, because students' writings varied to a certain degree in length, the ratio of correct characters against the total number

of characters was used to indicate the measure of character accuracy of a student's writing. The percentage of correct characters was therefore used to represent character accuracy in this study. The character accuracy was calculated for each post-interaction composition and the mean character accuracy of post-chat or post-FTF compositions was calculated for individual participant across sessions, each post-interaction writing session across learners, and the entire group. The mean number and SD were also calculated for the entire group for each respective medium.

3.5.3.3.3 Lexical quality and scoring method

The lexical quality consists of two parts: (a) accuracy and appropriateness of using lexical items or expressions, and (b) richness of such lexical items. A lexical item was considered correct if it represents a lexical choice that a native speaker of the Chinese language is likely to use or find acceptable in the context in question. A lexical error may include errors in the use of form, meaning, context, pragmatics, or part of speech. A lexical error may occur in the use of nouns, verbs, adjectives, adverbs, prepositions, measure words, etc. In the current study, the researcher used her native intuition as well as her professional Chinese language knowledge to judge the correctness of lexical usages in a student's writing. Lexical accuracy was obtained by the counts of correct words divided by total number of words. The second rater was invited to rate 20% of the data and the inter-rater reliability calculated for lexical accuracy was 92.86%.

To assess the richness of lexical items in each composition, the researcher counted the number of different words used, and that number was then divided by the total number of words. The mean lexical accuracy and richness scores of post-chat or post-FTF compositions were calculated for individual participant across sessions, each post-interaction writing session across learners, and the entire group. The mean score and SD were also calculated for the entire group for each respective medium.

3.5.3.3.4 Syntactic quality and scoring method

The syntactic quality in this study concerns two aspects: (a) correctness of grammatical features at the syntactic level (Polio, 1997), and (b) richness or variety of such syntactic features. The syntactic features examined in this study included the usage of cohesive devices that link ideas within and among sentences and paragraphs (Breiner-Sanders et al., 2001) as well as correlative conjunctions. Regarding the correctness of syntactic features, a syntactic feature was considered accurate if it represents a grammatical choice that a native speaker of the language is likely to find acceptable in the context in question (Morris, 1998). Spelling A syntactic error may include an error in the use of cohesive device (e.g. so, therefore, because, however), correlative conjunction (e.g. and, either), word order, or other syntactic features. Examples of Chinese syntactic features include the 把 [2] 'ba' structure, 比[3] 'bi' structure, conjunctions such as 因为…所以…[4] 'yinwei…suoyi…' structure, 如果...就[5]…'ruguo...jiu…' structure, and so on. In this study, syntactic accuracy was obtained by having the number of correct syntactic items divided by total number of syntactic items used. The syntactic words that are often used in pair, such as 因为…所以…[6] 'yinwei…suoyi…' structure, 如果…就…[7] 'ruguo...jiu…' structure, were counted as one syntactic item. The researcher used her native intuition as well as her professional Chinese language knowledge to judge the correctness of syntactic usages in the participants' writing. An independent rater coded 20% of the sample. The inter-rater reliability obtained for syntactic accuracy was 91.67%.

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[2] A Chinese disposal structure

[3] A Chinese comparison structure

[4] This structure means 'because…so…'

[5] This structure means 'if…so…'

[6] This structure means 'because…so…'

[7] This structure means 'if…so…'

To assess how varied the syntactic usages were, the researcher looked at the number of different syntactic structures. Syntactic richness was operationalised as the counts of different syntactic structures divided by total number of sentences. An independent rater coded 20% of the sample. The inter-rater reliability obtained for syntactic richness was 93.90%.

The mean syntactic accuracy and richness scores were obtained for individual participant across sessions, each post-interaction writing session across learners, and the entire group. The mean score and SD were also calculated for the entire group for each respective medium.

3.5.3.3.5 Content quality and scoring method

The content quality looks at two aspects: (a) content richness, and (b) organization of the writing. Content richness concerned the occurrence of a variety of ideas in the writing. Content richness was operationalised as the counts of different idea units divided by total number of sentences. An idea unit is a thought unit. It is the segments of texts that express a complete meaning. An idea unit could be either larger or smaller than one sentence. An independent rater coded 20% of the sample. The inter-rater reliability obtained for content richness was 94.5%.

The organization of the writing looked at the textual organization and linking of ideas; that is, whether the ideas were organized logically and whether appropriate cohesive devices were used (Chiang, 1999; Paulus, 1999). The organization of the writing was evaluated by the researcher and an independent rater based on a holistic rating scale, displayed in Table 3.14. Both raters' ratings were then averaged to derive the final scores. The content score was calculated for each individual post-interaction composition. The mean content score of post-chat or post-FTF compositions was calculated for individual participant across sessions, each post-interaction writing session across learners, and the entire group.

Table 3.14 Holistic rating scale for organization in the compositions

Score	Criteria (textual structure; linking of ideas; use of cohesive devices)
5	Logical sequence of ideas; cohesive on both sentence and paragraph level; very clear meaning, with no confusion
4	Some sequence of ideas; good sentence level cohesion; some paragraph level coherence; clear meaning for the most part
3	Weak sequencing of ideas; some sentence level cohesion; frequent lack of paragraph level cohesion; occasional confusion in meaning understanding
2	Text not coherent; lack of sentence and paragraph level cohesion; a lot confusion on meaning understanding
1	No understandable language; or no assessable language

3.5.3.3.6 Summary of definitions for L2 Chinese writing

constructs

The definitions of the L2 Chinese writing measures identified in the current study are summarized below:

1. Writing length: Refers to the number of characters generated in each composition; the higher the number of characters the greater the writing length.

2. Character accuracy: Refers to the ratio of correct characters to the total number of characters produced in each piece of writing; the higher the ratio the greater the character accuracy.

3. Lexical accuracy: Refers to the correctness and appropriateness of using lexical items or expressions. Lexical accuracy is obtained by dividing the number of correct words by the total number of words. The higher the score the better the lexical accuracy.

4. Lexical richness: Refers to the richness of using lexical items or expressions. Lexical richness is obtained by dividing the number of different words by the total number of words. The higher the score the better the lexical richness.

5. Syntactic accuracy: Refers to the correctness of syntactic usages. Syntactic accuracy is operationalised by counts of correct syntactic items divided by total number of syntactic items. The higher the score the better the syntactic accuracy.

6. Syntactic richness: Refers to the variety of syntactic usages. Syntactic richness is defined as the counts of different syntactic structures divided by total number of sentences. The higher the score the better the syntactic richness.

7. Content richness: Refers to the ratio of number of idea units to the total number of sentences produced in each piece of writing. The higher the score the better the content richness.

8. Organization: Refers to the textual organization and linking of ideas in the writing. It is evaluated by two raters based on a holistic scale. The higher the score the better the organization.

3.5.3.3.7 Holistic assessment

In addition to the analysis of individual constructs, the post-interaction compositions were also scored holistically using a 5-point scale, see Appendix O. The holistic rating scale was revised based on Song and Caruso (1996). An overall score was obtained for each piece of writing. Both the independent rater and researcher rated 100% of the data sample and their scores were averaged to derive the final scores. The mean holistic score of post-chat or post-FTF compositions was calculated for individual participant across sessions, each post-interaction writing session across learners, and the

entire group. The mean and SD were also calculated for the entire group for each respective medium.

3.5.3.4 Analysis of connection between interaction and post-interaction writing

On the basis of the analysis results of the interactive sessions and post-interaction writing, the following examinations were made to observe the relationship between the interactive sessions and individual composition writing. Two types of analysis were undertaken to identify possible relationships: (a) correlation analysis; and (b) transfer analysis.

The purpose of the correlation analysis was to identify connections between pair interaction and individual composition writing. Correlation data were explored between the following data: between length of interaction and length of compositions; between lexical, grammatical, and content quality in interaction and lexical, syntactic, and content quality in compositions. The correlations among these data were studied because they were related to each other. Specifically, the correlation analysis looked at whether conversation with greater length also resulted in greater length in composition writing and, if so, in what aspects? It also explored whether an interactive session with better content quality also resulted in better content in the individual composition writing. To disclose their relationships, the Pearson correlations coefficients were first calculated. Second, scatter plot figure was used to visually display the correlation data that had statistical significance.

To identify learning impact, transfer analysis was also conducted. The transfer analysis was qualitative in nature. It examined the similarities between interactive transcripts and post-interaction compositions in the aspects of lexical, syntactic, content, and organizational features. The interactive transcripts were examined to observe whether lexical, syntactic, or idea units as used in the interactive session also appeared in the post-

interaction writing, and if yes, in what manner. Whether the organizational feature was similar between the interactive session and that of the post-interaction writing was also explored. For this part of the analysis, not all sessions were analyzed. Instead, two different sessions were chosen for the online chat and FTT oral conversation sessions respectively and a different dyad was also chosen for each of the sessions to allow a more representative observation. Thus, the following dyads and interactive sessions and the corresponding compositions were subject to the transfer analysis: dyad A/B's chat session 4, dyad C/D's chat session 3, dyad A/B's FTF session 4, and dyad E/F's FTF session 3. The transfer of learning was interpreted from the perspectives of comprehensible input/output, negotiation of meaning, as well as peer collaboration. What was transferred from the interactive session to subsequent individual composition writing was investigated.

3.5.4 Data Preparation and Analysis for Research Question 3

One objective of the study was to examine the impact difference between two types of interactive discussions–online chat or FTF oral conversation–on individual Chinese L2 writing performance. The current research design is a within-subjects design and there is one independent factor: the modality of interaction. This independent variable is presented in the table below.

Table 3.15 Independent variable in the study

	Modality of interaction
Online chat	Condition 1: 6 participants
FTF oral conversation	Condition 2: the same 6 participants as above

To find out whether the impacts on learners' individual writing performance differed between the two interactive mediums, the performance that occurred in the two interactive mediums was first compared. The post-interaction writing performance was also compared between the two mediums. The impact was then compared between the two mediums. For the interactive transcripts, the mean conversation length, number of turns, and mean length per turn were compared between the online chat and FTF conversation mediums. In particular, data were compared to see which interactive medium produced more language and which medium had more frequent communication exchange. The Wilcoxon signed ranks test was the primary analysis method used to identify the significance of the mean difference. The two mediums' language contribution and focus of discussion patterns were also compared.

Students' post-interaction writing was also compared between the online chat and FTF conversation mediums to observe any significant difference. The Wilcoxon signed ranks test was the primary analysis method used. Because this study had a within-subjects design, i.e. each subject served as his or her own control by taking part in two conditions, a statistical comparison between the two groups is then validated. Because the Wilcoxon signed ranks test asks for independent samples and the current study involved paired interaction between learners in the interactive sessions, instead of using individual scores, the average scores of each dyad were used in the statistical analysis for all quantitative construct scores and holistic scores. For example, instead of using learners A's or B's individual composition length, the average composition length of the dyad was used for the Wilcoxon signed ranks test. The mean scores for each individual L2 writing measure as well as holistic scores were compared between the chat and FTF mediums to examine whether there was statistical significance.

The differences examined were also related to the data comparison in the interactive sessions to observe whether there was a connection. For example, could better writing fluency in the post-FTF individual writing be traced back to higher amount of

language production in the FTF session? Could better content quality in the post-chat in individual writing be traced back to specific focus of discussion pattern in the online-chat session? The correlation and transfer data identified for research questions 1 and 2 were also compared between the two mediums.

3.5.5 Data Preparation and Analysis for Research Question 4

Regarding the fourth research question; namely, learner perceptions about using the two interactive mediums to learn L2 Chinese writing, the interview and questionnaire data were analyzed qualitatively. During the seventh week of the research period, the participants were invited for a 30-minute semi-structured interview to talk about their learning experience of moving from the interactive sessions to individual writing. The discussions were focused on what knowledge they had applied from the interactive sessions to individual writing, if any. The researcher also requested clarification or elaboration on places that were noted in a review of the interactive and post-interaction written transcripts prior to the interview. During the interview, the learners were provided with their sixth week's FTF transcript and seventh week's online-chat transcript and post-interaction written scripts following the two interactive sessions as reference. At the end of the research period, learners were also asked to complete a questionnaire to once again discuss their perceptions of using interactive sessions for practice L2 Chinese writing.

The interview and questionnaire data were categorized based on theme and prominent themes were identified. Descriptive statistics such as frequency count were used to categorize and summarize learner perceptions. For example, frequency count was used to display how many students agreed that computer chat or FTF conversation enhanced their motivations for Chinese writing. Salient themes emerged during the interview and questionnaire data were summarized. Student quotations were also used to illustrate themes.

3.5.6 Case Study Analysis

In addition to an analysis aiming towards the four research questions, two participants—learners C and D—were chosen as the objects of an in-depth case study. Learner C, a male student, and learner D, a female student, were in the same dyad during the interactive sessions. A detailed learner profile is presented in the Findings for Case Study section in the Results chapter. All of the data sources were drawn upon for an integrated analysis, including the online chat and FTF conversation transcripts, post-interaction compositions, as well as interview and questionnaire data. The goal was to disclose more detailed information about how learners interacted and collaborated in the interactive sessions and how those interactions affected the subsequent composition writing.

One online-chat and one FTF session transcript and subsequent post-interaction compositions were selected for analysis. A micro-level analysis was conducted to examine specific linguistic, interactional, and collaborative features in the interactive sessions, and to identify what features learners carried over from the interactions to their compositions. Interview and questionnaire data were used to illustrate the moments of learning that were revealed in the interactive sessions and composition data.

Specifically, the case study analysis looks at three types of data: (a) the online chat and FTF conversation transcripts (chat session 4 and FTF session 5), (b) four post-interaction compositions (2 following each interactive session), and (c) interview and questionnaire data for each learner. In line with interactionist learning theories, the examination of the data considered the nature of input and output, occurrences of negotiation of meaning, opportunities for lexical and grammatical practice in the interactive sessions, and transfer of language from the interactive sessions to the subsequent composition writing. In line with collaborative learning theories, the examination of the data focused on the sociocultural dynamics, turn-taking structure, nature of the peer scaffolding, and other types of peer support. How the social dynamics

affected learners' subsequent composition writing was also explored. The conversation structure of the interactive session was analyzed; that is, how the dyad proceeded with the conversation. This information was then related to the subsequent composition data to understand what learners carried forward from the interactive session to their composition writing.

3.5.7 Summary of Data Analysis Procedure

The table below summarizes the specific analysis methods needed to answer each of the research questions.

Table 3.16 Analysis methods for each research question

Research questions	Data analysis
1. Impact of online chat on subsequent individual L2 Chinese writing	Online-chat transcripts: calculate number of characters, number of turns, and mean length per turn; examine language contribution, focus of discussion, and discussion quality
	Post-chat compositions: examine length, character accuracy, lexical, syntactic, content quality, and holistic quality
	Relationship: examine correlation between the chat session and post-chat composition writing; conduct transfer analysis
2. Impact of FTF conversation on subsequent individual L2 Chinese writing	FTF conversation transcripts: calculate number of characters, number of turns, and mean length per turn; examine language contribution, focus of discussion, and discussion quality
	Post-FTF compositions: examine length, character accuracy, lexical quality, syntactic quality, content quality, and holistic quality
	Relationship: examine correlation between the FTF session and post-FTF composition writing; conduct transfer analysis
3. Difference between the impacts of online chat and FTF conversation	Interactive session transcripts: compare length, number of turns, and mean length per turn; compare language contribution, focus of discussion, and discussion quality
	Post-interaction compositions: compare length, character accuracy, lexical quality, syntactic quality, content quality, and holistic scores
4. Learner perceptions of using the two mediums to learn L2 Chinese writing	Qualitative analysis: Categorize and summarize the interview and questionnaire data based on themes

3.6 Pilot Study

The aim of the pilot study was to examine the appropriateness of the main aspects of the study design, including the appropriateness of tasks and topics, the amount of time allowed for the tasks, and the effectiveness of instruction. Furthermore, the pilot study also helped examine whether the entire data collection procedure could proceed smoothly. Two major changes were made based on the results of the pilot study.

The pilot study was carried out during the fall 2008 semester in a college-level Chinese language program in the United States. Two second-year Chinese learners formed a dyad and participated in one online-chat and one FTF interactive session on two separate days. Both learners wrote a take-home post-interaction composition individually on the same day as the corresponding interactive session. Thirty minutes were given for each interactive session. A length of 350 characters was required for the compositions. Both students were also asked to respond to the perception questionnaire. The interview protocol was not tested in the pilot study.

Based on the pilot study results, first, it was found that a 30-minute chatting or FTF conversation session appeared to be relatively long for the students. Students spent about 20 minutes completing either the online chat or the FTF conversation task. Therefore, during the operational data collection, 20 minutes were allotted to each interactive session. Second, by allowing students to write the compositions at home, it was hard to control possible variables during the individual composing process, thus presenting a challenge to the data validity. Thus, in the actual data collection, learners wrote compositions immediately following each interactive session.

This chapter explained what design decisions were made to elicit data and what particular quantitative and qualitative analyses were conducted to analyze data. The next chapter, Chapter IV presents the results of the study.

CHAPTER IV: RESULTS

4.1 Introduction

After details of the study design were described in Chapter III (Methodology), this chapter presents the findings based on the four research questions explored in this study: (1) the impact of online chat on subsequent individual second language (L2) Chinese composition writing, (2) the impact of face-to-face (FTF) oral conversation on subsequent individual L2 Chinese composition writing, (3) the difference between the impacts of online chat and FTF oral conversation on subsequent individual L2 Chinese composition writing, and (4) Chinese L2 learners' perceptions of using computer chat or FTF conversation as tools for learning to write in Chinese. The findings for each research question are presented in separate sections. The findings in this study are summarized in the final section.

4.2 Findings for Research Question 1

Research question 1: Does interactive L2 Chinese online text chat have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?

The first question asked in this study was what impact the online-chat sessions might have on subsequent individual L2 Chinese composition writing. This section consists of four subsections. I first present the results of the analysis of the online-chat transcripts, then report findings on the post-chat compositions, next discuss the impact of the online chat on subsequent composition writing, and finally summarize the findings for research question 1.

4.2.1 Findings for Online-Chat Discussion

The online-chat transcripts were analyzed both quantitatively and qualitatively. The quantitative analysis calculated the conversation length, number of turns, length per turn, and contribution percentage in the chat sessions. The qualitative analysis examined

two aspects: (a) focus of discussion, and (b) quality of discussion in lexical, grammatical and content features. The next two subsections present the quantitative and qualitative data, respectively.

4.2.1.1 Quantitative findings for online-chat discussion

As discussed in the Methodology chapter, in each data collection session, the six learners were first asked to participate in a 20-minute pair discussion task either via online chat or through FTF conversation. During the online-chat sessions, the students formed into pairs and chatted with each other online based on an assigned free-discussion topic. Each student wrote on a separate computer using Microsoft Chinese word processor to type characters. The chat logs were saved on the computer for later analysis. Tables 4.1 and 4.2 below summarize the quantitative performance data in the online-chat sessions, including conversation length in characters, number of turns, and length in characters per turn. Table 4.1 represents the mean numbers across all 13 chat discussions. Table 4.2 presents the mean scores by dyad across each dyad's chat sessions. As can be seen from Table 4.1, the mean length for all 13 chat discussions was 560.38 characters with a standard deviation (SD) of 151.67. The mean number of turns was 35.31, with an SD of 11.49. The mean turn length was 16.35 characters, with an SD of 2.95.

Table 4.1 Mean length, number of turns, and turn length for the online-chat
sessions (N=13)

	M	*SD*
Number of characters	560.38	151.67
Number of turns	35.31	11.49
Turn length in characters	16.35	2.95

From Table 4.2, we can see that dyad A/B had the highest mean chat length, 617.75 characters, as well as the highest mean number of chat turns, 43.25 turns. Their mean turn length, however, was the shortest among the three dyads. The mean turn length of dyad C/D was the longest at 17.99 characters.

Table 4.2 Mean length, number of turns, and turn length by dyad for the online-chat sessions

	Dyad A/B	Dyad C/D	Dyad E/F
	M (N=4 sessions)	*M* (N=4 sessions)	*M* (N=5 sessions)
Number of characters	617.75	606.25	477.8
Number of turns	43.25	34.25	29.8
Turn length in characters	14.57	17.99	16.46

In addition to the quantitative data for the whole group and the three dyads, it is necessary to identify data for the individual interlocutors to understand individual performance in the interactive sessions. Thus, the mean turn length and contribution percentage was identified for individual interlocutors to reveal how each learner performed in the chat interaction. Table 4.3 summarizes the mean turn length of individual interlocutors in each chat session. These figures were obtained by dividing the number of characters by the number of turns produced by each learner in each chat session. The data below indicate that the turn length of individual interlocutors in the chat conversations ranged from 9.7 to 33.4 characters. Most of the turn lengths, however, clustered between 10 and 20 characters, suggesting that each chat exchange was similar to the others in length. This finding also points to a relatively equal interaction and collaboration pattern in the chat sessions.

Table 4.3 Mean turn length for individual interlocutors in the online-chat sessions

Dyad	Learner	Mean turn length in characters				
		Chat 1	Chat 2	Chat 3	Chat 4	Cha 5
1	A	20.2	NA*	15.8	13.9	15.2
	B	13.3	NA	11.1	12	15.1
2	C	9.7	NA	17.6	13.8	20.5
	D	33.4	NA	14.9	17.6	17.4
3	E	11.2	14.3	17.2	17	18
	F	10.6	15.9	17.2	21.4	22.1

Note: * Data were lost due to technology problems.

Table 4.4 below presents another quantitative perspective on the performance of individual interlocutors: the language contribution percentage in each chat interaction. The contribution percentage was obtained by dividing the number of characters generated by a learner by the total number of characters generated in the interactive session by the dyad.

Table 4.4 Individual interlocutor's language contribution percentages in the
online-chat sessions

Dyad	Learner	Chat 1	Chat 2	Chat 3	Chat 4	Chat 5
1	A	60.4%	NA	58.9%	53.6%	51.4%
	B	39.6%	NA	41.1%	46.4%	48.6%
2	C	23.7%	NA	54.2%	45.5%	55.9%
	D	76.3%	NA	45.8%	54.5%	44.1%
3	E	51.3%	51.2%	51.1%	44.3%	47.8%
	F	48.7%	48.8%	48.9%	55.7%	52.2%

As shown in Table 4.4, the participants' language contribution pattern in the chat sessions also displayed a relatively equal structure. Except for dyad C/D's first chat session, in all other chat sessions, each participant contributed between 40% and 60% of the talk in the session. For eight of the 13 sessions presented in Table 4.4, the difference in contribution between the two interlocutors in each dyad discussion was smaller than 10%. Thus, each participant had a similar number of opportunities to interact in Chinese during the chat conversations. This finding is consistent with the results reported in Table 4.3 on the balanced turn length for individual interlocutors. Both types of data indicate a relatively equal interaction and collaboration pattern in the chat conversations.

However, obtaining quantitative data for the whole group, dyads, or individual interlocutors does not allow one to look into the nature of the interaction and collaboration. To identify the impact of online chat on Chinese L2 composition writing, it is beneficial to understand the nature of the learning that occurred in the chat sessions. This part of the analysis entails qualitative examination of the data. The results are presented in the next subsection.

4.2.1.2 Qualitative findings for online-chat discussion

The qualitative analysis investigated two aspects: (a) focus of discussion, and (b) quality of discussion. To identify focus of discussion, the online-chat transcripts were coded into predefined focus areas as outlined in the Methodology chapter. Each turn was subjected to an analysis for its focus areas, which might be a single focus area or multiple ones. For definitions on each focus area, see the Methodology chapter. The total number of instances[8] for each focus area was identified and was also compared with the number of instances in the other focus areas to reveal the distribution of learning performance during the chat interaction. Table 4.5 below summarizes the number and percentage of

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[8] The word *instance* instead of *turn* is used because one turn may serve as a site for multiple focus areas.

instances for each focus area in each chat session. Data are presented on four chat

sessions, one or two sessions for each dyad. For complete data on the other chat sessions,

see Appendix P.

Table 4.5 Number and percentage of instances for focus areas in the
online-chat sessions

Focus areas	Dyad A/B Chat 3	Dyad C/D Chat 1	Dyad E/F Chat 1	Dyad A/B Chat 4
Social greetings	11 (17.2%)	2 (6.1%)	2 (6.1%)	4 (9.3%)
Task management	1 (1.6%)	5 (15.2%)	0 (0%)	0 (0%)
Interpreting task prompt	1 (1.6%)	1 (3%)	1 (3%)	0 (0%)
Generating ideas	36 (57.1%)	24 (72.7%)	30 (90.9%)	36 (83.7%)
Lexicon-related episodes	2 (3.1%)	0 (0%)	0 (0%)	3 (7%)
Grammar-related episodes	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Character-related episodes	1 (1.6%)	1 (3%)	0 (0%)	0 (0%)
Talking off-topic	12 (18.8%)	0 (0%)	0 (0%)	0 (0%)
Total number of instances	64	33	33	43

The results point to one focus area that is much more frequent during the chat

discussions than the others; that is, generating ideas. For three of the four sessions above,

over 70% of the instances were devoted to generating ideas. Among all of the chat

sessions in this study, from 57.1% to 90.9% of the talk dealt with generating ideas (See

Appendix P). Social greetings were the other focus area that was present in each chat

session presented above. A few lexicon-related meaning negotiations were also found in

two of the sessions above. Interestingly, no grammar-related episodes were found in any of the chat sessions. Discussion effort spent on the other focus areas was also infrequent.

Having discovered what learners had focused on during the chat interaction led to a further step of the qualitative analysis; that is, the quality of discussion. In other words, did learners use appropriate lexical and grammatical items? Was the discussion rich in relevant content? Therefore, the chat conversations were analyzed in three sub-features: lexical quality, grammatical quality, and content quality. A 5-point rating scale was used to rate the three aspects separately, which was displayed in Table 3.11, 3.12 and 3.13, respectively, in the Methodology chapter. Both the researcher and the independent rater assessed 100% of the chat transcripts based on the provided rating scales and obtained three sub-scores for each chat transcript. As reported in the Methodology chapter, the inter-rater reliability for the lexical quality, grammatical quality, and content quality scores in the interactive sessions was 66.7%, 66.7%, and 50%, respectively. The relatively low inter-rater reliability results were expected given that the ratings were based on holistic scales and involved relatively high subjective judgment. The two raters' scores were averaged to derive the final scores for each chat session, thus helped to enhance the objectivity of the ratings. The discussion quality scores across all chat sessions are summarized in Table 4.6. As the data show, the mean scores for the lexical, grammatical, and content quality were between 3 and 3.5 on a 5-point scale.

Table 4.6 Mean scores of the quality of discussion in the online-chat sessions (N=13)

	M	*SD*
Lexical score	3.46	0.43
Grammatical score	3.15	0.47
Content score	3.23	0.53

Table 4.7 represents the mean discussion quality scores by dyad in the online-chat sessions. The data show that dyad C/D had the highest scores in all three aspects. Dyad A/B had the lowest grammatical score, and dyad E/F had the lowest lexical and content scores.

Table 4.7 Mean scores of the quality of discussion by dyad in the online-chat sessions

	Dyad A/B	Dyad C/D	Dyad E/F
	M (N=4 sessions)	M (N=4 sessions)	M (N=5 sessions)
Lexical score	3.38	3.88	3.2
Grammatical score	3.0	3.38	3.1
Content score	3.38	3.5	2.9

In summary, the chat sessions in this study had a mean conversation length of 560.38 characters. The mean number of turns was 35.31 turns. The learning environment in the online chat was relatively equal for the Chinese L2 learners. The online chat allowed learners to generate ideas, discuss usages of characters or lexical items, manage the task in Chinese, help each other interpret the task prompt, greet each other in Chinese, and to talk off-topic in Chinese. The quality of the chat discussions in lexical, grammatical, and content aspects received a 3-range score on a 5-point scale based on the holistic judgment of the two raters in this study. The next subsection reports the analysis results for the post-chat composition writing.

4.2.2 Findings for Post-Chat Composition Writing

Upon completing each online-chat task, students immediately turned to the post-chat writing task: a 350-character composition produced independently during the same class session on the topic that had been addressed in the chat session. Students were asked to write the composition by hand on a piece of paper provided by their Chinese

teacher. A 30-minute timeframe was allowed for each post-interaction writing task. The analysis of the compositions focused on five writing constructs: (a) writing length, (b) character accuracy, (c) lexical quality, (d) syntactic quality, and (e) content quality. In addition, a holistic score was also assigned to each composition to obtain an overall assessment. Qualitative analyses and descriptive statistics were used primarily for this part of analysis. As discussed in the Methodology chapter, the writing length was obtained by counting the number of characters generated in each composition. The character accuracy was identified by calculating the ratio of correct characters to the total number of characters produced in each piece of writing.

Each of the other three writing constructs—lexical quality, syntactic quality, and content quality—consists of two sub-dimensions. The lexical quality looked at both lexical accuracy and lexical richness. Assessment of lexical accuracy was determined by dividing the number of correct lexical items by the total number of words. Lexical richness was measured by dividing the number of different words by the total number of words. Similarly, syntactic quality included the two sub-dimensions of syntactic accuracy and richness. Syntactic accuracy was obtained by dividing the number of correct syntactic structures by the total number of syntactic structures used. Syntactic richness was derived by dividing the counts of different syntactic structures by the total number of sentences. The construct of content quality was operationalized as the two sub-dimensions of content richness and organization. Evaluation of content richness was performed by dividing the number of different idea units by the total number of sentences. The organizational feature was assessed by using a 5-point holistic rating scale, as displayed in Table 3.14 in the Methodology chapter. Both the researcher and the independent rater assessed 100% of the post-chat compositions for the organizational feature using the provided rating scale. The two raters' scores were then averaged to derive the final organizational score for each composition. As reported in the Methodology chapter, the inter-rater reliability for the organizational score in the post-

interaction compositions was 50%. In addition to the individual construct scores, a holistic score was also assigned to each composition based on a 5-point rating scale, as displayed in Appendix O. Again, the second rater rated 100% of the sample and the two raters' scores were averaged to obtain the final holistic score for each post-chat composition. As reported in the Methodology chapter, the inter-rater reliability for the holistic score in the post-chat compositions was 60%. The reason for the relatively low inter-rater reliability for organizational and holistic scores was that the ratings were based on holistic scales and involved relatively high subjective judgment. The two raters' scores were averaged to derive the final scores for each chat session, which helped to enhance the objectivity of the ratings.

Findings for the post-chat compositions are presented in three different ways: (a) for all post-chat writing sessions, (b) for individual learners, and (c) for individual post-chat writing sessions. First, the mean scores were obtained for all 26 post-chat compositions to obtain an overall picture of the group performance. Second, the mean scores were summarized for individual learners across their post-chat writing sessions to shed light on individual performance. Third, mean scores were also calculated for individual post-chat writing session across the six learners to discover whether there was group performance change over time. The mean scores for all 26 post-chat compositions are first presented in the next sub-section.

4.2.2.1 Findings for post-chat composition across all sessions

Table 4.8 below presents the mean scores for all 26 post-chat compositions. The data show that the mean composition length following a chat session was 341.92 characters, with an SD of 58.80. The ratings for character accuracy, lexical accuracy, and syntactic accuracy were all relatively high, with mean percentage scores for the group higher than 90%. The lexical richness percentage score was close to that of the syntactic

richness percentage score, 56.56% and 51.30%, respectively. The mean content richness percentage score was 70.95%, with an SD of 0.17. The mean organization score and the holistic score were 3.62 and 3.46 respectively on a 5-point scale.

Table 4.8 Mean scores for all the post-chat compositions (N=26)

	M	*SD*
Number of characters	341.92	58.80
Character accuracy	98.77%	0.01
Lexical accuracy	96.54%	0.02
Lexical richness	56.56%	0.09
Syntactic accuracy	91.89%	0.07
Syntactic richness	51.30%	0.24
Content richness	70.95%	0.17
Organization (5-point scale)	3.62	0.71
Holistic assessment (5-point scale)	3.46	0.58

4.2.2.2 Findings for post-chat composition for individual learners

The data were also summarized for individual learners across their post-chat writing sessions to understand individual performance. Table 4.9 below presents the individual learner data.

Table 4.9 Mean scores for individual learners' post-chat compositions

Measure	A M (N=4 sessions)	B M (N=4 sessions)	C M (N=4 sessions)	D M (N=4 sessions)	E M (N=5 sessions)	F M (N=5 sessions)
Number of characters	368.0	348.75	365.75	293.25	339.4	338.0
Character accuracy	99.60%	98.85%	99.28%	97.23%	98.78%	98.88%
Lexical accuracy	97.25%	98.08%	94.88%	96.93%	95.90%	96.42%
Lexical richness	43.85%	52.78%	57.23%	66.10%	58.74%	59.40%
Syntactic accuracy	91.43%	89.33%	94.20%	90.08%	92.78%	93.00%
Syntactic richness	34.38%	60.20%	63.25%	71.05%	49.40%	34.28%
Content richness	56.48%	74.73%	63.85%	82.78%	71.58%	75.12%
Organiza-Tion	3.13	3.75	3.75	3.88	3.9	3.3
Holistic assessment	3.13	3.38	3.25	3.63	3.9	3.4

The data show that for writing length, learner A generated the longest compositions of 368.0 characters. Recall that together with learner B, dyad A/B also produced the highest chat conversation length. Learner D had the lowest composition length of 293.25 characters. All learners wrote their compositions with high character accuracy, with percentage scores all higher than 90%. Learner A had the highest character accuracy of 99.60%. Learner D had the highest lexical, syntactic, and content richness scores among the six, which were 66.10%, 71.05%, and 82.78%, respectively. Recall that together with learner C, dyad C/D also received the highest lexical, grammatical, and content scores for their chat sessions. Although learner A wrote the longest compositions, his lexical and content richness scores were the lowest among the

six, 43.85% and 56.48%, respectively. With respect to the organization and holistic assessment scores, learner E had the highest scores of 3.9 for both categories. Thus, the high scores were distributed among the six learners.

4.2.2.3 Findings for post-chat composition for individual sessions

Data were also summarized for the individual post-chat composition writing sessions for the six learners combined. The purpose was to observe whether there were changes across sessions over time. The mean scores for each post-chat writing session are summarized in Table 4.10.

Table 4.10 Mean scores for individual post-chat composition writing sessions

	Writing 1	Writing 2	Writing 3	Writing 4	Writing 5
	M (N=6 learners)	M (N=2 learners)	M (N=6 learners)	M (N=6 learners)	M (N=6 learners)
Number of characters	274.17	332.5	335.5	382.33	378.83
Character accuracy	98.63%	98.80%	99.02%	98.70%	98.73%
Lexical accuracy	95.82%	93.55%	96.93%	97.17%	97.25%
Lexical richness	60.60%	59.70%	54.20%	58.47%	51.92%
Syntactic accuracy	90.85%	89.45%	93.87%	93.03%	90.60%
Syntactic richness	68.42%	44.05%	33.97%	52.77%	52.48%
Content richness	80.35%	48.80%	79.63%	63.98%	67.23%
Organization	4.17	3.75	3.33	3.92	3.0
Holistic assessment	3.58	3.75	3.33	3.83	3.0

The data above suggest that learners seemed to generate longer compositions over time. The mean composition length for the first writing session was 274.17 characters. In the fourth and fifth post-chat writing sessions, the mean composition length increased by around 100 characters. Scores on other measures did not display an increasing effect. Great differences however were found in the lexical, syntactic, and content richness ratings, as well as the organization and holistic scores between different post-chat writing sessions, which might reflect different topic difficulty between sessions. For example, for the lexical richness measure, the rating of 60.60% for post-chat writing session 1 and 59.70% for post-chat writing session 2 were much higher than the 51.92% of post-chat writing session 5. This might indicate that the learners had more diversified lexical items for writing on the topic of the differences between Chinese and Western educations (post-chat writing session 1), as compared to writing about the relationship between morality and economic development (post-chat writing session 5). As another example, the syntactic richness rating of 68.42% for post-chat writing session 1 was also much higher than all the other sessions, especially the 33.97% for post-chat writing session 3. This finding might indicate that the topic of the differences between Chinese and Western educations (post-chat writing session 1) allowed students to produce more diversified syntactic items, as compared to the topic of how commercialism affects traditional festivals in China and the United States (post-chat writing session 3).

In summary, when the L2 Chinese learners in this study wrote following an online-chat session, they produced compositions based on free-discussion topics with a mean length of 341.92 characters. They also seemed to generate longer compositions over time. The learners also wrote with relatively high character, lexical, and syntactic accuracy, with ratings higher than 90%. For the three types of richness investigated in this study, the lexical and syntactic richness scores were both in the 50% range. The mean content richness score was at 70.95%. The organization and holistic score were in the 3-range on a 5-point scale. It was also interesting to observe that although learner D

wrote the shortest compositions; she had the highest lexical, syntactic, and content richness scores. By contrast, learner A wrote the longest compositions, but his lexical and content richness scores were the lowest among the six participants. By looking at the data in two different ways, i.e. by composition session and by learner, different information was obtained. An examination of the data by composition showed that certain topics were particularly challenging for applying lexical and syntactic items or achieving overall good quality. Looking at the data by learner revealed individual performance beneath the group data. Having analyzed the interactive chat sessions and post-chat compositions separately, the impact of the chat conversations on subsequent individual composition writing is presented in the next subsection.

4.2.3 Findings for Impact of Online Chat on Post-Chat
Composition Writing

The impact analysis was performed in two different ways: (a) correlation analysis, and (b) transfer analysis. The results of the two types of analysis are presented in the following two sub-sections, respectively.

4.2.3.1 Findings for correlations between online chat
and post-chat writing

First, correlations between the chat session data and post-chat writing data were identified. Correlations were explored between the following pairs of related data: (a) chat length and subsequent composition length, (b) lexical quality scores in the chat transcripts and lexical accuracy scores in the subsequent compositions, (c) lexical quality scores in the chat transcripts and lexical richness scores in the subsequent compositions, (d) grammatical quality scores in the chat transcripts and the syntactic accuracy scores in the subsequent compositions, (e) grammatical quality scores in the chat transcripts and the syntactic richness scores in the subsequent compositions, (f) content scores in the chat transcripts and the content richness scores in the subsequent compositions, and (g)

content scores in the chat transcripts and the organization scores in the subsequent

compositions. The results of the correlation analyses are summarized in the table below.

Table 4.11 Pearson correlation coefficients between online chats and post-chat
compositions (N=13)

Relationship between		R	P (<.05, 2-tailed)
Chat length	Composition length	−0.06	0.844
Chat lexical quality score	Composition lexical accuracy score	−0.09	0.759
Chat lexical quality score	Composition lexical richness score	0.22	0.462
Chat grammatical quality score	Composition syntactic accuracy score	0.10	0.743
Chat grammatical quality score	Composition syntactic richness score	0.20	0.514
Chat content score	Composition content richness score	0.26	0.394
Chat content score	Composition organization scores	0.12	0.697

The data above indicate that no significant association was found between the

online chat and post-chat compositions in any of the measure examined above. Thus, the

post-chat composition writing was not significantly associated with the preceding online

chat interaction. Given that the correlation data itself does not allow one to infer any

cause and effect relationship, a further transfer analysis was conducted to understand in a

more direct way what impact the chat sessions might have had on the post-chat

composition writing.

The next subsection presents findings of the analysis of the transfer of learning

from the interactive chat sessions to individual post-chat composition writing.

4.2.3.2 Findings for transfer analysis of performance
from online chat to post-chat writing

To further understand how much of the performance in the online chats could be successfully transferred to the subsequent composition writing, the chat sessions and subsequent compositions were analyzed in detail to observe the transfer effect. The transfer analysis looked into two aspects. First, were the lexical and syntactic structures, idea units, and organization in the post-chat compositions similar to the chat transcripts, and what percentage of those items in the compositions could be found in its preceding chat discussion? Second, did the language-related meaning negotiations in the chat discussions, if any, transfer to the post-chat composition writing?

This part of analysis is qualitative in nature. Such a qualitative analysis enabled an examination beneath the surface of the quantitative correlation analyses. It allowed an observation of details of the transfer from the online chats to post-chat composition writing that could not be disclosed by the quantitative analyses of the whole group.

Two different dyads and two different sessions were chosen for this analysis. In specific, dyad A/B's chat session 4 and dyad C/D's chat session 3 were subjected to the qualitative analysis. The two discussions were chosen because of the presence of lexicon-related episodes, which were completely absent in some other chat sessions, thus allowing an analysis from more angles. Table 4.12 below presents information on the similarities between the post-chat composition and its preceding chat session. The percentage of the lexical items, syntactic items, and idea units in each composition that were also present in the preceding chat session is presented. Illustrations are also provided.

Table 4.12 Similarity of the compositions to their preceding online-chat sessions

Composition	Learner	Percentage found in the preceding chat session		
		Lexical items	Syntactic structures	Idea units
Dyad A/B post-chat composition 4	A	80.3%	70%	75%
	B	81.4%	81.8%	66.7%
Dyad C/D post-chat composition 3	C	74%	75%	58.3%
	D	66.2%	75%	83.3%

The data above show that although there is a range in the percentages, the lexical and syntactic structures, as well as the idea units in the four compositions were to a large degree also present in the chat sessions. From 66.2% to 81.4% of the lexical items in the four post-chat compositions had already been produced by either the writer or his/her chat partner in the corresponding chat sessions. Example 1 below gives details on the similarity between the lexical items in the post-chat composition and those in the online-chat session.

Example 1: Similarity of lexical items between composition and their preceding chat session

Dyad A/B chat session transcript 4

5 B: 你觉得网络对人们的生活有什么影响？
What impact do you think the Internet has on people's life?

6 A: 消极的影响
Negative impact

7 B: 有积极的影响还是有消极的影响？为什么
It has positive or negative impact? Why

8 A: 网上是因为我们有很多色狼
Internet, it's because there are many perverts

Learner B composition script 4

我们都知道上网改变了我们的生活。可是那些改变是积极还是消极？
We all know the Internet has changed our life, but are those changes positive or negative?

The number in the left column indicates the turn number. The lexical items that are shared between the chat transcript and composition script are underlined. The punctuation is reproduced precisely from the Chinese, which applies to all examples cited in this study. As the data show, the lexical items learner B used in her composition were very similar to those produced by either B or A (B's chat partner) in dyad A/B's chat discussion. B also used the same sentence structure 还是 'or' in the same way as she used it in the chat discussion.

Regarding the syntactic structures, from 70% to 81.8% of the syntactic structures in the four post-chat compositions were found in their corresponding chat sessions. Example 2 below gives explanations on how the post-chat composition was similar to the online-chat session in its syntactic structures. The syntactic structures that were shared between the chat transcript and composition script are underlined for both original Chinese texts and English translations. As the data shows, learner D used the 给 'to or for' and 对…来说 'for…' structures, which she also used in the chat discussion.

Example 2: Similarity of syntactic structures between composition and their preceding chat session

Dyad C/D chat session transcript 3	Learner D composition script 3
25 D: 所以，人们通过买礼物给别的人表达向他们的爱 *So people express their love by buying gifts for other people* 26 C: 哈哈 *Hah hah* 41 D: 所以。。。 过节最重要的是什么？对我来说，吃美食是最重要的之一 嘿嘿 *So, what is the most important thing to do for the festivals? For me, eating delicious food is one of the most important things Laughter*	公司想要消费者认为他们为了表达爱而需要买东西送给爱上的人。之所以买东西是因为消费者想表达爱，可是，这样来说的看法并不对。对我来说，过如何的节日的最重要的是吃美食！ *Companies want consumers to believe that they need to express their love by buying things for their loved one. The reason that consumers buy things is because they want to express their love, but, such a perspective is not appropriate. For me, the most important thing to celebrate festivals is to eat delicious food!*

Concerning the content of students' writing and chat sessions, for the four compositions, from 58.3% to 83.3% of the content, expressed as idea units, was found in their preceding chat sessions. Example 3 below presents the manner in which the ideas in the post-chat composition were similar to those in the corresponding chat session. As the data show, from the online-chat session, learner A fully integrated the idea of the importance of knowing how to use computer into his composition and he also enriched the idea with more details.

Example 3: Similarity of idea units between composition and their preceding
chat session

Dyad A/B chat session transcript 4	Learner A composition script 4
13 B: 你觉得父母应该不应该让孩子用上网？ *Do you think parents should allow their children to use the Internet?*	网上改变了大家的生活。现在如果你不知道怎么用网上，你就从来没找好工作。我是小孩子的时候，我们没有电脑。我十三岁的时候，在我的学校，我们受到我们的第一次电脑。现在六岁的孩子比我知道更多的电脑还有网上的东西。可是这些孩子有比较多的机会。
14 A: 应该 *They should*	*Internet changed people's life. Now if you don't know how to use the Internet, you will never find a good job. When I was little, we didn't have computers. When I was thirteen, at my school, we received our first computer. Now a six-year old child knows more than me about using computers and the Internet. But these children have more opportunities.*
15 B: 多大？ *At what age?*	
16 A: 5 岁 网上是我们的未来 我们必须让我们的还在明白网上 *Five. Internet is our future; we need to let our children understand the Internet*	
17 B: 对我同意 *Yah, I agree*	
18 A: 如果他们不明白，那他们可能不成功对我同意 *If they don't understand, their children will not succeed*	

By comparing the writing organization of the four compositions with their preceding chat transcripts, it was found that learners A and D basically followed the conversation flow in the online-chat session, adding elaborations. Learner B also integrated into her composition all of the ideas in the chat session, both those she herself initiated and those initiated by her partner. Learner B, however, re-sequenced the ideas to emphasize her point that the Internet had a lot of advantages although there were also negative sides, in contrast to the dominance of the Internet's negative side during the chat. This earned her an organization score of 4.5 on a 5-point scale. In learner C's composition, he also picked up the general idea from the chat conversation about the disadvantages of commercializing traditional festivals. Furthermore, he inserted a new point of how the economic crisis had changed Americans' habit of buying holiday gifts. With the exception of learner A, who received a 3.0, all of the other learners received a 4.0 or 4.5 composition organization score. Thus, moving from the chat session to post-chat composition writing, all four learners followed the general idea structure in the chat sessions, although sometimes they modified the structure to some degree by changing the sequence or adding new content.

The second part of the transfer analysis examined whether the lexical items negotiated in the lexicon-related episodes were transferred into post-chat writing and in what manner. As mentioned before, no cases of grammar-related episodes were found in the chat data. A few lexicon-related episodes, however, were found in both of chat sessions investigated in this analysis.

Examples 4 and 5 below from dyad A/B's chat session 4 present information on the lexicon-related episodes generated in the online chats as well as how the lexical items were used in the post-chat writing. The lexicon-related episodes in the chat session and subsequent use of the lexical item in the composition are both underlined. From Examples 4 and 5, we can see that both learner A and learner B had explained or clarified a lexical item, i.e. 色狼 and 沟通, respectively, to their partner. They carried the lexical

item forward and used it in their post-chat compositions. Although learner B wrote the character 沟 in 沟通 erroneously as 构, the usage of the word was appropriate in the context. In contrast, the learners who received the explanation during the lexicon-triggered meaning negotiation in these two examples did not include the lexical item in their individual composition writing.

Example 4: Lexicon-related meaning negotiations in dyad A/B's online-chat session 4

Dyad A/B chat session transcript 4	Learner A composition script 4
7　B:　有积极的影响还是有消极的影响？为什么 *It has positive or negative? Why*	父母觉得如果他们对黑客和<u>色狼</u>进行攻击，那他们就没有网上的麻烦。 *The parents think that if they can attack the hackers and <u>perverts</u>, then they won't have any issue with using the Internet.*
8　A:　网上是因为我们有很多<u>色狼</u> *Internet, it's because there are many <u>colored wolves</u>*	
9　B:　<u>色什么</u>？ *<u>Color what?</u>*	
10　A:　他们上载他们的不好的照片在网上。然后呢，很多孩子可以看到 <u>色狼 是 se lang　色狼的意思是 colored wolf 或者 pervert</u> *They upload bad pictures to the Internet. And then, a lot of children would see them. <u>Se lang means colored wolf or pervert</u>*	
11　B:　我明白 *I see*	
12　A:　噢好啦 *Ok, good*	

Example 5: Lexicon-related meaning negotiations in dyad A/B's
    online-chat session 4

Dyad A/B chat session transcript 4	Learner B composition script 4
31 B: 所以。人们以前的生活有什么不同的地方？ *So how was people's life different before the Internet?*	我觉得对上网持很开放的态度，但是不只是买东西比较放便，<u>构通</u>也改变了很多。你可以跟任何人在世界上讨论，好象没有限。 *I carry an open attitude about using the Internet; it is not only about more convenience in shopping, it also changed the way of <u>communication</u>. You can discuss with anyone in the world, there seems to be no limit.*
32 A: 什么意思？ *What do you mean?*	
34 B: 他们怎么交通？ *How did they transport?*	
35 A: 嗯，他们没有 QQ 或者电脑，他们可能用电脑 *Hum, they didn't have QQ or computer, they may use computer*	
36 B: <u>我要说沟通不要说交通</u>。沟通很不一样。 *I meant to say goutong (<u>communication</u>), not jiaotong (transport/transportation). The <u>communication</u> was very different.*	

There were also lexicon-related episodes in dyad C/D's chat session 3, presented in Example 6 below. However, neither of them carried the word 浪漫 forward to their composition writing. The reason may be that the episode was not actually an explanation or clarification of a word. Although learner D explained the word 浪漫 to learner C by using English, learner C responded that he knew the meaning of the word but he questioned the opinion raised by learner D about whether Chinese people think that celebrating Christmas is a romantic thing.

Example 6: Lexicon-related meaning negotiations in dyad C/D's
online-chat session 3

Dyad C/D chat session transcript 3	Learner C/D composition script 3
13 D: 有的中国人认为圣诞节是浪漫的 *Some Chinese people think that Christmas is romantic*	No usage found
14 C: 我觉得有些中国人盲目过圣诞节，因为"过"圣诞节看起来流行浪漫？为什么？ *I think Some Chinese people celebrate Christmas in a blind way, because "celebrating" Christmas sounds fashionable. Romantic? Why?*	
15 D: Romantic *Romantic*	
16 C: 我知道意思是什么，但是为什么他们觉得圣诞节很浪漫？ *I know the meaning, but why do they think Christmas is romantic?*	

To obtain a complete picture of the transfer effect of lexicon-triggered meaning negotiations from the online-chat sessions to post-chat composition writing, all the chat sessions were explored in their number of lexicon-triggered meaning negotiations and their transfer to subsequent composition writing. The results are summarized in the table below.

Table 4.13 Transfer of lexicon-based meaning negotiations from online chat to post-chat compositions

Number of lexical items negotiated in chat sessions	Number of negotiated lexical items used in compositions	
	By learners who explained the word	By learners who received explanation of the word
4	3	0

The results displayed above indicate that in the online-chat interaction, only a total of four lexicon-triggered meaning negotiations were found. Three of the four negotiated lexical items were used in the post-chat compositions. Interestingly, it was observed that learners who had explained the lexical item to their partner during the meaning negotiation tended to carry the lexical item forward and use it in their post-chat compositions. In contrast, learners who received the explanation during the lexicon-triggered meaning negotiation did not include any of the negotiated lexical items in their individual composition writing.

4.2.4 Summary of Findings for Research Question 1

To summarize the findings for research question 1 (Does interactive L2 Chinese online text chat have an impact on subsequent individual L2 Chinese composition writing?), the analysis revealed that the conversations generated in the online chat sessions had a mean length of 560.38 characters and a mean number of 35.31 turns. As an interactive medium, the online chats allowed L2 Chinese learners an equal learning environment. Learners had a similar number of opportunities to practice in Chinese during the chat interaction. During the chat discussions, learners used most of their time to develop ideas. They also utilized the opportunities to discuss the usages of lexical items or characters, though this type of discussion was not found in all chat sessions. The chat discussions received a mean score of 3.46 for lexical quality, 3.15 for grammatical quality, and 3.23 for content quality on a 5-point rating scale.

When L2 Chinese learners wrote compositions individually following their online-chat sessions, their mean composition length was 341.92 characters, about 60% of the mean chat conversation length. They wrote with high character, lexical, and syntactic accuracy, with all scores higher than 90% accurate use for the items produced. The mean lexical and syntactic richness levels were 56.56% and 51.30%, respectively. The content

richness was highest at 70.95%. The organization and holistic scores of the post-chat compositions were 3.62 and 3.46, respectively, on a 5-point scale.

No significant association was found between the online chats and post-chat compositions in the length, lexical, grammatical, or content measures. When examining the chat transcripts and composition scripts more closely, it was found that there was fairly high similarity between the interaction and composition writing in the aspects of lexical, syntactic, and content items. With respect to the composition organization, during the composition writing learners basically followed the same idea structure as in their chat sessions. Learners also carried forward the lexical items they discussed in the chat sessions and used them in their afterwards composition writing. Interestingly, it was observed that learners who had explained the lexical item during the meaning negotiation tended to carry the lexical item forward and use it in their post-chat compositions. In contrast, learners who received the explanation during the lexicon-triggered meaning negotiation did not include any of the negotiated lexical items in their individual composition writing. It was also found that learners generated significantly longer compositions over the five chat sessions.

4.3 Findings for Research Question 2

Research question 2: Does interactive L2 Chinese face-to-face oral conversation have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects?

The main interest in the second question was to see what impact the FTF conversations may have on subsequent individual L2 Chinese composition writing. The organization of this section is similar to that of the Findings for Research Question 1 section; therefore the explanations of certain terms and procedures may be omitted in this section. This section consists of four subsections: the analysis results on the FTF conversation transcripts, the analysis results of the post-FTF composition writing scripts,

a discussion of the impact of the FTF oral conversations on subsequent composition writing and, finally, a summary of the findings for research question 2.

4.3.1 Findings for FTF Conversation

The FTF transcripts were analyzed both quantitatively and qualitatively. The quantitative analysis includes the conversation length, number of turns, length per turn, and contribution percentage. The two qualitative aspects analyzed were the focus of the FTF discussions and the quality of the discussions. The following two subsections first present the quantitative data and these are followed by a report on the qualitative data.

4.3.1.1 Quantitative findings for FTF conversation

During the FTF sessions, students also formed into dyads and were asked to converse for 20 minutes in Chinese based on the assigned topic. The FTF oral conversations were audio-taped as mp3 files for later transcription and analysis. Upon completing each FTF interactive task, students immediately wrote a 350-character composition independently during the same class session on the topic that was addressed in the FTF session, which was designated as the post-FTF writing task. Students were asked to write the composition by hand on a piece of paper provided by their Chinese teacher. A 30-minute timeframe was allowed for each post-FTF writing task. Tables 4.14 below summarizes the quantitative performance data, including mean conversation length, number of turns, and mean turn length across all 13 FTF sessions in the study.

Table 4.14 Mean length, number of turns, and turn length for the FTF sessions (N=13)

	M	*SD*
Number of characters	1168.69	311.94
Number of turns	33.38	10.56
Turn length in characters	36.51	8.68

The data above shows that the mean conversation length for all 13 FTF sessions was 1168.69 characters with an SD of 311.94. The mean number of turns was 33.38 turns, with an SD of 10.56. The mean turn length was 36.51 characters, with an SD of 8.68.

Table 4.15 presents the mean scores by dyad. We can see that the mean FTF length for dyad E/F was the highest at 1338.0 characters. Dyad E/F also had the highest mean number of FTF turns at 38.8. Their mean turn length, however, was the shortest among the three dyads. The mean turn length of dyad A/B was the longest at 37.21 characters.

Table 4.15 Mean length, number of turns, and turn length by dyad in the FTF sessions

	Dyad A/B	Dyad C/D	Dyad E/F
	M (N=4 sessions)	*M* (N=4 sessions)	*M* (N=5 sessions)
Number of characters	1188.25	937.5	1338.0
Number of turns	34.25	25.75	38.8
Turn length in characters	37.21	36.94	35.62

In addition to the quantitative data for the group and three dyads, it is also necessary to identify data for individual interlocutors to understand individual performance in the FTF interactive sessions. Therefore, the mean turn length and contribution percentage of individual interlocutors was identified for each FTF session. Table 4.16 summarizes the turn length of individual interlocutors in each FTF session. This data was obtained by having the number of characters divided by the number of turns produced by a learner in each FTF session. The data indicate that the mean length per turn for individual interlocutors during the FTF conversations ranged from 18.1 to 61 characters. The mean turn length for individual interlocutors was relatively spread out in

the FTF sessions, with around 60% of the data clustered between 20 and 40 characters per turn. This finding indicates a relatively unequal collaborative pattern.

Table 4.16 Mean turn length for individual interlocutors in the FTF sessions

Dyad	Learner	Mean turn length in characters				
		FTF 1	FTF 2	FTF 3	FTF 4	FTF 5
Dyad 1	A	33.9	NA	49.6	41.8	51.9
	B	20.3	NA	50.6	24.9	24.9
Dyad 2	C	35.6	NA	36.6	54.5	43
	D	35.8	NA	25.5	38.5	26.1
Dyad 3	E	52	50.2	38.4	61	24.4
	F	23.9	23.9	18.1	42.5	21.2

Table 4.17 below presents the language contribution percentages in each FTF interaction. The contribution percentage was obtained by having the total number of characters generated by a learner divided by the total number of characters generated in the FTF session by the dyad. The data show that the learners' language contribution pattern in the FTF sessions displayed a relatively unequal structure. For seven of the13 FTF conversations, the contribution between the two interlocutors in each dyad discussion differed by more than 20%: the FTF sessions 1, 4, and 5 by dyad A/B, the FTF session 5 by dyad C/D, and the FTF sessions 1, 2, and 3 by dyad E/F. In those seven FTF conversations, the participants A, C, and E contributed significantly more to the talk than their partners did. Thus, during the FTF conversations some participants were more dominant than their respective partners. This further confirms the findings (displayed in Table 4.16) on the wide range of turn lengths for individual interlocutors during the FTF conversations.

Table 4.17 Individual interlocutors' language contribution percentages in the FTF sessions

Dyad	Learner	FTF 1	FTF 2	FTF 3	FTF 4	FTF 5
Dyad 1	A	62.6%	NA*	52.4%	62.7%	67.6%
	B	37.4%	NA	47.6%	37.3%	32.4%
Dyad 2	C	48.2%	NA	59%	58.5%	62.2%
	D	51.8%	NA	41%	41.5%	37.8%
Dyad 3	E	68.5%	67.8%	68.8%	58.9%	55%
	F	31.5%	32.2%	31.2%	41.1%	45%

Note: * Data were not analyzed because data were missing for the corresponding online-chat session.

To identify the impact of FTF conversation on individual composition writing, it is also beneficial to understand the nature of the performance that occurred in the FTF sessions. This part of the analysis is a qualitative examination.

4.3.1.2 Qualitative findings for FTF conversation

The qualitative analysis investigated two aspects: (a) focus of discussion, and (b) quality of discussion. To identify focus of discussion, the FTF transcripts were coded into corresponding focus areas. The total number of instances for each focus area was obtained and compared with number of instances on other focus areas to reveal the distribution of different learning focuses during the FTF interaction. Table 4.18 below summarizes the findings by number and percentage of instances for each focus area. Data are presented on four FTF sessions, one or two sessions for each dyad. For complete data on the other FTF sessions, see Appendix Q.

Table 4.18 Number and percentage of instances for each focus area in the FTF sessions

Focus area	Dyad A/B FTF 1	Dyad A/B FTF 3	Dyad E/F FTF 3	Dyad E/F FTF 4
Social greetings	0	2 (10%)	0	0
Task management	0	0	0	0
Interpreting task prompt	0	1 (5%)	0	0
Generating ideas	39 (95.1%)	10 (50%)	42 (79.2%)	25 (80.6%)
Lexicon-related episodes	2 (4.9%)	4 (20%)	8 (15.1%)	4 (12.9%)
Grammar-related episodes	0	0	3 (5.7%)	2 (6.5%)
Character-related episodes	0	0	0	0
Talking off-topic	0	3 (15%)	0	0
Total number of instances	41	20	53	31

The data indicate that the most significant focus area during the FTF conversations was generating ideas. Among all the FTF sessions, from 50% to 95.1% of the turns were in regard to generating ideas (see Appendix Q for complete analysis results). On the other hand, lexicon-related episodes were found in most of the FTF sessions, although only a few instances in each. Grammar-related episodes also occurred in a few FTF sessions. There were also a few instances of social greetings. No instances were found of character-related episodes. Discussion of the other focus areas was insignificant or totally absent.

The other type of qualitative analysis conducted was the quality of FTF discussion. The FTF conversations were analyzed in three sub-features: lexical quality, grammatical

quality, and content quality. A 5-point rating scale was used to evaluate the three features separately, as displayed in Table 3.11, 3.12 and 3.13 respectively in the Methodology chapter, and three sub-scores were derived. Both the researcher and the independent rater assessed 100% of the FTF transcripts using the provided rating scales and obtained three sub-scores for each FTF transcript. The two raters' scores were then averaged to derive the final sub-scores for each FTF session. As reported in the Methodology chapter, the inter-rater reliability results for the lexical quality, grammatical quality, and content quality scores in the interactive sessions were 66.7%, 66.7%, and 50%, respectively. The relatively low inter-rater reliability results were expected given that the ratings were based on holistic scales and involved relatively high subjective judgment. The two raters' scores were averaged to derive the final scores for each chat session, which helped to enhance the objectivity of the ratings. Table 4.19 presents the mean discussion quality scores across all 13 FTF sessions. The analysis shows that the mean lexical score was higher than the grammatical and content scores, and the grammatical score was the lowest: 3.62 on a 5-point scale.

Table 4.19 Mean score on quality of discussion for the FTF sessions (N=13)

	M	SD
Lexical score	4.27	0.39
Grammatical score	3.62	0.42
Content score	3.92	0.57

Table 4.20 represents the mean discussion quality scores by dyad in the FTF sessions. Dyad C/D also had the highest scores in all three aspects for their FTF conversations. By contrast, dyad E/F had the lowest scores for all three aspects.

Table 4.20 Mean score on quality of discussion by dyad in the FTF sessions

	Dyad A/B	Dyad C/D	Dyad E/F
	M (N=4 sessions)	*M* (N=4 sessions)	*M* (N=5 sessions)
Lexical score	4.25	4.33	4.1
Grammatical score	3.63	4.0	3.3
Content score	3.75	4.38	3.7

In summary, the FTF conversations had a mean length of 1168.69 characters. The mean number of turns was 33.38 turns. The interaction and collaboration in the FTF conversations displayed a relatively unequal structure. As an interactive medium, it facilitated L2 Chinese learners to generate ideas and discuss the usage of lexical or grammatical items. Lexicon-related episodes were found in most of the FTF sessions. Grammar-related episodes were also found in a few FTF sessions. The mean lexical score of the FTF discussions was relatively high: 4.27 on a 5-point scale. The grammatical and content scores were 3.62 and 3.92, respectively. The next subsection reports on the analysis results of the post-FTF composition writing.

4.3.2 Findings for Post-FTF Composition Writing

The analysis of the post-FTF composition focused on five writing constructs: writing length, character accuracy, lexical quality, grammatical quality, and content quality. In addition, a holistic score was also assigned to each composition to obtain an overall evaluation. Qualitative analysis and descriptive statistics were used primarily for this part of the analysis. For information on how each score was derived, see the Methodology chapter or the Findings for Research Question 1 section above.

Data are presented for all post-FTF writing sessions, individual learners, and individual post-FTF writing sessions, respectively. The next subsection presents findings across all post-FTF writing sessions.

4.3.2.1 Findings for post-FTF composition across all

sessions

Upon completing each FTF conversation task, students immediately wrote a 350-character composition independently during the same class session on the topic that had been addressed in the FTF session, which was designated as the post-FTF writing task. Students were asked to write the composition by hand on a piece of paper provided by their Chinese teacher. A 30-minute timeframe was allowed for each post-FTF writing task. Table 4.21 below presents the mean scores for individual measures as well as holistic scores for all post-FTF compositions.

Table 4.21 Mean scores for all the post-FTF compositions (N=26)

	M	*SD*
Number of characters	380.31	59.74
Character accuracy	98.0%	0.01
Lexical accuracy	97.39%	0.02
Lexical richness	53.29%	0.09
Syntactic accuracy	92.91%	0.09
Syntactic richness	44.62%	0.16
Content richness	73.64%	0.15
Organization (5-point scale)	3.42	0.66
Holistic assessment (5-point scale)	3.21	0.57

The data show that the mean composition length following an FTF session was 380.31 characters, with an SD of 59.74. The mean scores of character, lexical, and syntactic accuracy were all relatively high, with scores higher than 90%. The mean

lexical richness score was 53.29% and the syntactic richness score was 44.62%. The content richness score was 73.64%. The mean organization score and the holistic score were 3.42 and 3.21, respectively, on a 5-point scale.

4.3.2.2 Findings for post-FTF composition for individual learners

The results were also summarized for individual learners across all of their post-FTF writing sessions to understand individual performance. The table below presents the data.

Table 4.22 Mean scores for individual learners' post-FTF compositions

	A	B	C	D	E	F
	M (N=4 sessions)	*M* (N=4 sessions)	*M* (N=4 sessions)	*M* (N=4 sessions)	*M* (N=5 sessions)	*M* (N=5 sessions)
Number of characters	397.75	409.25	401.5	313.75	379	380.8
Character accuracy	98.93%	97.88%	98.98%	96.18%	97.88%	98.14%
Lexical accuracy	97.63%	97.05%	98.13%	95.70%	96.90%	98.74%
Lexical richness	42.50%	53.48%	51.38%	66.33%	57.80%	48.36%
Syntactic accuracy	96.75%	83.35%	94.15%	90.35%	98.18%	93.26%
Syntactic richness	34.25%	48.68%	62.55%	51.98%	40.28%	33.78%
Content richness	54.63%	73.13%	78.00%	63.65%	83.78%	83.60%
Organization	3.25	3.5	3.63	3.13	3.5	3.5
Holistic assessment	3.13	3.63	3.13	2.88	3.1	3.4

The data above indicate that, first, all learners performed well in terms of character and lexical accuracy in the post-FTF writing, with scores higher than 95%. The data also show that learner A had a mean lexical score of 42.50% and a content richness score of 54.63%, both the lowest among the six. Learner B generated the longest post-FTF compositions: 409.25 characters, which was 95 characters greater than learner D, who had the lowest composition length of 313.75 characters. Learner B's holistic assessment score of 3.63 was also the highest among the six. As mentioned above, learner D wrote the shortest post-FTF compositions. Her organization score of 3.13 and holistic assessment score of 2.88 were also the lowest among the six. Thus, recall that although dyad C/D received the highest scores in the FTF discussion quality, the FTF session did not bring learner D a satisfactory performance in the post-FTF composition writing. Learner E's syntactic accuracy and content richness scores of 98.18% and 83.78% respectively were the highest among the six. Learner F had the lowest syntactic richness score of 33.78%. Recall that dyad E/F generated the highest FTF conversation length as well as the highest number of FTF turns among the three dyads. Their mean post-FTF composition length, however, was lower than that of learners A, B, and C.

4.3.2.3 Findings for post-FTF composition for
individual sessions

Data were also summarized for individual post-FTF writing session across all six learners. The purpose was to observe whether there were significant changes between sessions over time. The mean scores for each post-FTF writing session are summarized in Table 4.23 below. The data indicate that learners seemed to generate longer compositions after the FTF sessions over the 10 weeks of the study. The mean composition length for the fifth post-FTF writing session was 109 characters greater than that of the first post-FTF writing session. The increasing trend in length could be observed consistently across the FTF sessions. No claim can be made about changes in any of the other constructs

over time. This finding may relate to the small data sample in this study, which will be discussed at greater length in the Discussion chapter.

Table 4.23 Mean scores for individual post-FTF composition writing sessions

	Writing 1	Writing 2	Writing 3	Writing 4	Writing 5
	M (N=6 learners)	*M* (N=2 learners)	*M* (N=6 learners)	*M* (N=6 learners)	*M* (N=6 learners)
Number of characters	320	346	393.83	389.17	429.67
Character accuracy	97.80%	98.35%	97.55%	98.22%	98.30%
Lexical accuracy	96.17%	98.95%	96.90%	97.43%	98.55%
Lexical richness	56.88%	47.95%	56.77%	54.48%	46.80%
Syntactic accuracy	86.95%	90.45%	98.48%	92.15%	94.87%
Syntactic richness	42.58%	54.15%	46.83%	45.93%	39.95%
Content richness	78.43%	95.85%	64.67%	73.72%	70.32%
Organization	3.0	4.50	3.58	3.50	3.25
Holistic assessment	2.75	4.0	3.25	3.42	3.17

In summary, when the L2 Chinese learners in this study wrote following an FTF session, they produced essays based on free-discussion topics with a mean length of 380.31 characters. Learners also seemed to generate longer compositions over the five post-FTF writing sessions. Learners also wrote with relatively high character, lexical, and syntactic accuracy, with all three mean scores higher than 90%. For the three types of richness investigated for the post-FTF compositions, the mean lexical richness score was 53.29%, and the mean syntactic richness score was 44.62%. The mean content richness

score was higher at 73.64%. The organization and holistic scores of the post-FTF compositions were 3.42 and 3.21, respectively, on a 5-point scale. Learner B generated the longest post-FTF compositions, and her holistic assessment score of 3.63 was the highest among the six learners. Learner D wrote the shortest post-FTF compositions, and her organization score of 3.13 and holistic assessment score of 2.88 were also the lowest among the six. Although dyad E/F generated the greatest FTF conversation length, their post-FTF compositions were shorter than those of learners A, B, and C.

Having analyzed the interactive FTF sessions and post-FTF compositions, the impact of the interactive FTF conversations on subsequent individual composition writing is presented in the next subsection.

4.3.3 Findings for Impact of FTF Conversation on Post-FTF Composition Writing

The impact analysis was performed using two different approaches: (a) correlation analysis, and (b) transfer analysis. The two types of analysis results are presented in the following two subsections.

4.3.3.1 Findings for correlations between FTF discussion and post-FTF writing

First, correlations between the FTF interaction and post-FTF compositions were explored. Correlation analyses were performed between the following pairs of variables: (a) FTF length and subsequent composition length, (b) lexical quality scores in the FTF transcripts and lexical accuracy scores in the subsequent compositions, (c) lexical quality scores in the FTF transcripts and lexical richness scores in the subsequent compositions, (d) grammatical quality scores in the FTF transcripts and syntactic accuracy scores in the subsequent compositions, (e) grammatical quality scores in the FTF transcripts and syntactic richness scores in the subsequent compositions, (f) content scores in the FTF transcripts and content richness scores in the subsequent compositions, and (g) content

scores in the FTF transcripts and organization scores in the subsequent compositions. The

results of the correlation analyses are summarized in the table below.

Table 4.24 Pearson correlation coefficients between FTF conversations and
         post-FTF compositions (N=13)

Relationship between		R	P (<.05, 2-tailed)
FTF length	Composition length	−0.13	0.669
FTF lexical quality score	Composition lexical accuracy score	0.004	0.988
FTF lexical quality score	Composition lexical richness score	0.16	0.602
FTF grammatical quality score	Composition syntactic accuracy score	−0.54	0.056
FTF grammatical quality score	Composition syntactic richness score	0.795	0.001*
FTF content score	Composition content Richness score	−0.14	0.642
FTF content score	Composition organizational score	0.29	0.343

Note: *statistically significant measure, p<.05

The data above indicate that the grammatical quality score in the FTF oral

conversations was positively associated with the syntactic richness score in the post-FTF

compositions($r = 0.795$). However, no significant association was found between the FTF

oral conversation and post-FTF compositions in other measures examined above. A

scatter-plot figure is presented below to visually display the correlations between the FTF

grammatical quality scores and the post-FTF composition syntactic richness scores. The

representation shows that the two sets of data have a clear positive correlation. Therefore,

when the learners used better grammatical features in the FTF discussions, they tended to

write with more diversified syntactic structures in the post-FTF compositions.

Figure 3. Correlation between FTF grammatical quality scores and post-FTF composition syntactic richness scores
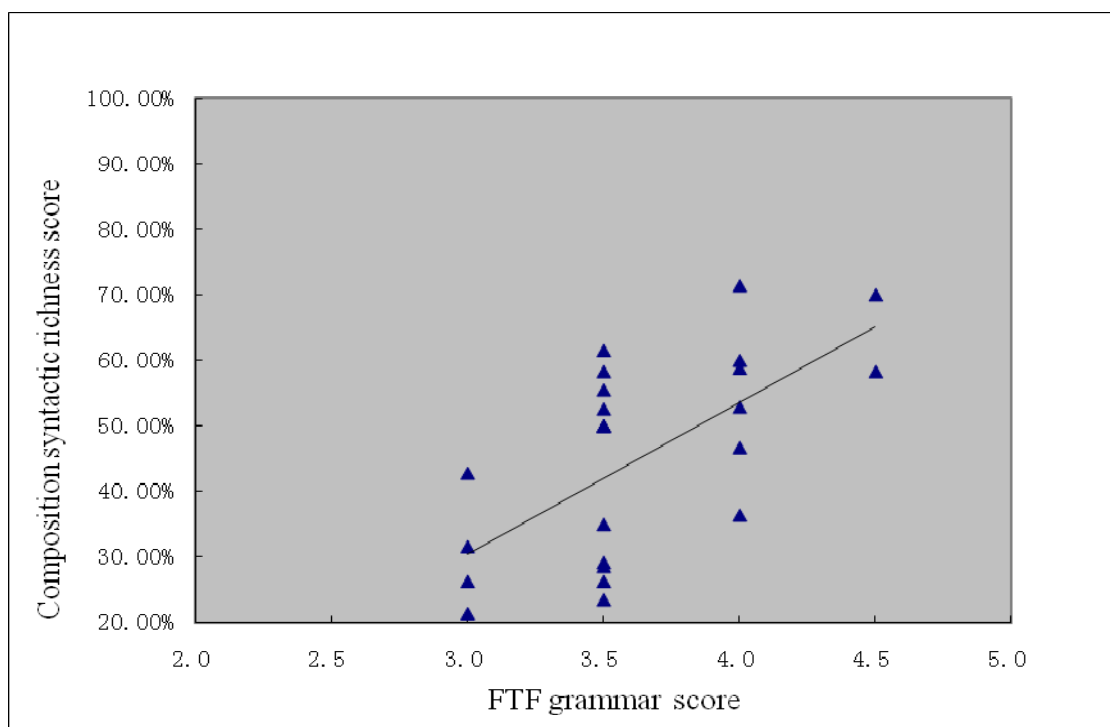
Because the correlation data however does not allow one to infer any cause and effect relationship, a further transfer analysis was also conducted to understand in a more direct way what impact the FTF sessions may have had on the post-FTF composition writing. The subsection below presents the results of the transfer analysis of the performance moving from FTF conversation to post-FTF composition writing.

4.3.3.2 Findings for transfer analysis of performance
from FTF conversation to post-FTF writing

To further understand how much of the performance in the FTF session was successfully transferred to subsequent composition writing, dyad discussions and their subsequent compositions were analyzed in detail to observe any possible learning transfer

effect. The transfer analysis examined two aspects. First, were the lexical and syntactic structures, idea units, and organization in the post-FTF compositions similar to the FTF transcripts, and what percentage of those items in the composition could be found in its preceding FTF discussion? Second, whether language-related meaning negotiations in the FTF discussions, if any, were transferred to the post-FTF composition writing was also explored. Such a qualitative analysis enabled an examination beneath the surface of the quantitative correlation analyses. It allowed an observation of details of the transfer from the FTF discussions to post-FTF composition writing that could not be disclosed by the quantitative analyses of the whole group.

Two different dyads and two different sessions were chosen for the transfer analysis: dyad A/B's FTF session 4 and dyad E/F's FTF session 3. These two FTF discussions were chosen because language-related meaning negotiations occurred in the two sessions, thus allowing an analysis from more angles. Table 4.25 presents information on the percentages of lexical and syntactic items, as well as idea units in the post-FTF composition that were also found in the preceding FTF sessions. Illustrations are provided.

Table 4.25 Similarity of the compositions to their preceding FTF sessions

Composition	Learner	Percentage found in the preceding FTF session		
		Lexical items	Syntactic structures	Idea units
Dyad A/B post-FTF composition 4	A	91%	70.6%	90.9%
	B	82.7%	70.6%	75%
Dyad E/F post-FTF composition 3	E	71.8%	25%	40%
	F	76.8%	75%	50%

The data above indicate that, the lexical items in the four post-FTF compositions were very similar to their preceding FTF sessions. From 71.8% to 91% of the lexical items in the four post-FTF compositions were produced by one or both learners in the preceding FTF session. Example 7 below presents details on how the lexical items in the post-FTF composition were similar to those in the FTF session. The number in the left column indicates the turn number. The lexical items that were shared between the FTF conversation transcript and composition script were underlined. As the data shows, the lexical items that learner A used in his composition were very similar to those in the FTF discussion in which he participated. He also used the same sentence structure 所以 'therefore' in a way similar to the FTF discussion.

Example 7: Similarity of lexical items between composition and their preceding
FTF session

Dyad A/B FTF session transcript 4	Learner A composition script 4
22 B: 。。。。。。<u>所以</u>人们<u>在农村</u>受到什么影响？ *So how are the people in the <u>rural area</u> affected?*	<u>城市化</u>给农村一点的<u>影响</u>。<u>差不多所以的</u><u>人在</u>中国农村<u>有电视</u>。<u>他们</u>可以<u>看到</u>中国<u>城市化</u>的影响，在比如说上海、北京和广州。<u>所以他们</u>知道关于<u>城市化</u>，然后他们大概<u>要</u>新的东西。
23 A: 我觉得<u>他们在农村</u>，<u>差不多所以的</u><u>人有电视</u>，<u>所以他们</u>看到<u>城市化</u>或者<u>城市</u>的生活，<u>所以</u>他们说有的<u>人</u>说我<u>要</u>那种生活 。。。。。。 *I think in the <u>rural area</u>, <u>almost</u> everyone has access to <u>TV</u>, <u>therefore</u> <u>they can see</u> what urban life is like, and then some of them will say that's the life I <u>want</u>.*	*<u>Urbanization</u> has some <u>impact</u> on the <u>rural area</u>. <u>Almost</u> all the <u>people</u> in China's <u>rural area</u> <u>have TV</u>. They can <u>see</u> the <u>impact of urbanization</u>, for example in Beijing, Shanghai, and Guangzhou. <u>Therefore</u> they know about <u>urbanization</u>, and then they <u>want</u> a new life.*

For the syntactic items, more than 70% of the syntactic items in the post-FTF compositions of learners A, B, and F were found in the respective preceding FTF session. However, for learner E's composition, only 25% of the syntactic items in his composition

were found in the FTF session in which he participated. Example 8 below gives information on how the syntactic items in the post-FTF composition were similar to those in the preceding FTF conversation session. The syntactic items that were shared between the FTF conversation transcript and composition script are underlined. As the data show, learner B used 因为 'because' and 可是 'but' structures, which learner A, her partner, also used in the preceding FTF discussion.

Example 8: Similarity of syntactic structures between composition and their preceding FTF session

Dyad A/B FTF session transcript 4	Learner B composition script 4
5 A: 对，<u>因为</u>那个户口让很多人伤心，<u>因为</u>他们要换他们的家，<u>可是</u>非常麻烦，如果他们住在毕家村，他们有毕家村的户口，没有西安的户口。 *Yes, <u>because</u> the residence registration system made a lot of people upset, <u>because</u> if they want to move, it's very troublesome. If they live in village Bi, they have a residence record in village Bi, they don't have an identity to live in Xi'an.*	这件事情选成很多麻烦，<u>因为</u>很多人需要去别的地方找工作为了专钱，<u>可是</u>买不起别的城市的户口。 *This caused a lot of problems, <u>because</u> a lot of people need to go to other places to look for a job in order to make money, <u>but</u> they could not afford buying a residence identity in other cities.*

For the idea units, 90.9% of the idea units in learner A's composition were found in the preceding FTF session 4, and 75% of learner B's idea units were found in the FTF discussion 4. Learners E's and F's composition however had a relatively low content similarity percentage, 40% and 50% respectively. Example 9 below presents the manner in which the content of the post-FTF composition was similar to that of the FTF conversation session. As the data show, learner E integrated into his composition writing the idea he talked about across a few FTF turns about the different spending habits of young people and elderly people. He also inserted a number of new ideas in his

composition, which made the content similarity of his composition relatively low. Thus, learner E went beyond the FTF sessions and wrote more creatively than they talked.

Example 9: Similarity of ideas between composition and their preceding
FTF session

Dyad E/F FTF session transcript 3	Learner E composition script 3
5 E: 。。。。。。比如说，哥哥买了一个新 i-pod 和新的电脑和新的照片，照相机。。。。。。。 *...For example, my (Chinese home-stay) brother bought a new iPod and a new computer, and camera...* 7 E: 但我觉得啊，这么贵，但你有更多钱，你可以买别的。 *But I think, it's so expensive, but you have more money, you can buy something else.* 11 E: 我家庭妈妈说舒服的是年轻人，我们老人吃凉菜，就是冷的菜，吃昨天的菜。 *My home-stay mom said that comfortable life style is only for the young people. The elderly eat leftovers.*	我的中国家庭为哥哥化钱，父母说热菜，品牌产品，等东西是年轻人的。老年人是吃昨天的菜，也不用购买时尚产品。 *My Chinese home-stay family spent money for my home-stay brother, my home-stay parents say that warm dishes, brand-name products, etc. are for young people to use. The elderly only eat leftovers from the day before, and they have no need to purchase any fashionable products.*

By comparing the organization of the four compositions with their preceding FTF conversation transcripts, it was found that learners A and B basically followed the idea sequence in the FTF discussion. For learners E and F, they both made a new statement at the beginning of the composition. Although they used some ideas in the FTF session to support their arguments, the structure of their writing was clearly different from their FTF discussion structure. Based on the two raters' ratings, all four learners received an organization score of 3 on a 5-point scale for the four post-FTF compositions presented above. Thus, moving from the FTF session to post-FTF composition writing, the four learners displayed different transfer patterns in the organization aspect. Learners A and B

closely followed the idea structure in the FTF conversation when they wrote their individual compositions. Learners E and F, however, used some of the ideas from the FTF session and also added quite some new content to their compositions. As a result, the organization of their compositions appeared to be very different from the organization of the FTF session.

The second part of the transfer analysis looked at whether language-related meaning negotiations were transferred into the post-FTF writing and in what manner. A few lexicon-related episodes were found in both FTF sessions investigated above. However, only one of them was transferred to the post-FTF composition writing, which is presented in Example 10 below. Again, the lexicon-related meaning negotiations in the FTF session and the subsequent usage of the lexical item in the composition are both underlined.

Example 10: Lexicon-related meaning negotiations in dyad A/B's FTF session 4

Dyad A/B FTF session transcript 4		Learner B composition script 4
12	B:	可是在中国有很多四川人在别的地方，在所有的地方，所以你觉得他们换他们的户口或者是<u>非法的工作</u>？ *But in China there are many Sichuanese people in other places, all over the places, so you think they either need to change their residence identity or otherwise it will be <u>illegally working</u>?*	然后如果他们有孩子与此同时<u>非发工作</u>，孩子不会上学效。 *Then, if they have children and at the same time are <u>working illegally</u>, their kids won't be able to go to school.*
13	A:	<u>非法的工作</u>？ *<u>Working illegally</u>?*	
14	B:	是很大的问题。我觉得城市化对美国不太，不是一个大问题，比较小。 *It's a big problem. I think urbanization is not a big problem for the U.S. It's a relatively small problem.*	

From Example 10, we can see that learner B used the phrase 非法的工作 'working illegally,' and learner A repeated the phrase to signal non-understanding. Learner B, however, did not spend time explaining the word 非法, and they continued with the conversation. Learner B carried forward the word 非法 and used it in her subsequent writing. Learner A, who perhaps still did not understand the word, did not use the word in his composition. Other lexical items discussed in the lexicon-related episodes in the FTF sessions investigated were not found in the subsequent compositions.

Grammar-related meaning negotiations also occurred in dyad E/F's FTF session 3, presented in Example 11 below. From Example 11, we can see that learner E explained how to use the grammar structure 将 to learner F by using the structure to state his opinion. Learner F seemed to understand the structure because she also applied the structure immediately to state her own opinion. Learner E used the structure 将 in his subsequent composition writing. Learner F, however, did not, even though she understood how to use it with the help of learner E during the FTF discussion.

Example 11: Grammar-related meaning negotiations in dyad E/F's
　　　　　FTF session 3

Dyad E/F FTF session transcript 3	Learner E composition script 4
20 F:　　我不知道怎么用这个。 　　　　*I don't know how to use this.*	自会开车走，我只<u>将食物视为化钱首 选</u>，很少买别的东西。 *Since I learned how to drive, <u>I treat food as the priority</u> when I need to spend money, I seldom buy other things.*
21 E:　　将，我<u>将食物备为花钱的首 先</u>。 　　　　*It's jiang. <u>Food takes priority when I spend money.</u>*	
22 F:　　我的妈妈<u>将菜视为花钱首 选</u>。 　　　　*My mom <u>treats food as the priority</u> when she spends money.*	

To obtain a complete picture of the learning transfer of grammar- and lexicon-triggered meaning negotiations from the FTF oral conversation sessions to post-FTF composition writing, all the FTF oral conversation sessions were examined in the number of meaning negotiations, and their usages in the subsequent composition writing. The transfer results of lexicon-triggered meaning negotiations are summarized in the table below.

Table 4.26 Transfer of lexicon-based meaning negotiations from FTF
          oral conversations to post-FTF compositions

Number of lexical items negotiated in FTF sessions	Number of negotiated lexical items used in compositions	
	By learners who explained the word	By learners who received explanation of the word
16	3	1

The data above indicate that the FTF conversation environment triggered a total of 16 lexicon-based meaning negotiations. However, only four of them were included by learners in their individual composition writing. The transfer result of grammar-based meaning negotiations is summarized in Table 4.27 below.

Table 4.27 Transfer of grammar-based meaning negotiations from FTF oral
          conversations to post-FTF compositions

Number of grammatical structures negotiated in FTF sessions	Number of negotiated structures used in compositions	
	By learners who explained the structure	By learners who received explanation of the structure
3	1	1

The data above indicate that the FTF interactive environment also resulted in grammar-triggered meaning negotiations, although only three instances were identified. Two of those were also used by learners in their post-FTF compositions.

4.3.4 Summary of Findings for Research Question 2

To summarize the findings in response to research question 2 (Does interactive L2 Chinese face-to-face oral conversation have an impact on subsequent individual L2 Chinese composition writing?), the conversations generated in the FTF sessions in this study had a mean length of 1168.69 characters and a mean number of 33.38 turns. As an interactive medium, the learning environment in the FTF conversations for L2 Chinese learners displayed a relatively unequal structure. Some learners tended to be more dominant than others. During the FTF sessions, learners used most of their time to develop their ideas. Lexicon-related episodes were found in most of the FTF sessions. Those lexical items, however, were used infrequently in the subsequent composition writing. In specific, out of the 16 lexical items negotiated in the FTF conversations, only three of them were included in the subsequent compositions. A total of three grammar-based meaning negotiations were found in the FTF sessions, and two of them were used in the subsequent composition writing. The lexical quality of the FTF discussions was rated relatively high: 4.27 on a 5-point scale. The grammatical and content quality scores were in the medium range, i.e. 3.62 and 3.92, respectively.

When L2 Chinese learners wrote composition individually following their FTF sessions, their mean composition length was 380.31 characters, which was about 33% of the mean FTF conversation length. The mean scores of character, lexical, and syntactic accuracy were all quite high, with scores higher than 90%. The mean lexical richness score was 53.29% and the mean syntactic richness score was 44.62%. The content richness score was higher at 73.64%. The organization and holistic scores of the post-

FTF compositions were in the medium range, 3.42 and 3.21, respectively, on a 5-point scale.

Positive correlation was observed between the FTF grammatical quality score and the syntactic richness score in the post-FTF compositions (r =.795). However, no significant association was found between the FTF oral conversation and post-FTF compositions in other measures examined. When examining the FTF transcripts and composition scripts more closely, it was found that for some sessions there was high similarity between the interaction and subsequent compositions with respect to lexical and syntactic items, content, and organizational features. Such a pattern, however, was not consistently observed. For some sessions, learners used only a few ideas from the FTF discussions; they added a good number of new ideas and also developed new structure in their composition writing. Across the five post-FTF writing sessions, it was also found that the learners generated significantly longer compositions over time.

4.4 Findings for Research Question 3

Research question 3: Do interactive online chat and face-to-face oral conversation differ in their impact on subsequent individual L2 Chinese writing?

The third research question looked at the impact difference between the online chats and FTF oral conversations on individual Chinese composition writing. The analysis was built upon the findings for research questions 1 and 2. The interactive data, post-interaction composition data, as well as the impact data were compared between the two mediums. Both quantitative and qualitative data were compared. A summary of the findings for research question 3 is presented at the end of this section. The first subsection below presents a comparison of the results between the online chat and FTF oral conversation sessions.

4.4.1 Comparison of Results between Online Chat and

FTF Conversation Sessions

In this part of the analysis, both quantitative and qualitative data regarding the interactive sessions were compared between the two mediums. Both group and dyad data were compared. Table 4.28 presents the data comparison between the online chat and FTF sessions for the entire participant group in the aspects of conversation length, number of turns, mean turn length, lexical score, grammatical score, and content score.

Table 4.28 Comparison between online chats and FTF sessions (N=13)

	Online chats		FTF conversations		Mean difference (Chat−FTF)
	M	*SD*	*M*	*SD*	
Number of characters	560.38	151.67	1168.69	311.94	−608.31
Number of turns	35.31	11.49	33.38	10.56	1.93
Turn length in characters	16.35	2.95	36.51	8.68	−20.16
Lexical score	3.46	0.43	4.27	0.39	−0.81
Grammatical score	3.15	0.47	3.62	0.42	−0.47
Content score	3.23	0.53	3.92	0.57	−0.69

Table 4.29 below represents the Wilcoxon signed ranks test results, a test performed to examine statistical significance of the differences in learner performance between the two mediums. As can be seen from the table, a Wilcoxon signed ranks test found that except for the number of turns, the other differences between the online chats and FTF oral conversations were all statistically significant at the 0.05 level. In other words, the mean conversation length and turn length of the FTF sessions were

significantly greater than those of the online chats. The mean lexical, grammatical, and content scores of the FTF sessions were also significantly higher than those of the chat sessions.

Table 4.29 Wilcoxon signed ranks test results for differences between online chats and FTF conversations (N=13)

Measure	Mean difference (Chat−FTF)	Z	P (<0.05, 2-tailed)
Number of characters	−608.31	−3.18	0.001*
Number of turns	1.93	−0.04	0.969
Turn length in characters	−20.16	−3.18	0.001*
Lexical score	−0.81	−3.11	0.002*
Grammatical score	−0.47	−2.49	0.013*
Content score	−0.69	−2.99	0.003*

Note: *statistically significant measure, p<0.05

Table 4.30 below represents the comparison of dyad data between the two mediums. The data show that for individual dyads, their mean conversation length and turn length in the FTF sessions were all greater than those in the chat sessions. The mean lexical, grammatical, and content quality dyad scores in the FTF sessions were also higher than those of the chat sessions. This finding may relate to the fact that learners discussed at greater length in the FTF conversations; thus, they also applied relatively more lexical items, grammatical structures, and idea units. As the result, the FTF conversations were rated higher than the online chats in various measures. Dyad C/D's lexical, grammatical and content quality scores were the highest among the three dyads for both mediums.

Table 4.30 Comparison of dyad data between online chats and FTF conversations

Measure	Dyad A/B (N=4 sessions)		Dyad C/D (N=4 sessions)		Dyad E/F (N=5 sessions)	
	Chat	FTF	Chat	FTF	Chat	FTF
	M	*M*	*M*	*M*	*M*	*M*
Number of characters	617.75	1188.25	606.25	937.5	477.80	1338
Number of turns	43.25	34.25	34.25	25.75	29.80	38.80
Turn length in characters	14.57	37.21	17.99	36.94	16.46	35.62
Lexical score	3.38	4.25	3.88	4.33	3.2	4.1
Grammar score	3.0	3.63	3.38	4.0	3.1	3.3
Content score	3.38	3.75	3.5	4.38	2.9	3.7

Data on individual interlocutors were also compared between the two mediums, including mean turn length and language contribution percentage. It was found that the length of turns in the online chats was similar across the two participants in each dyad. Learners also had a similar number of opportunities to interact in Chinese during the chat conversations. By contrast, the individual interlocutors' turn length in the FTF sessions was more spread out. During the FTF conversations some learners also tended to dominate the conversations. Therefore, the data suggest that the online chats facilitated a relatively equal interactive and collaborative environment. By contrast, the FTF sessions exhibited a relatively more unequal interactive and collaborative structure.

Qualitative data on focus of discussion were also compared between the online chat and FTF sessions. For both mediums, the most prominent focus area was generating ideas. In contrast to the occasional lexicon-related episodes found in the online-chat sessions, lexicon-related episodes were found in most of the FTF sessions. Grammar-

related episodes also occurred in a few FTF sessions, in contrast to zero episodes found in the chat sessions. On the other hand, social greetings were a focus area to which turns were devoted in most of the chat sessions. By contrast, few instances of social greetings were found in the FTF sessions. The online chats also had a few character-related episodes, whereas no character-related episode was found in the FTF sessions. Discussion effort spent on the other focus areas was insignificant for both mediums.

In summary, the differences between the two mediums existed in four aspects. The first important difference was that the interactive and collaborative environment in the online chats appeared to be more equal for the L2 Chinese learners. In the FTF conversations, some learners tended to be more dominant in the conversations than others. Second, within the same time frame, learners were able to produce more language in the FTF sessions than in the chat sessions. This finding applied to both the whole group and to each dyad. Third, learners also tended to discuss with better quality in the FTF sessions. The lexical, grammatical, and content scores of the FTF conversations were significantly higher than those of the online chats. This also applied both to the whole group and to each dyad. Fourth, with regard to the discussion focus area, both mediums allowed L2 Chinese learners to discuss usages of lexical items. In contrast to the occasional lexicon-related episodes found in the online-chat sessions, lexicon-related episodes were found in most of the FTF sessions. Grammar-related episodes were also found in a few FTF sessions, in contrast to zero episodes found in the chat sessions. Thus, the FTF environment seemed to create more opportunities for generating lexicon- and grammar-related meaning negotiations. The online-chat sessions also had a few character-related episodes, whereas no character-related episode was found in the FTF sessions. The next subsection reports the comparison results between the post-chat and post-FTF composition writing.

4.4.2 Comparison Results between Post-Chat and Post-

FTF Composition Writing

In this part of the analysis, all quantitative and qualitative data regarding the post-interaction compositions were compared between the two mediums, including nine measures of length, character accuracy, lexical accuracy, lexical richness, syntactic accuracy, syntactic richness, content richness, organization, and holistic assessment. Comparisons were made for both the group and individual learners. The next subsection presents the data comparison results between the two mediums for the entire group.

4.4.2.1 Comparison results between post-chat and post-

FTF compositions for the group

Table 4.31 below presents the data comparison between the post-chat and post-FTF compositions across all post-interaction sessions.

Table 4.31 Comparison of data between post-chat and post-FTF compositions (N=13)

	Online chats		FTF conversations		Mean difference (Chat−FTF)
	M	*SD*	*M*	*SD*	
Number of characters	341.92	49.57	380.31	49.36	−38.39
Character accuracy	98.77%	0.01	98.0%	0.01	0.77%
Lexical accuracy	96.54%	0.02	97.39%	0.01	−0.85%
Lexical richness	56.56%	0.07	53.29%	0.07	3.27%
Syntactic accuracy	91.89%	0.05	92.91%	0.07	−1.02%
Syntactic richness	51.30%	0.19	44.62%	0.12	6.68%
Content richness	70.95%	0.12	73.64%	0.11	−2.69%
Organization	3.62	0.54	3.42	0.53	0.20
Holistic assessment	3.46	0.47	3.21	0.43	0.25

Table 4.32 displays the Wilcoxon signed ranks test results. As discussed in Chapter III (Methodology), because independent samples are needed to perform the Wilcoxon signed ranks test and the current study involved interaction among subjects, the mean scores of each dyad instead of individual learners' scores were used for all measures taken on the post-interaction compositions. For example, learner A's and learner B's lexical accuracy scores for their post-chat writing session 1 were averaged to derive dyad A/B's lexical accuracy score for the post-chat writing session 1. This averaged score was used to perform the Wilcoxon signed ranks test.

Table 4.32 Wilcoxon signed ranks test results for differences between post-chat and
post-FTF compositions (N=13)

Measure	Mean difference (Post-chat – post-FTF composition)	Z	P (<0.05, 2-tailed)
Number of characters	−38.39	−3.11	0.002*
Character accuracy	0.77%	−2.94	0.003*
Lexical accuracy	−0.85%	−1.43	0.152
Lexical richness	3.27%	−2.13	0.033*
Syntactic accuracy	−1.02%	−0.74	0.463
Syntactic richness	6.68%	−1.50	0.133
Content richness	−2.69%	−0.04	0.972
Organization	0.20	−0.67	0.502
Holistic assessment	0.25	−1.37	0.171

Note: *statistically significant measure, p<0.05

As can be seen from Table 4.32, of the nine measures, the Wilcoxon signed ranks test found significant differences in three measures between the post-chat and post-FTF compositions: composition length, character accuracy, and lexical richness. The other differences were insignificant at the 0.05 level. In other words, the mean length of the

post-FTF compositions, as reflected in number of characters, was significantly greater than that of the post-chat compositions. The character accuracy and lexical richness of the post-chat compositions were significantly higher than those of the post-FTF compositions. Therefore, although learners wrote shorter post-chat compositions, they used more correct characters as well as more diversified vocabulary items in the post-chat composition writing. Although no significant difference was found in other measure scores, based on the mean numbers presented in Table 4.31, we could see that the mean scores of syntactic richness, organization, and holistic assessment in the post-chat composition writing were higher than those of the post-FTF composition writing, while the mean scores of lexical accuracy, syntactic accuracy, and content richness in the post-FTF composition writing were higher than those of the post-chat composition writing. Larger data set will be needed to understand whether such patterns have statistical significance.

As reported in the findings for research questions 1 and 2, learners seemed to generate longer compositions across both online-chat and FTF sessions. For both mediums, the mean composition length of the fifth writing session was about 100 characters longer than the composition length in the first writing session. Thus, both the online-chat and FTF sessions seemed to be helpful in enhancing L2 Chinese writing fluency.

4.4.2.2 Comparison results between post-chat and post-FTF compositions for individual learners

The results were also compared for individual learners to shed light on whether individual writing performance differed between the two mediums. Table 4.33 represents the comparison of individual learner data between the post-chat and post-FTF compositions.

Table 4.33 Comparison of individual learner data between post-chat and post-FTF compositions

	Learner A (N=4)		Learner B (N=4)		Learner C (N=4)		Learner D (N=4)		Learner E (N=5)		Learner F (N=5)	
	Post-chat	Post-FTF	Post-chat	Post-FTF	Post-chat	Post-FTF	Post-chat	Post-FTF	Post-chat	Post-FTF	Post-chat	Post-FTF
Measure	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*
Character numbers	368	397.75	348.75	409.25	365.75	401.5	293.25	313.75	339.4	379	338	380.8
Character accuracy	99.60%	98.93%	98.85%	97.88%	99.28%	98.98%	97.23%	96.18%	98.78%	97.88%	98.88%	98.14%
Lexical accuracy	97.25%	97.63%	98.08%	97.05%	94.88%	98.13%	96.93%	95.70%	95.90%	96.90%	96.42%	98.74%
Lexical richness	43.85%	42.50%	52.78%	53.48%	57.23%	51.38%	66.10%	66.33%	58.74%	57.80%	59.40%	48.36%
Syntactic accuracy	91.43%	96.75%	89.33%	83.35%	94.20%	94.15%	90.08%	90.35%	92.78%	98.18%	93.00%	93.26%
Syntactic richness	34.38%	34.25%	60.20%	48.68%	63.25%	62.55%	71.05%	51.98%	49.40%	40.28%	34.28%	33.78%
Content richness	56.48%	54.63%	74.73%	73.13%	63.85%	78.00%	82.78%	63.65%	71.58%	83.78%	75.12%	83.60%
Organiza-tion	3.13	3.25	3.75	3.5	3.75	3.63	3.88	3.13	3.9	3.5	3.3	3.5
Holistic score	3.13	3.13	3.38	3.63	3.25	3.13	3.63	2.88	3.9	3.1	3.4	3.4

The data above show that for individual learner, the mean character accuracy and syntactic richness in the post-chat composition writing was greater than those in the post-FTF compositions. On the other hand, the individual learners' mean post-FTF composition length was greater than that of the post-chat compositions by 20 to 60 characters. Individual learner performance between the two mediums varied for the other six measures. For the measure of lexical accuracy, learners B and D performed better in the post-chat composition writing, while other learners performed better in the post-FTF composition writing. The lexical richness ratings for learners A, C, E, and F in the post-chat composition writing were higher, while learners B and D had better lexical richness in the post-FTF compositions. Regarding syntactic accuracy, learners B and C performed better in the post-chat composition writing, while learners A, D, E, and F had better performance in the post-FTF composition writing. For the measure of content richness, learners A, B, and D performed better in the post-chat composition writing, while learners C, E, and F used more idea units in the post-FTF compositions. Regarding organization, learners B, C, D, and E received better scores in the post-chat compositions, while learners A and F received better scores in the post-FTF compositions. In terms of the holistic assessment, learners C, D, and E received better scores in the post-chat composition writing, while learners A, B, and F had higher scores in the post-FTF compositions. In general, learners B, C, and D seemed to have better performance in the post-chat composition writing because six out of their nine measure scores were higher in the post-chat compositions. However, learners A and F had better performance in the post-FTT compositions because five and six out of their nine measure scores were higher in the post-FTF composition writing respectively.

In summary, when the L2 Chinese learners in this study wrote following an online-chat or FTF session, they displayed significant differences in three measures: composition length, character accuracy, and lexical richness. The mean length of the post-FTF compositions was significantly greater than that of the post-chat compositions.

This finding applied to both the group and individual learner data. On the other hand, the character accuracy in the post-chat compositions was significantly better than that in the post-FTF compositions. This finding also applied to both the group and individual learner data. The lexical richness in the post-chat compositions was also significantly better than that in the post-FTF compositions. This finding applied to the group data. The individual learner data show that each learner also generated better syntactic richness in the post-chat compositions than in the post-FTF compositions. Individual learner performance between the two mediums was divided for the other six measures. Some learners in general performed better in the post-chat compositions, while others performed relatively better in the post-FTF composition writing.

Having compared the interactive sessions and post-interaction compositions, the impacts of the interactive mediums on subsequent individual composition writing were compared. The results of this analysis are reported in the next subsection.

4.4.3 Comparison Results between Impacts of Online
Chat and FTF Conversation on Composition Writing

In this subsection, the relationship of online chat and FTF conversation with subsequent individual composition writing was compared. In specific, the correlation data and transfer analysis data were compared.

4.4.3.1 Comparison results of correlation data between
online chat and FTF sessions

The correlation data between the interactive sessions and post-interaction writing were compared between the online chats and FTF oral conversations. For both mediums, no significant association was found for the length, lexical, and content measures. However, a positive correlation was found between the two variables of FTF grammatical quality and syntactic richness in the post-FTF composition writing ($r = .795$). In contrast, no correlation was found between the chat grammatical quality and the syntactic richness

in the post-chat composition writing. The sub-section below presents the comparison of the transfer data between the two mediums.

4.4.3.2 Comparison results of transfer analysis data
between online chat and FTF sessions

The transfer pattern from the interactive learning to individual composition writing was also compared between the two mediums, based on the data of dyad A/B's chat session 4, dyad C/D's chat session 3, dyad A/B's FTF session 4, and dyad E/F's FTF session 3, and their subsequent compositions. The transfer characteristics in lexical items, syntactic structures, idea units, idea structure, and language-related meaning negotiations were compared between the two mediums. The comparison of the transfer data between the two mediums based on the qualitatively examined interactive and composition writing sessions is presented in the table below.

Table 4.34 Comparison of transfer data between online chats and FTF conversations

Composition	Percentage found in the preceding interactive session		
	Lexical items	Syntactic structures	Idea units
Learner A post-chat 4	80.3%	70%	75%
Learner B post-chat 4	81.4%	81.8%	66.7%
Learner C post-chat 3	74%	75%	58.3%
Learner D post-chat 3	66.2%	75%	83.3%
Learner A post-FTF 4	91%	70.6%	90.9%
Learner B post-FTF 4	82.7%	70.6%	75%
Learner E post-FTF 3	71.8%	25%	40%
Learner F post-FTF 3	76.8%	75%	50%

The data above indicates that for both mediums, a high percentage of lexical items in the compositions was found in the preceding interactive sessions. The transfer of other aspects however differed between the two mediums. First, for syntactic structures, a relatively high similarity was found between the four post-chat compositions and their preceding chat sessions. Such high similarity was not consistently found for the post-FTF compositions. For learner E, only 25% of the syntactic structures in his post-FTF composition 3 were found in the preceding FTF session. Second, a high percentage of idea units in all the four post-chat compositions were also found in the preceding chat sessions. By contrast, less than half of the idea units in learner E's and learner F's post-FTF composition 3 were found in the preceding FTF session. Third, between the two mediums, learners followed the idea structure in the interactive discussions to a different degree. Moving from the chat session to post-chat composition writing, the four learners generally followed the idea structure in the chat sessions. The writing structure in the post-chat compositions was similar to that in the corresponding chat session, although sometimes learners might modify the idea sequence or add some new contents. By contrast, the writing structures in the post-FTF compositions could differ from the FTF discussion structure to a larger degree. In learner E's and learner F's post-FTF composition 3, learners E and F only integrated part of the ideas in the FTF discussion and added in more than 50% of new content. Their composition structures appeared to be very different from the FTF discussion structure.

The transfer effect of the lexicon-based and grammar-based meaning negotiations was also compared between the two mediums. The comparison results are presented in the table below.

Table 4.35 Comparison of transfer of lexicon-based meaning negotiations from interaction to post-interaction composition between online chat and FTF conversation

	Number of negotiated words in interactive sessions	Number of negotiated words used in post-interaction compositions	
		By learners who explained the word	By learners who received explanation of the word
Online chats	4	3	0
FTF oral conversations	16	3	1

The data above indicate that the FTF conversation environment triggered more opportunities of lexicon-based meaning negotiations as compared to online chat. In the online-chat interaction, only a total of four lexicon-based meaning negotiations were found, while the FTF conversation environment had a total of 16 of them. The data also show that the lexical items negotiated in the chat sessions were often successfully carried forward to the afterwards post-chat composition writing. Three of four identified lexical items were used in the post-chat compositions. Interestingly, only learners who had explained the lexical item during the meaning negotiation tended to carry the lexical item forward and used it in their post-chat compositions. In contrast, learners who received the explanation during the lexicon-triggered meaning negotiation did not include the lexical item in their individual composition writing. On the other hand, the lexical items discussed in the FTF sessions were mostly not used in the subsequent post-FTF writing, for either learners who had explained or learners who had received explanations of the lexical item during meaning negotiations.

Finally, the FTF interactive environment also created opportunities for grammar-triggered meaning negotiations although only three grammar-based meaning negotiations

were identified. Learners also carried forward two of the three negotiated grammatical structures and used them in their post-FTF compositions.

4.4.4 Summary of Findings for Research Question 3

For the research question 3 (Do interactive online chat and face-to-face oral conversation differ in their impact on subsequent individual L2 Chinese writing?), it can be concluded that the impact of the online chats and FTF discussions resembled each other in some ways and differed in others. First, a comparison of the interactive data indicates that within the same time frame, learners were able to discuss more in the FTF sessions than in the online chats. It was also evident that the lexical, grammatical, and content qualities of the FTF sessions were significantly better than those of the chat discussions. These applied to both group and individual dyad data. But the online chats also had their advantages. In the online chats, each learner had a relatively equal number of opportunities to practice in Chinese; whereas in the FTF sessions some learners tended to dominate the conversations. Furthermore, although in the online chats, only occasional lexicon-related episodes were found, the lexical items concerned were often successfully used in the subsequent post-chat compositions. In contrast, although lexicon-related episodes were found in most of the FTF sessions, frequently the lexical items concerned were not used in the post-FTF writing.

When the L2 Chinese learners wrote individually after the above two interactive mediums, they also displayed different performance. The mean length of the post-FTF compositions was significantly greater than that of the post-chat compositions. In contrast, the character accuracy and lexical richness of the post-chat compositions were significantly higher than those of the post-FTF compositions. These findings applied to both group and individual learner data. Thus, it seemed that the greater FTF conversation length may have stimulated learners to generate longer post-FTF compositions. In contrast, although the lexical, grammatical, and content qualities in the FTF sessions

were significantly better than those in the chat sessions, the higher quality of the language produced in the FTF sessions did not result in better performance in the lexical, grammatical, or content features of the post-FTF compositions. Of the linguistic measures to which the compositions were subjected, the lexical richness of the post-chat compositions was significantly better than their post-FTF counterparts.

By comparing the correlation data between the two mediums, it was found that neither chatting nor FTF conversation length was correlated with the post-interaction composition length (chat r = −0.06; FTF r = −0.13). But as mentioned above, across the two mediums, the mean length of the post-FTF compositions was significantly higher than that of the post-chat compositions. For both mediums, no significant association was found between the interaction and post-interaction compositions in length, lexical, and content aspects. Positive correlation was observed between the FTF grammatical quality score and the syntactic richness score in the post-FTF compositions (r =.795). A comparison of the transfer data between the two mediums also suggests that the transfer of learning from a chat session to post-chat composition writing was more parallel in the sense that the post-chat writing resembled the chat session to a greater degree. The chat sessions functioned like a rehearsal for the post-chat composition writing. In the process of moving from an FTF discussion to post-FTF composition writing, the FTF discussion appeared to function like a brainstorming session, providing students with ideas that they could incorporate into their individual composition. This finding may help to account for the apparent contradiction between the high lexical, grammatical, and content scores in the FTF sessions and the subsequent lower scores on the corresponding measures in the post-FTF compositions.

4.5 Findings for Research Question 4

Research question 4: How do L2 Chinese learners perceive the use of the online interactive chat medium or face-to-face oral conversation as means of planning for writing compositions in Chinese?

To enrich and triangulate the data, learners' perception data were also elicited. Research question 4 looks at participants' reactions to using computer chat or FTF conversation as tools for learning to write in Chinese. The answers to this question were obtained from two sources: interview and questionnaire. As discussed in the Methodology chapter, during the seventh week of the study, all participants were interviewed individually regarding their learning experience of moving from the interactive session to individual L2 Chinese writing, as well as their perceptions about using online chat or FTF conversation in preparation for Chinese L2 writing (see Appendix M). At the end of the study (i.e., in the tenth week), the participants were asked again to complete a questionnaire discussing their perceptions of using online chat or FTF conversation to practice writing (see Appendix N). The interview and questionnaire data were coded based on theme and prominent themes were identified. Descriptive statistics such as frequency count were used to analyze the learners' perceptions. For each medium, the interview data are first presented, followed by the questionnaire data. The data from the two sources are then consolidated for each medium.

4.5.1 Learners' Perceptions of Impact of Online Chat

When asked about the usefulness of chatting online prior to composition writing, qualitative analyses of the interview and questionnaire data show remarks clustering around five aspects: (a) opportunities for language practice, including character, lexical, and grammatical practice, (b) brainstorming ideas, (c) information sharing, (d) preparing an initial plan for how to organize their compositions, and (e) enhancing writing fluency.

These clusters elicited the most responses and represent the general comments among the six interviewees.

Three learners felt that the visual aspect of chatting provided benefits for practicing and reinforcing character knowledge. The usefulness of the chat sessions to recall and use vocabulary was a common comment in the interviews. Two learners also commented on the opportunity afforded by online chat to practice grammar. The comments below illustrate the learners' perspectives on the advantages of online chat in allowing opportunities for language practice:

> Learner B: It's helpful because when we type a word, we see them and we can write them more easily than when we just talk about them.

> Learner C: The real benefit is I can try a new word and formulate it into a sentence.

> Learner D: We always try to use new grammar, vocab, and maybe remember a sentence and use it in my own writing.

Four learners maintained that online chat allowed them the opportunity to brainstorm ideas, which was another frequently cited benefit for online chat:

> Learner C: I just kind of use this as a way to begin to think about what the essay topic is going to be about, and then I kind of put my actual opinions more in depth information in the actual writing.

> Learner F: It really helps, brainstorming. Usually when I start writing an essay, I have a hard time getting started because I just can't think of what I should talk about. So during the chats it prepares, so when I start writing, I'm already thinking things, what information I can include, then I just start.

Furthermore, chatting also allowed the members of the dyad to share information; specifically, vocabulary and ideas.

> Learner F: It's more brainstorming, like sharing ideas about our experiences.

> Learner A: There are so many words that I know, my partner she always knows some other words I've never met, she taught me WTO today. We had one chat about trade in America. Right afterwards I was able to use it in my writing. More ideas, more vocab to draw upon, not that much on grammar, it's very choppy.

Four of the six learners felt that at the macro-level, the online chat sessions prepared them with an initial organizational plan for their writing. The interactive discussions in the chats provided them with an initial content structure as well as a meaningful starting point, which facilitated the L2 writing process.

> Learner D: My vocab is enough, but I can't write an essay about it. It's really like sometimes I don't know what to say. So it helps me to *focus*[9].

> Learner B: I reorganized it when I wrote my essays. It's more about ideas and key words.

Finally, learners reported that chatting online before their individual writing enhanced their writing fluency in Chinese. In specific, the practice of writing in the online chat facilitated and improved the idea formulation and organization process.

> Learner C: I feel this past two weeks, I could write more. By doing this, it helps me formulate and organize my idea. Usually I have a clear understanding of what I need to write, I can write *a lot more*.

However, not all of the perceptions were positive. During the interviews, learners also expressed their reservations about using online chat for practicing L2 Chinese writing. The following five aspects were the common negative comments raised: (a) restricted grammar practice, (b) informal language style, (c) slow communication, (d) a limited number of ideas, and (e) difficulty in retaining information. First, three learners commented that the practice in the chatting was more focused on the character and vocabulary practice, and the grammar practice was very restricted. The comment below expressed learners' opinions.

> Learner F: It was mostly vocab, seeing characters, we didn't use much grammar. I didn't really try to use grammar structures. The mistakes we make when chatting are common mistakes, so I can understand.

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[9] Italics indicates words spoken with emphasis

In relation to the lack of grammar practice, five of the six learners perceived that the language they used in the chats was informal, quite distant from the formal style they would need to write a composition.

> Learner B: You don't use formal language as you need for essay.

> Learner C: They are really short lines. I usually type one or two lines, and then have the other person (***)[10] wait.

Although the language in the chat sessions was short and informal, the learners till considered that the communication flow in the online chats was slow. One reason was typing Chinese took time. Learner also needed to spend time reading messages and waiting for responses from their partners. Furthermore, in online chat it took time for learners to explain or clarify information to continue the conversation.

> Learner E: Chatting has typing, reading, waiting the whole time.

> Learner E: We need to explain more on typing. If we don't understand a phrase or word, it takes longer to explain the meaning.

> Learner C: I feel I could write a lot more. I can chat really fast, and I'm not sure if people can respond very quickly. If they cannot respond as fast as they were talking it might drag out the conversation.

The slow pace of communication in the chats resulted in fewer idea units, as learner C pointed out.

> Learner C: For the chatting, we were able to know how to write it, but given the fact that chat takes long, you can't generate as many ideas that we use in the chat room as face-to-face.

Finally, for some learners the information discussed in the chats was hard to retain even though while chatting learners could visually see the entire exchange.

> Learner E: If I want to remember what we were talking about, normally I'm kind of only reading what's going on. If I want to remember what we talked about, for some reason, I normally have to scroll back and reread, I might know what I'm looking for, I might understand the topic, but I won't remember what we really said.

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[10] (***)Indicates inaudible portion

Besides the interview data, all participants were also asked to complete a questionnaire at the end of the study to discuss their perceptions of using chats to practice Chinese writing. Qualitative analysis was used to analyze the questionnaire data. The questionnaire data are summarized in Table 4.36 and 4.37.

Table 4.36 Questionnaire data regarding the advantages of chatting
           online before composition writing

Advantages	Number of responses (N=6)
Provide opportunities for character practice	4
Provide opportunities for linguistic practice	3
Allow opportunities for lexical practice	2
Allow opportunities for idea brainstorming	4

The data above were in line with the interview data and did not add new information. The table below summarizes the negative aspects learners pointed out in response to the questionnaire.

Table 4.37 Questionnaire data regarding the disadvantages of chatting
           online before composition writing

Disadvantages	Number of responses (N=6)
Slow communication	1
Limited number of ideas	3
Difficulty in retaining information	1
Distant relationship between learners	1

The data above raised a new negative aspect of using online chat for practice writing, that is, distant relationship between learners. However, because only one learner made this comment, it cannot be treated as a representative view. The other data above were consistent with the interview data.

4.5.2 Learners' Perceptions of Impact of FTF Conversation

Learners were also interviewed about their perceptions of conversing face-to-face before writing Chinese compositions. With regard to the benefits, the learners pointed out the following seven aspects: (a) opportunities for linguistic and lexical practice, (b) brainstorming ideas, (c) easier retention of information, (d) preparing an initial structure for organizing writing, (e) peer collaboration, and (f) enhanced L2 Chinese writing fluency.

First, the FTF conversations provided opportunities for lexical and grammatical practice.

> Learner F: Otherwise you have to think about which grammar structures I can start with. I feel more prepared.

> Learner E: Normally we try to include a phrase or word we remember from class. Maybe I'll say something that she doesn't remember.

All six learners agreed that the FTF conversations allowed an effective way to brainstorm ideas, and more ideas tended to be generated in the FTF discussions compared to the online chats.

> Learner C: Speaking was better because we were able to throw out *more ideas*, and we can use that for our essays.

> Learner F: FTF discussions also initiated and facilitated deeper thinking. I don't always write about what we talked about, but this makes me think a lot while we were talking. And here I can think what we didn't think about or what I really want to say and didn't have time for.

The FTF conversations also allowed learners to effectively retain the information. According to the learners, it was mainly because they were able to discuss the ideas with certain depth.

> Learner F: For FTF, I remember more, maybe because we can go more into details about specific things, I think, so the ideas are easier to remember.

> Learner B: I remember more from FTF, because you say it aloud. It's helpful to hear someone else's ideas.

The FTF discussion also prepared learners with an initial writing logic or structure, which learners, however, tended to reorganize during the composition writing.

> Learner E: What I hope and I assume that happens is my writing has more logic or flow to it as opposed to when I sit down and just have to write. When I write, I think about it in my head when I start the first paragraph. Even if I list out all the bullet points, maybe they are not all thought out. I think this really helps, force me to do it. I already know what I want to talk about, kind of structure.

> Learner A: Since we had talked so much before sometimes I came out with other ideas because I had been thinking about it longer.

The FTF conversations also resulted in effective peer collaborations between the Chinese L2 learners. The learners were able to share their ideas and experiences during the FTF discussions. Surprisingly, although the FTF conversations were co-constructed by the two learners in the dyad, how the learners viewed ownership of the ideas varied.

> Learner A: Just having some else bring up ideas that I would never think of myself or point out directions is very helpful.

> Learner B: FTF is helpful to get your own ideas, more ideas from another person. I remember more from FTF, because you say it aloud. It's helpful to hear someone else's ideas.

> Learner E: I don't really include her ideas. I usually include what we both talked about. I feel like what we agreed upon is a little bit easier. It's more like we each have the same ideas but different experiences, but they all mean the same thing. My spending habits and hers are not that different but what we do is a little different.

Finally, learners also felt that the FTF discussions helped improve their L2 Chinese writing fluency and also improved their attitudes towards writing in Chinese.

Learner A: If I didn't have FTF, I'll probably never get to 300 characters. There are definitely a lot of advantages to use FTF to get us *prepared*. Yeah, when I have compressed time, I need to organize my ideas as quickly as possible. If I didn't have this, there is *no way* I can get to 300 characters. If I did, it would be today, I went to school, after that, I ate something.

Despite the participants' mostly positive attitudes, the interview data also revealed certain negative perceptions about using FTF conversations prior to writing. First, the FTF conversations did not facilitate opportunities for character learning.

Learner B: When we talk, we don't see characters, we can say anything that we know how to say, but don't necessarily know how to write, it's hard to transform to an essay. Sometimes I'll write what I think a character looks like and that helps the ideas get across.

Second, the grammar practice in the FTF conversations was still considered limited although perceived relatively more than that in the online chat sessions. Consider learner F's perspective:

Learner F: When I'm talking, it's easier practice using grammar because it's quicker to speak but still I don't try to practice grammar so much because it's just more natural to say more simple sentences just so it speeds up communication. The practice was more on vocab, understanding the other speaker, listening in Chinese.

Third, learners felt that the effectiveness of FTF conversation would depend heavily on who their partner was. Interestingly, as we see above, learner C made a similar argument about the need for a chatting partner who could type or write faster. His partner, learner D, made another argument expressing her wish for a partner who could converse better in Chinese.

Learner D: Depends on who my partner is, I want to have a better speaking partner. So more challenge rather than running out of all my words.

An analysis of the questionnaire data displayed the following results, which are presented in Table 4.38 and 4.39. The questionnaire data in Table 4.38 below presented a new advantage of using FTF discussions for practicing L2 Chinese writing; that is, a learner-centered learning experience. Again, because only one student made this

comment, it was not included in the analysis. The rest of the advantages were consistent

with the interview data.

Table 4.38 Questionnaire data regarding the advantages of conversing FTF
        before writing

Advantages	Number of responses (N=6)
Provide opportunities for linguistic practice	2
Provide opportunities for lexical practice	2
Generate ideas	5
Retain information better	1
Allow learner-centered learning	1

Table 4.39 Questionnaire data regarding the disadvantages of conversing
        FTF before writing

Disadvantages	Number of responses (N=6)
Lack of visual learning	4
Distraction	1
Redundancy	1
High pressure	1

The questionnaire data above presented three new disadvantages of using FTF

discussions for practicing writing: distraction, redundancy, and high pressure. However,

they were not included in the analysis because only one person expressed each one. The

rest of the disadvantage responses were consistent with the interview data.

4.5.3 Comparison of Perception data between Online

Chat and FTF Conversation

By comparing the interview and questionnaire data, it was found that according to the six learners in this study, both the online chats and FTF conversations provided the following advantages for learning of Chinese L2 writing: (a) chances for lexical and linguistic practice, (b) opportunities for idea brainstorming, (c) information sharing, (d) helped to prepare an initial structure for organizing writing, (e) improved writing fluency, and (f) improved attitudes toward writing. However, the level of benefit or support the two mediums provided for the aspects above differed to some degree. The differences are elaborated next.

First, although both mediums allowed learners opportunities to practice grammar, it was perceived by the learners that the grammar practice in the online chats was more restricted compared to the FTF discussions. Second, although both mediums allowed for brainstorming ideas, the communication flow in the online chats was much slower due to the time needed for typing, reading, and waiting. Accordingly, the ideas generated in the online chats were also more limited compared to those in FTF.

> Learner E: In FTF, you have an idea, then you start to talk about, yah, actually there are more interesting things. In chatting, we still hold on to whatever we think is the best thing.

> Learner C: For the chatting, we were able to know how to write it, but given the fact that chat takes long, you can't generate as many ideas that we use in the chat room as face-to-face.

Third, although both mediums provided learners with an initial content structure, the learners reported that they were able to discuss at greater depth during the FTF discussions and, therefore, they could retain the information better as compared to the online chat sessions.

> Learner F: For FTF, I remember more, transfer, maybe because we can go more into details about specific things, I think so the ideas are easier to remember.

> Learner E: FTF is more helpful, I feel we exchange more not too much faster, I feel I'm able to think through the conversation a lot easier as opposed to here if I want to remember what we were talking about, normally I'm kind of only reading what's going on. If I want to remember what we talked about for, for some reason, I normally have to scroll back and reread, I might know what I'm looking for, I might understand the topic, but I won't remember what we really said. But I'll remember in FTF. I kind of already what we talked about, just moved along. I think it's just we use instant messaging so much.

According to the learners, the two mediums also had their respective characteristics. First, the online chats allowed for character practice because of its visual aspect. By contrast, the FTF discussions did not allow learners to visually view any information. Second, one learner also pointed out that because in the FTF conversations learners were more on the spot, the pressure level was higher.

The table below summarizes the similarities and differences between impacts of the online chats and FTF conversations on individual composition writing, as the learners perceived them.

Table 4.40 Similarities and differences between the impacts of online chat and FTF conversation

Aspect	Online chat	FTF conversation
Provide opportunities for grammatical practice	Yes, but restricted	Yes
Provide opportunities for lexical practice	Yes	Yes
Provide opportunities for character practice	Yes, visual aspect is an advantage	No
Allow ideas brainstorming	Yes, but slow communication; limited number of ideas	Yes
Allow peer collaboration	Yes, but limited	Yes, facilitated deeper thinking
Prepare an initial writing structure	Yes, but information hard to retain	Yes, information easier to retain
Improve writing fluency	Yes	Yes
Language style	Informal	More formal

The next section presents the findings of the case study.

4.6 Findings for Case Study

Two participants were chosen as the objects of an in-depth case study. The goal was to disclose more detailed information about how learners interacted and collaborated in the interactive sessions and how those interactions affected the subsequent composition writing. All of the data sources were drawn upon for an integrated analysis, including the online chat and FTF conversation transcripts, post-interaction compositions, as well as the interview and questionnaire data. A micro-level analysis was conducted to examine specific linguistic, interactional, and collaborative features in the interactive sessions, and to identify what features learners carried over from the interactions to their compositions. Interview and questionnaire data were used to illustrate the moments of learning that were revealed in the interactive sessions and composition data.

4.6.1 Case Study Learner Profiles

Learners C and D were chosen as the objects for this case study. They were in the same dyad for the interactive sessions in the study. Learner C is male and learner D is female. Both are 21 years old. Both studied Chinese as an L2 for three semesters prior to the semester of the data collection. Both of them rated their Chinese composition writing skill as fair. Neither of them had taken a Chinese writing course before. During the interview, learners C and D made comments regarding Chinese L2 writing in general as well as their own Chinese writing. Learner C said he did not practice writing in Chinese often, but he did chat online with his girlfriend, who was Chinese American. In his perception, the Chinese writing style was very standardized and different from Chinese speaking. He reported that knowing more about using conjunctions to connect sentences would improve his writing. Learner C also commented that, when he wrote in Chinese, he would think about what he needed to say in English and then rearrange everything into Chinese. As long as he had ideas about what to talk about, he could write very quickly.

Learner D said that she did not like writing in Chinese, but she did chat online with her Chinese boyfriend. She also described herself as a very slow writer in both Chinese and English, in the sense that, when she was given a topic, she often needed to spend a long time thinking about what to write. According to learner D, the obstacle was not about having enough vocabulary, but rather the difficulty of developing the writing structure. She reported that having the opportunity to talk with someone else beforehand helped her to be more focused.

Learners C and D were chosen for this case study because they displayed interesting performance data. The performance data of C and D also differed from each other to some degree, thus providing contrasting learner profiles. The two learners' performance data will be summarized first as a dyad and individual data will be discussed later. Dyad C/D had the lowest FTF conversation length among the three dyads, but they received the highest mean lexical, grammatical, and content scores for both the online chats and FTF conversations. Dyad C/D's other scores were similar to those of the other two dyads.

For the post-chat compositions, learner C had the highest mean syntactic accuracy score in the group of six subjects, but the lowest mean lexical accuracy score. For his post-FTF compositions, learner C had the highest mean character accuracy, syntactic richness, and organization scores. Learner C's other scores were in the same range as those of the other learners. Thus, learner C seemed to have performed relatively better in the post-FTF composition writing sessions, given that three of his scores were the highest in the participant group, as compared to only one highest score for his post-chat compositions.

Following the same interactive sessions as learner C, learner D generated the shortest compositions for both her post-chat and post-FTF compositions. She received the highest mean lexical, syntactic, and content richness scores for her post-chat compositions. Although dyad C/D received the highest lexical, grammatical, and content

scores for their FTF discussions, it did not result in a satisfactory performance for learner D's post-FTF compositions. The character and lexical accuracy, organization, and holistic assessment scores in her post-FTF compositions were the lowest among the six learners. Thus, learner D seemed to have performed relatively better in the post-chat compositions: three of her scores were the highest among the six learners.

Dyad C/D's fourth chat session and fifth FTF session and subsequent compositions were analyzed. Thus, one interactive session and two compositions were analyzed for each medium. The next subsection explains the analysis structure used in the case study.

4.6.2 Case Study Analysis Structure

The case study analysis looks at three types of data: (a) the online chat and FTF conversation transcripts (chat session 4 and FTF session 5), (b) four post-interaction compositions (2 following each interactive session), and (c) interview and questionnaire data for each learner. In line with interactionist learning theories, the examination of the data considered the nature of input and output, occurrences of negotiation of meaning, opportunities for lexical and grammar practice in the interactive sessions, and transfer of language from the interactive sessions to the subsequent composition writing. In line with collaborative learning theories, the examination of the data focused on the sociocultural dynamics, turn-taking structure, nature of the peer scaffolding, and other types of peer support. How the social dynamic affected learners' subsequent composition writing was also explored.

The interactive data are first presented. The conversation structure of the interactive session was analyzed; that is, how the dyad proceeded with the conversation. This information was then related to the subsequent composition data to understand what learners carried forward from the interactive session to their composition writing. The

next subsection presents findings on dyad C/D's fourth chat session and subsequent compositions.

4.6.3 Online Chat Case Study Findings

The analysis results of dyad C/D's fourth chat session are first presented, followed by a report on the analysis results of their subsequent individual compositions.

4.6.3.1 Findings for online chat session 4 of dyad C/D

In chat session 4, the learners were asked to discuss how the Internet had affected people's lives. The topic was the same for the chat discussion and post-chat composition. Before the conversation structure of the chat transcript is presented, the surface performance data in dyad C/D's fourth chat session is summarized in Tables 4.41 and 4.42.

Table 4.41 Chat length in characters and number of turns
  for online chat session 4 of dyad C/D

	Dyad C/D
Chat length in characters	516
Number of turns	33

Table 4.42 Mean turn length in characters and language contribution
  percentages for online chat session 4 of dyad C/D

	Learner C	Learner D
Mean turn length in characters	13.8	17.6
Language contribution percentage	45.5%	54.5%

From table 4.41, we can see that dyad C/D's chat session 4 had a conversation length of 516 characters and 33 turns. From Table 4.42, we can see that the mean turn length of both learners was similar. The contribution percentage difference between learner C and learner D was smaller than 10%. The data show a relatively equal interactive and collaborative relationship between the two learners, which means that they had a similar number of opportunities to interact in Chinese during their fourth chat conversation. What follows next is an analysis of the organization in dyad C/D's chat session 4, presented in table 4.43.

As the data in Table 4.43 show, the conversation had a six-part structure. First (turns 1-3), C and D greet each other in Chinese. Second, from turn 4 to 11, the discussion begins with learner D assuming an initiator role to orient the dyad to the assigned task. Learner D asks what impact the Internet has on people's life, learner C lists a few aspects such as communication and shopping, and he explains the lexical item 沟通, the Chinese word for communication, to learner D because she seems not to understand the word. Third, from turn 12 to 17, learner D takes an active role to switch the topic to a discussion of the negative sides of the Internet. Learner C agrees and further develops the ideas that D originally raised. Fourth, from turn 18 to 23, learner D changes the direction of the discussion to talk about the advantages of the Internet. Both learners provide specific information regarding the advantages of the Internet. Fifth, from turn 24 to 28, learner D takes the direction back to once again discuss the negative side of the Internet. Learner C does not provide much information this time. Finally, from turn 29 to 33, learner C indicates that he does not have more things to say. Learner D starts to summarize their conversation. Learner C asks to end their conversation.

Table 4.43 Organization for online chat conversation 4 of dyad C/D

Turn number	Learner	Content
1	C	Greet each other in Chinese.
2	D	
3	C	
4	D	Asks what impact the Internet has on people's life.
5	C	Responds that there are several impacts.
6	D	Asks what they are.
7	C	Responds such as impacts on communication, shopping, etc.
8	D	Repeats the Chinese word 沟通 for communication with a question mark to signal her not understanding.
9	C	Explains the word 沟通 in English to D.
10	D	Says ok to signal her understanding.
11	C	Replies that's good.
12	D	Says that the Internet also has negative impacts.
13	C	Asks what they are.
14	D	Answers that she wastes a lot of time on the Internet.
15	C	Agrees that the Internet makes him less efficient.
16	D	Says that with the Internet, people read less.
17	C	Agrees, and adds that people can read books, magazines and all kinds of stuff on the Internet.
18	D	Changes the topic to the advantages of the Internet. She says that overall, the Internet has more advantages than disadvantages.
19	C	Agrees that he doesn't know how to survive without the Internet.
20	D	Agrees.
21	C	Says that without the Internet, people will have problems in research, study, etc., people's lives would be greatly affected.
22	D	Agrees and says that without the Internet, it will also make contacting people difficult.
23	C	Agrees and says that he would be really upset if there were no Internet.

165

Table 4.43—continued

24	D	Gives disadvantages of the Internet. She says that the Internet may pose challenge to national and personal safety, and there are also serious viruses and Internet hackers.
25	C	Agrees and says that he is very lucky that his computer never had a virus.
26	D	Says that her computer may have virus because it is really slow.
27	C	Asks D whether her computer currently has viruses or had before.
28	D	Responds she does not really know. Her computer is just very slow.
29	C	Says that he does not have anything else to say.
30	D	Summarizes what they discussed. She says that the Internet changed people's life to a large degree, and the impact is positive although there are also negative ones.
31	C	Agrees.
32	D	Says that the biggest contribution of the Internet is that it brings convenience to people's lives.
33	C	Asks if they should end the conversation, and they do end the conversation.

The conversation structure displayed above provides an example of learners developing the subtopics in the course of turn-by-turn interaction. We can see that learners C and D seem to understand each other's language effectively. In turn 8-11, when learner D does not understand the lexical item 沟通 that learner C used, she signals her lack of understanding by repeating the word with a question mark. Learner C explains the word to her in English and they continue the conversation. Thus, although a single instance, we can see that dyad C/D engaged in meaning negotiation triggered by a lexical item and in this example, the peer expert learner C provided scaffolding for learner D by explaining the word to her in English. It is also evident that in this chat conversation learner D assumed a more active role because she controlled the flow of their conversation and directed all of the changes of topic. In contrast, learner C's role appeared to be more of a complementary one by filling in more details or providing

elaborations. In a sense, learner D provided scaffolding in the content and organizational aspect by directing the discussion flow. In turn 29, when learner C expressed that he had nothing else to say, learner D offered to summarize their conversation. Thus, although the amount of language contributed by both learners was similar, the two learners' roles were not equal. Learner C assumed a more passive role whereas learner D took a more active approach. Based on the two raters in this study, dyad C/D's fourth chat session received a lexical quality score of 3.5, a grammatical quality score of 3.5, and a content quality score of 3. What follows next is a detailed analysis of dyad C/D's individual compositions written after the fourth online chat session.

4.6.3.2 Findings for post-chat composition 4 for learners

C and D

The performance data for post-chat composition 4 of learners C and D are first summarized in Table 4.44 below.

Table 4.44 Performance data for post-chat composition 4 of learners C and D

	Learner C	Learner D
Length in characters	409	345
Character accuracy	99.5%	97.1%
Lexical accuracy	96.8%	98.4%
Lexical richness	56.7%	61.8%
Syntactic accuracy	95%	85.7%
Syntactic richness	94.4%	78.6%
Content richness	55.6%	71.4%
Organization	4.5	4
Holistic assessment	4	4

Table 4.45 below presents the content and organization of learner C's composition written following his chat session 4.

Table 4.45 Content and organization for post-chat composition 4 of learner C

Paragraph	Content and organization
1	Makes a beginning statement that the Internet has both positive and negative sides, and stated that he would discuss the positive side first.
2	Discusses the advantage of the Internet in the communication aspect.
3	Discusses the advantage of the Internet in the aspect of shopping.
4	Discusses the disadvantages of the Internet in the aspects of privacy invasion and existence of Internet hackers. Made a final statement that, as long as one uses the Internet appropriately, using the Internet should not be an issue.

The data above indicate that learner C carried over the idea structure of the preceding chat session to his composition. Similar to the chat session, he discussed both the positive and negative sides of the Internet. He devoted two separate paragraphs to a discussion of the two positive aspects of communication and shopping. He initiated both of these ideas in chat turn 7, although learner D also supplied information on the communication aspect in turn 22. In the last paragraph, learner C discussed the negative side of the Internet, including privacy invasion and existence of the Internet hackers. Several of those ideas were raised and discussed primarily by learner D during the chat session, and learner C successfully integrated them into his composition. Other ideas initiated by learner D, including reduced efficiency and reading less, were not included by learner C in his composition.

It was interesting to observe that learner C also carried over the lexical item 沟通, which he explained to D during the chat, into his composition. Overall, because the content and organization in the composition could all be retrieved in the chat session, the lexical and syntactic items were similar to those in the chat session. Learner C's post-chat composition 4 received high character, lexical, and syntactic accuracy scores, and high syntactic richness score, all higher than 90%. His lexical and content richness scores were in the 50% range. His organization score was 4.5 and his holistic assessment score was 4, both on a 5-point scale. Therefore, although learner C assumed a comparatively passive role in the chat session, he successfully transferred the resources of the chat session to his composition.

During the interview learner C also commented on his chatting practice in general. He perceived chatting as a way to begin to think about what the essay topic might entail, and during the composition writing he wrote his opinions with more depth. But, given the fact that typing took longer and there was also waiting time during the online chat, he could not generate as many ideas in the chat sessions as in the FTF sessions. Thus, he often wrote down basic questions and answers during the chat discussions. Learner C also commented that he could have chatted much more quickly, but he was not sure if his interlocutor could respond quickly. Thus, we can see that learner C had some reservations about using the online chat practice, which may have resulted from the passive position he had in the chat session.

Table 4.46 below presents the content and organization of learner D's composition written following her chat session 4. The data indicate that learner D also followed the structure of the chat session closely in her composition, and she included both the positive and negative sides of the Internet. She devoted the first paragraph to the positive side of the Internet by listing the aspects that were affected by the Internet in a positive way. In the second paragraph, she dealt with the negative side of the Internet, including privacy invasion, time wasting, less reading activity, as well as the existence of

viruses and Internet hackers. She originally raised and discussed these ideas during the

chat session, and she included all of them in her composition.

Table 4.46 Content and organization for post-chat composition 4 of learner D

Paragraph	Content and organization
1	Discusses in general the advantages of the Internet by listing the aspects that the Internet has positive impact on, such as communication, work, and study.
2	Argues that despite all the contributions brought by the Internet, it also caused problems, such as privacy invasion, time wasting, less reading activity, as well as existence of viruses and Internet hackers.
3	Makes a final statement that, overall, the Internet has more advantages than disadvantages, and that its problems need to be dealt with actively.

In terms of the lexical items, although learner C explained the word 沟通 to her in

English during the chat session, she did not use it in her composition. Instead, she used

the synonym 联系, which was less appropriate than 沟通 in the context. Because all of

the content and organization in her composition could be traced back to the chat session,

it is not surprising that the lexical and syntactic items were similar to those in the chat

session. Learner D's post-chat composition 4 received character and lexical accuracy

scores higher than 90%. Her content richness score was 71.4%, which was much higher

than learner C's 55.6 %. This finding may relate to the more active role she assumed in

the chat session. Her lexical richness score was 61.8%. Both her organization score and

holistic assessment score were 4 on a 5-point scale. Overall, learner D utilized well the

content and structure developed in the chat session. Compared to learner C, her transfer

of learning from chat session to post-chat composition writing was more parallel. This finding may relate to the more active role she assumed in the chat session.

During the interview, learner D commented that the chatting helped her to organize her thoughts and to practice the patterns, words, and even sentences that she might use when she wrote her composition. It also facilitated her to use the words, ideas, and language patterns the other person produced. This preparation facilitated her composition writing process. She was able to write faster and struggled less as she wrote her composition. For learner D, the chat discussion functioned as an effective writing rehearsal and supplied her with a ready structure that she could use in her subsequent individual writing. Overall, both learners' compositions resembled to a large degree the chat session in the aspects of organization, content, and use of lexical and syntactic items. This indicates that it was comparatively easy for both learners to transfer what they discussed in the chat session to their subsequent composition writing.

The next subsection presents findings on dyad C/D's fifth FTF conversation and subsequent compositions.

4.6.4 FTF Conversation Case Study Findings

The analysis results of dyad C/D's fifth FTF session is first presented, followed by a report on the analysis results of learners C's and D's subsequent compositions.

4.6.4.1 Findings for FTF conversation 5 of dyad C/D

In the fifth FTF conversation, learners were asked to discuss cultural icons that can represent Chinese and American cultures. The topic was the same for the FTF discussion and post-FTF composition. Before the conversation structure of the FTF transcripts is presented, the surface performance data in dyad C/D's fifth FTF session is first summarized in Tables 4.47 and 4.48. From table 4.47, we can see that dyad C/D's FTF session 5 had a conversation length of 760 characters and 22 turns. From Table 4.48, we can see that the mean turn length of learner C was much greater than that of learner D.

The contribution percentage difference between learners C and D was also about 25%. Both data indicate that in contrast to their online chat session 4, there was a relatively unequal interactive and collaborative relationship between the two learners in their FTF conversation 5. Learner C appeared to be more dominant than learner D.

Table 4.47 Length and number of turns for FTF session 5 of dyad C/D

	Dyad C/D
FTF conversation length in characters	760
Number of turns	22

Table 4.48 Turn length and language contribution for FTF session 5 of dyad C/D

	Learner C	Learner D
Mean turn length in characters	43	26.1
Language contribution percentage	62.2%	37.8%

What follows next is a detailed analysis of learner C's and D's FTF session 5, presented in Table 4.49.

Table 4.49 Organization for FTF conversation 5 of dyad C/D

Turn number	Learner	Content and organization
1	D	Asks what can represent Chinese culture.
2	C	Responds that it is hard to decide. It could be clothing. A lot of companies such as Microsoft and Coca Cola can represent American culture. It is hard to think of any Chinese companies that can represent Chinese culture.
3	D	Says that she is not sure either, it may be cell phone, or maybe hi-tech?
4	C	Asks D whether she means that the above can represent Chinese culture.
5	D	Repeats that maybe hi-tech or technology can represent Chinese culture?
6	C	Asks whether D can think of any specific people who can represent Chinese culture.
7	D	Says Bruce Lee.
8	C	Says that Mao Zedong used to represent Chinese culture, but now it is hard to say. Says that products that are cheap and with so-so quality can make one think of China.
9	D	Says that a cultural icon may be a celebrity that everyone wants to meet or achieve his or her accomplishments. Asks whether C thinks that Bill Gates can be a cultural icon.
10	C	Says that many entrepreneurs may represent America, because America stands for free business culture. If ordinary people can create a large company, then he could represent American culture.
11	D	Says that this topic is hard to discuss.
12	C	Agrees that he also does not know what can really represent Chinese culture, maybe clothing or something else.
13	D	Says that if one has a lot of luxuries, the person's life is splendid; the person can be a cultural icon.
14	C	Says that Chinese history is long. The Forbidden City or the government can represent China, and group culture is important. But in Western countries it is not the case, individualism is very important.
15	D	Says maybe family plan (one-child policy).
16	C	Says that thus in the U.S., only celebrities can represent America.
17	D	Says again that the topic is hard to discuss. Asks whether cultural icons need to be people only or can be something else?
18	C	Suggests Li Jiacheng as a Chinese cultural icon.

Table 4.49—continued

19	D	Says that in the U.S. there are American dreams. If one realizes his or her dream, that person becomes a cultural icon.
20	C	Says that he needs to think about whether entrepreneurs can represent Chinese and American culture because Americans like different kinds of things.
21	D	Says that Madonna and Michael Jackson are American icons.
22	C	Ends the conversation by saying that it is really hard to decide.

As the data show, the conversation had a four-part structure. First, from turn 1 to 5, D assumed an initiator role to orient the dyad to the assigned task. Learner D asked what could represent Chinese culture. Next, the dyad tried to figure out what could serve as representatives for Chinese and American cultures, respectively. They mentioned companies, clothing, and other items, but no consensus was reached. Second, from turn 6 to 10, the dyad focused on a discussion of people as cultural icons. They cited different Chinese and American names. Third, in turn 11, learner D expressed her frustration with the topic. From turn 13 to 16, learner D argued that celebrities can be American cultural icons. Learner C agreed and commented that Chinese culture emphasizes group culture whereas American culture emphasizes individualism, and thus celebrities can be good representatives of American culture. Fourth, in turn 17, learner D expressed once again her frustration with the topic. From turn 18 to 22, both learners cited different people as cultural icons for each culture. Learner C focused on people that represent American and Chinese business cultures. Learner D, however, cited several American celebrities' names. The conversation ended with learner C's comment that it is hard to decide.

The above conversation structure displays a turn-by-turn process of developing a topic that appeared to be a challenging for the learners. Dyad C/D went through a process that began with their being somewhat confused and ended with their formulating a clearer

idea about what to focus on. In the end, learners C and D came out with different approaches to the topic. Learner C narrowed down his thinking by choosing successful entrepreneurs as cultural icons, while learner D tended to favor celebrities as cultural icons.

During their interaction, learners C and D seemed to understand each other's language effectively. No lexicon- or grammar-related language episodes were found. However, although both learners shared and exchanged ideas, learner C's language and discussion appeared to be more elaborated. In turn 6, learner C also took the conversation to a clearer discussion focus by discussing people as icons instead of other kinds of icons. In contrast, learner D expressed her frustrations with the topic twice. Thus, in this FTF conversation learner C assumed a more active role. As can be seen from Table 4.48, learner C contributed 62.2% of the conversation talk, whereas learner D contributed 37.8%.

Based on the two raters in this study, dyad C/D's fifth FTF conversation received a lexical quality score of 5, a grammatical quality score of 4, and a content quality score of 4. These three scores were higher than those in dyad C/D's chat session 4. What follows next is a detailed analysis of the compositions that learners C and D wrote following the fifth FTF session.

4.6.4.2 Findings for post-FTF composition 5 of learners C and D

The performance data in the compositions produced by C and D following the fifth post-FTF compositions are first summarized in Table 4.50 below.

Table 4.50 Performance data for post-FTF composition 5 of learners C and D

	Learner C	Learner D
Length in characters	492	348
Character accuracy	99.2%	96.5%
Lexical accuracy	97.5%	98.9%
Lexical richness	41.1%	65.4%
Syntactic accuracy	100%	100%
Syntactic richness	50%	50%
Content richness	87.5%	66.7%
Organization	3.5	2.5
Holistic assessment	3.5	2.5

Table 4.51 below presents the content and organization of learner C's composition written following his FTF session 5.

Table 4.51 Content and organization for post-FTF composition 5 of learner C

Paragraph	Content and organization
1	Made a beginning statement that there are many different cultural icons to represent Chinese and American cultures. He chose Bill Gates and Li Jiacheng from Hong Kong to represent American and Chinese cultures, respectively, and explained his reasons for choosing them.
2	Discussed in detail why Bill Gates could represent American culture.
3	Discussed why Li Jiacheng could represent Chinese culture.

It is clear that the structure above is straightforward. Learner C made a statement at the beginning and introduced the two icons he chose for the two cultures. He then elaborated on the two icons in the next two paragraphs. It is evident that, although both of the cultural icons he chose were originally raised in the FTF session, Li Jiacheng, whom

he suggested, and Bill Gates, suggested by learner D, all of the details learner C wrote for the two icons in the composition were new. Thus, the FTF discussion provided him with a clear writing focus. Learner C did not seem to integrate any other ideas in the FTF session that were initiated by learner D. Because the content was fairly different from the FTF session, the lexical and syntactic items were also quite different. Learner C's post-FTF composition 5 had a length of 492 characters and received character, lexical, syntactic accuracy scores higher than 90%. His content richness score was also a relatively high 87.5%, which was significantly higher than learner D's 66.7%. His lexical and syntactic richness scores were 41.1% and 50%, respectively. His organization and holistic assessment scores were both 3.5 on a 5-point scale. Overall, learner C transferred the ideas initiated in the FTF session and developed them with new content in his post-FTF composition writing.

During the interview, learner C commented that the FTF discussion was helpful because it facilitated brainstorming and helped him to formulate and organize his ideas. He was able to discuss more things in the FTF discussion than in the chat session. However, as the learning data above indicate, although learners discussed at greater length in the FTF conversation, there was less transfer to their composition writing. Table 4.52 below presents the content and organization of learner D's composition written following her fifth FTF session.

Table 4.52 Content and organization for post-FTF composition 5 of learner D

Paragraph	Content and organization
1	Discussed why there are cultural icons and their functions in society.
2	Discussed kinds of people that can be considered cultural icon, such as celebrities, actors, and business people, and why those people can become icons.

The data above show that the content of learner D's composition was overall very general, without much concrete information provided. The content of her first paragraph could not be found in the preceding FTF session. The content of paragraph 2 appeared to be a brief and general summary of the part of FTF discussion that she initiated. Thus, the preceding FTF discussion did not seem to provide much useful information or structure for her to draw upon during her composition writing. Due to the different content and structure, the lexical and syntactic items used in her compositions were very different from those in the FTF session. Learner D's post-FTF composition 5 had a length of 348 characters. The composition received character, lexical and syntactic accuracy scores higher than 90%. Her content richness score of 66.7% was much lower than learner C's 87.5%. Both her organization and holistic assessment scores were 2.5 on a 5-point scale, which were lower than those of learner C. Overall, learner D's composition following the fifth FTF session was much shorter than that of learner C. Compared to learner C, her transfer of content, lexical items, and syntactic items was less. In general, what the fifth FTF session provided for learners C and D in terms of preparing them for the subsequent composition writing was limited. Both learners developed new content and structure in their compositions.

Interestingly, although learner C contributed more in the fifth conversation, as well as two other FTF conversations, learner D seemed to be unsatisfied with C's speaking ability during the FTF sessions and expressed her wish to have a better speaking partner who would challenge her more, rather than allow her to run out of words. In addition to this negative opinion, the above data also indicate that learner D did not utilize much of the information in the FTF session. The next subsection summarizes the findings for the case study.

4.6.5 Summary of Case Study Findings

The case study findings confirmed the earlier results that the transfer of learning from a chat session to subsequent composition writing had a parallel pattern. The post-chat writing of both learners resembled to a great degree their chat session in lexical and syntactic items, content, and organization. By contrast, the FTF discussion functioned more as a brainstorming process that provided learners with a general idea for their subsequent writing. Learners still invested significant effort in developing the content and organization for their post-FTF compositions.

Second, during the post-chat composition writing, learners C and D integrated ideas that the other raised in the chat session. During the post-FTF composition writing, learners C and D tended to include only those ideas that they themselves had initiated during the FTF session.

It is also observed that, although the fifth FTF conversation of dyad C/D was longer than their fourth chat discussion and also had better lexical, grammatical, and content qualities, the learners did not seem to be able to draw upon their FTF discussion when they composed their essays. The lack of a solid structure seemed to pose an even greater challenge for learner D, who claimed to be a slow writer. Both the content and organization of her fifth post-FTF composition received relatively low scores. On the other hand, during the chat session, learners C and D pooled their linguistic resources and ideas and reached a substantial structure at the end. Such a structure facilitated both learners to readily transform the content of the chat discussion into their compositions. As a result, they generated linguistically more complex, more structured, and better-quality writing. Table 4.53 presents a comparison between the post-chat and post-FTF compositions written by learners C and D.

Table 4.53 Comparison between post-chat compositions and post-FTF compositions for learners C and D

	Fourth post-chat writing session		Fifth post-FTF writing session	
	Learner C	Learner D	Learner C	Learner D
Syntactic richness	94.4%	78.6%	50%	50%
Content richness	55.6%	71.4%	87.5%	66.7%
Organization	4.5	4	3.5	2.5
Holistic assessment	4	4	3.5	2.5

In conclusion, a comparison of these two particular participants was illuminating in terms of obtaining a deeper understanding of the interactive and collaborative structure in the online chats and FTF discussions and how they contributed to the post-interaction composition writing.

4.7 Summary of Findings

The results reported in this chapter show that both the online chats and the FTF conversations provided an interactive and collaborative L2 learning environment. The collaboration in the online chats was relatively equal, whereas in the FTF sessions some learners tended to dominate the conversations more than others. Also, the online chats allowed learners chances to discuss the usages of character and lexical items, and learners applied them in their subsequent composition writing. The FTF sessions also allowed learners to discuss the usages of lexical and grammatical items. The lexical items, however, were often not used in the afterwards composition writing. Some of the grammatical items were transferred to the subsequent composition writing, others were not.

Learners discussed at greater length (as measured by number of characters) in the FTF sessions, which seemed to lead to greater length in the post-FTF compositions. But it is also worth noting that although learners had significantly better lexical, grammatical, and content performance in the FTF sessions, as perceived by learners themselves in addition to the quantitative measures taken on the data, this superior linguistic and ideational production did not result in a better lexical, grammatical, or content performance in the post-FTF composition writing. By comparing the transfer of ideas and linguistic elements between the two mediums, it was found that the transfer process from the online chats to post-chat composition writing was more of a parallel process, whereas the transfer process from the FTF sessions to post-FTF composition writing displayed a more selective pattern. Finally, one can also conclude that both mediums helped to improve learners' L2 Chinese composition writing fluency and increase their motivation towards L2 Chinese writing.

To conclude this chapter, by investigating the impacts of the two interactive mediums of FTF oral conversation and online chat on L2 individual composition writing, it was found that both the online chats and FTF conversations had benefits for the development of L2 Chinese writing ability in various aspects. In the next chapter, the findings are discussed. Implications for research and teaching are also presented.

CHAPTER V: DISCUSSION

5.1 Introduction

In the Results chapter, data gathered and the analysis of the data for the four research questions were presented. This chapter discusses the study findings. Research questions are restated and answers for each question are provided. The case study findings are integrated into each corresponding research question. The implications and limitations of the study are also discussed.

5.2 Answer to Research Question 1

Research question 1 deals with the relationship of online chat and subsequent composition writing. The question is posed as follows: Does interactive L2 Chinese writing in online chat have an impact on subsequent individual second language (L2) Chinese composition writing? If so, in what aspects?

The hypothesis underlying this research question was that, as a result of the practice in online chat, Chinese L2 learners will have improved performance in individual-based composition writing in the aspects of enhanced amount and complexity of L2 written production and improved L2 writing ability in other aspects. The analysis results confirm part of the hypothesis and reveal other new findings. The findings for research question 1 are first discussed within the framework of interactionist theory and then are examined from the perspective of collaborative learning theory. Similarities and differences between the current findings and previous studies are also pointed out. The section ends with a summary of the answer to research question 1.

The findings in this study show that the online chats benefited L2 Chinese writing as ascribed to interactionist theory. First, the peer interaction in the online chats generated comprehensible input, comprised of two learners' character, lexical, and grammatical production, as well as their ideas. The case study findings also indicate that learners C and D understood each other effectively during the chat discussion. Consistent with

Warschauer (1997), the chat interactions also allowed opportunities for learners to generate L2 Chinese output that needed to be comprehensible to their interlocutor. VanPatten (2004) points out that juxtaposing one learner's output with another learner's input may also prompt learners to attend to their interlocutor's language and discover new knowledge that may be integrated into their own interlanguage system. Similar to findings in many previous studies (Beauvois, 1998; Jones et al., 2006; Kern, 1995; Selfe, 1992; Warschauer, 1996, 1997), such practice opportunities were equally distributed between the two learners in a dyad.

Second, similar to previous studies (Blake, 2000; Fidalgo-Eick, 2001; Pellettieri, 2000; Tudini, 2003), by allowing the learners to view each other's output turn by turn, the chat discussions facilitated negotiation of meaning triggered by lexical items. Four lexical items were negotiated in the chat sessions. Thus, the online chats offered opportunities for acquisition of the negotiated items. It was also observed that the learners who had explained the lexical item to their partner during the meaning negotiation tended to carry the lexical item forward and used it in their post-chat compositions. They integrated three of the four negotiated lexical items into their post-chat compositions. In contrast, learners who had received the explanation during the lexicon-triggered meaning negotiation did not include any of the negotiated lexical items in their individual composition writing. Thus, the negotiation process seemed to reinforce the lexical item for the student who wrote it first, but did not share the same effect for the student who did not understand the lexical item. The reason may be that the one-time meaning negotiation did not allow learners a strong retention of the lexical item and thus they were not able to use it in their composition. Such result adds new information to the interaction hypothesis by indicating that the learning effect during negotiation of meaning also depended on whether a learner negotiated the language item actively to other learners or was the recipient of the linguistic information.

No grammar-triggered negotiation of meaning was found in any of the chat sessions. This differs from the previous studies that claim that online chat presents a good L2 environment for focus on form (Kelm, 1992; VanPatten, 2004; Warschauer, 1997). Similar findings, however, were found in Jones et al.'s (2006) study, in which the L2 online peer-tutoring writing sessions focused more on global writing concerns such as content and process, but little on sentence structure. There are several possible explanations for the lack of form-related meaning negotiations in this study's chat sessions. First, grammar-related errors did not affect understanding the meaning; thus, learners did not perceive the need to correct them. Second, learners may not have sufficient L2 Chinese proficiency to correct each other's grammatical errors. Second language acquisition (SLA) researchers argue that the ability to notice and explain errors is different for learners with different levels of L2 proficiency (Qi & Lapkin, 2001; Williams, 1999, 2001). The frequency of attention to form increases as the proficiency level increases. The participants in this study were at the intermediate level of Chinese proficiency, which may not have provided them with a strong enough base to correct each other's grammatical errors (Blake, 2000). Third, the stated purpose of the online chats was to exchange and develop ideas. Learners were not instructed to correct each other; thus, they may not have thought to focus on linguistic errors. Fourth, in the L2 interaction literature, most negotiation has been found to center on meaning instead of form (Blake, 2000; Fidalgo-Eick, 2001; Pellettieri, 2000).

Despite the apparent lack of focus on form, however, an exploration of whether learners attended to grammatical form during the chat discussions should not be limited to examining whether there were grammar-related episodes. The findings suggest that most of the syntactic structures used in the post-chat compositions could be retrieved from the preceding chat sessions. This might also indicate learners' attention to grammatical forms during the chat discussion. Further studies are needed to understand

what linguistic aspects L2 learners may consciously or unconsciously attend to during chat conversations.

Third, a somewhat parallel transfer of learning was also found from the chat session to subsequent post-chat composition in the aspects of characters, lexical items, syntactic structures, ideas, and content organization. A good portion of the characters, lexical items, and syntactic structures used in a post-chat composition were present in its preceding chat session. The ideas and content organization in the composition could also be found in the preceding chat transcript. The input and output in the chat discussion was comprehensible and subsequently used in the composition writing. Thus, we can conclude that learners treated the chat discussion as a ready-to-use pre-writing package. There might be two reasons for such a parallel transfer of learning. First, with visual access to all of the information in the chat sessions, learners were able to retain the information. Second, the contents of the chat sessions were relatively simple and limited, which allowed for easier processing of the information. Thus, the online chats served as an effective medium to prepare L2 learners with lexical items, syntactic structures, and ideas that they incorporated into their subsequent compositions.

The fourth discussion point related to interactionist theory is that, following the interactive chat sessions, learners wrote with consistently high character, lexical, and syntactic accuracy, with percentage scores all higher than 90%. The reason for the high character, lexical, and syntactic accuracy may be that learners tended to use only those characters, words, and syntactic structures that they were familiar with, resulting in high ratings on the three accuracy measures. It may also mean that learners did not find the composition tasks lexically or grammatically challenging. On the other hand, limited by their lexical and grammatical knowledge, learners only used a moderate range of lexical and syntactic items. The mean lexical richness rating was 56.56% and mean syntactic richness was 51.30%. Great differences were also discovered in the lexical richness, syntactic richness, content richness, and organizational and holistic ratings across post-

chat writing sessions, which may indicate differential difficulty of the various topics. Some topics may be particularly challenging in terms of applying lexical and syntactic features, coming up with ideas, or generating overall good writing quality. For instance, all of the ratings mentioned above in the post-chat writing session 1 were much higher than those in several other sessions. This finding may indicate that a discussion of the differences between Chinese and Western education was comparatively easy for learners to manage. In contrast, the lexical richness and the organizational and holistic ratings for the post-chat writing session 5 were much lower than those in several other sessions. This finding may indicate that the topic of the relationship between morality and economic development was a difficult topic for learners to analyze and discuss. According to the ACTFL Writing Proficiency Guidelines (Breiner-Sanders et al., 2001), a writing task that deals with personal experiences and concrete topics is easier compared to a writing task that deals with impersonal and abstract information. A writing task that requires argumentation is also considered relatively difficult. Thus, the task of discussing the differences between Chinese and Western education relationship (post-chat writing session 1) was relatively easier for the learners than the task of discussing the relationship between morality and economic development (post-chat writing session 5).

Fifth, as the participation in the online chat sessions proceeded during the semester, learners tended to produce compositions with increasing length. This finding confirms findings in previous studies (Abrams, 2003; Kern, 1995), which argued that online chat helped enhance the amount of L2 production. On the other hand, increasing length may also partially be the result of students' improved Chinese L2 skills from their language study and from being in the target language environment, as well as with becoming more comfortable with the task of writing compositions. The following paragraphs discuss the chat session findings within the framework of collaborative learning theory.

The findings indicate that online chat also presented an effective L2 collaborative learning environment. Online chat facilitated a relatively equal interactive and collaborative relationship between learners. Such a characteristic is especially beneficial for L2 learners with comparatively low L2 ability or a shy personality. However, the current study also reveals a more nuanced view of the notion of equal collaboration. The case study findings revealed that although the contribution percentages between the two learners in a chat dyad tended to be similar, the similar percentages could mask differences in roles: one member of a dyad might take a leading role by directing and controlling the conversation flow. For example, learner D assumed an active role in dyad C/D's chat session 4 in the way that she initiated all of the subtopics and controlled the overall direction of the conversation. In a sense, learner D provided scaffolding for learner C in terms of content organization and ideas during their online-chat discussion 4. Thus, although the language contribution may be similar between the two learners in a dyad, their actual roles may not be equal and the interaction might not be truly reciprocal. Storch (2004) points out that in interactions with high equality, control over the task does not reside with one participant; rather, the flow of information needs to be bilateral. Thus, to make chat interaction achieve equality in more than just amount, appropriate interventions, such as teacher participation or more specific task instructions, may be needed. On the other hand, whether different L2 learners may benefit similarly from an equal collaboration also needs further exploration.

Second, the results of the current study also underline the importance of scaffolding in the online chat environment. The more capable peer learners provided scaffolding to their partners by supplying ideas and overall discussion structure. As discussed above, learners exchanged and shared ideas and experience in the online chats. The more expert peers also played an active role in leading the conversation flow and, thus, they created a more productive structure for both learners to fill in ideas. Learners also carried over the ideas and content structure in the online chats to the subsequent

composition writing. Thus, in the chat discussions the peer learners empowered their interlocutors within a zone of proximal development (ZPD) through the idea and structural support.

Third, besides peer scaffolding, learners in the online chats also exchanged and shared each other's linguistic resources including characters, words, and grammatical structures, as well as experiences and ideas. Similar findings were found in previous studies (Honeycutt, 2001; Lee, 2002, 2004). During the chat discussions in this study, learners used most of their time to develop ideas. The case study findings also revealed the turn-by-turn process of developing subtopics. Learners also tended to integrate each other's ideas into their subsequent composition writing.

Finally, writing to a peer learner in the online chat medium might also help L2 learners to obtain a better awareness of their writing audience, which is conducive to the development of L2 writing skills, given that writing is essentially a social act (Hamdaoui, 2006; Hyland, 2002; Weissberg, 2006). Thus, participation in the online chats was in itself also a learning process.

In summarizing the answer to research question 1 (i.e., the impact of online chat on subsequent individual L2 Chinese composition writing), it is clear that the findings support the hypothesis with regard to enhancing the amount of L2 written production. Learners wrote with increased composition length over time. Following the chat discussions, learners also wrote with consistently high character, lexical, and syntactic accuracy. Great discrepancies however were found in the ratings of other measures between the post-chat writing sessions, which might relate to different difficulty level of the topics. In interactionist terms, online chat allowed comprehensible input and output and negotiation of meaning triggered by lexical items. Four lexical items were negotiated in the chat sessions. It was also observed that the learners who had explained the lexical item to their partner during the meaning negotiation tended to carry the lexical item forward and used it in their post-chat compositions. In contrast, learners who had

received the explanation during the lexicon-triggered meaning negotiation did not include any of the negotiated lexical items in their individual composition writing. This adds new information to the interaction hypothesis in the way that the learning effect related to the role that L2 learner assumed in the negotiation of meaning. No instances of grammar-triggered meaning negotiation were found. The comprehensible input and output were meaningfully processed by the learners. A parallel transfer of learning from the chat sessions to post-chat compositions was found in the aspects of characters, lexical items, syntactic structures, idea units, and organization. Thus, the interplay between interactive L2 online chatting and L2 composition writing seemed to be relatively direct. Under the framework of collaborative learning theory, online chat facilitated a relatively equal collaboration between learners. Learners exchanged and shared each other's linguistic resources, experiences, and ideas. In spite of the surface equal contribution, sometimes one member of a dyad might play a more leading role by directing and controlling the chat conversation flow. Thus, certain interventions, such as teacher participation or more specific task instructions, might be necessary to make the chat interaction truly bilateral and reciprocal. In the online chats, peer learners also empowered their interlocutors within a ZPD through linguistic and idea support. The interactive writing practice in online text chat also helped L2 learners to develop a better awareness of the writing audience (Weissberg, 2006). Such awareness might engender important social cognitive skills deemed beneficial for the development of L2 writing ability. The following section will address research question 2.

5.3 Answer to Research Question 2

Research question 2 is parallel to research question 1, but for the FTF conversation environment: Does interactive face-to-face oral conversation have an impact on subsequent individual L2 Chinese composition writing? If so, in what aspects? The study results answer the second research question affirmatively.

The hypothesis underlying this research question was that, as a result of the oral practice in FTF conversation, Chinese L2 learners will perform better in individual-based composition writing in a variety of respects. The analysis results revealed various benefits of FTF conversation for the development of L2 Chinese writing skills. New findings also emerged. The findings for research question 2 are first discussed within the framework of interactionist theory and then are examined from the perspective of collaborative learning principles. Similarities and differences of the findings to previous studies are also pointed out. The section ends with a summary of the findings for research question 2.

The findings in this study showed that FTF conversation presented some benefits as ascribed to interactionist theory. First, the FTF discussions generated comprehensible input comprised of two learners' lexical and grammatical creations as well as their ideas. The case study findings also indicate that learners C and D understood each other effectively during the dyadic FTF discussion. The FTF interaction also allowed learners opportunities to produce L2 Chinese output that was comprehensible to their interlocutors.

Second, most of the FTF conversations also facilitated negotiations of meaning triggered by lexical items. However, out of the 16 negotiated lexical items in the FTF conversations, only four of them were incorporated by learners in their individual composition writing. It is possible that, because the FTF discussions were relatively rich in information and learners had to focus on keeping the conversation going at the same time, they may have been unable to allocate sufficient attention to specific lexical items. Three grammar-triggered meaning negotiations were also found in some of the FTF sessions, and two of them were used by learners in their post-FTF compositions.

Third, the comprehensible input and output in the FTF discussions were not fully transferred to subsequent composition writing. The transfer analysis findings indicate that learners sometimes transferred only a limited part of syntactic structures and ideas produced in the FTF discussions to their post-FTF compositions. For example, only 25%

of the syntactic items in learner E's post-FTF composition 3 were found in the preceding FTF session 3 in which he participated. In the post-FTF composition 3 for learners E and F, only 40% and 50% of the contents were found in the preceding FTF session respectively. Both the transfer analysis and case study findings indicate that learners continued to develop new ideas in the post-FTF composition writing. The reason for such a selective transfer of learning may lie in that in the FTF discussions learners were able to discuss their ideas more in-depth. Thus, they obtained a clearer idea about what they wanted to write in the post-FTF composition instead of simply using all the ideas in the FTF discussions. In the post-FTF composition writing, learners often went beyond the FTF discussions and developed new content. Therefore, the FTF discussions functioned like a brainstorm process, which stimulated continued idea generation in the post-FTF composition writing.

Fourth, following the FTF discussions, learners wrote with high character, lexical, and syntactic accuracy, with all scores higher than 90%. Learners only used a moderate range of lexical and syntactic items in the post-FTF compositions. The mean lexical richness rating was 53.29% and mean syntactic richness rating was 44.62%. The reason for the high character, lexical, and syntactic accuracy might be that learners tended to use only those characters, words, and syntactic structures that they were confident about, which resulted in high ratings on the three measures. In contrast, limited by their lexical and grammatical knowledge, learners only used an average range of lexical items and syntactic structures.

Fifth, as the participation in the FTF sessions proceeded during the semester, learners tended to produce compositions of increasing length. Again, increasing length may also partially be the result of students' improved Chinese L2 skills from their language study and from being in the target language environment, as well as with becoming more comfortable with the task of writing compositions. The paragraphs below

discuss the findings on FTF oral conversation within the framework of collaborative learning theory.

The findings indicate that FTF conversations provided a good L2 collaborative learning environment. First, the FTF conversations allowed learners to explore each other's linguistic resources, including words and grammatical structures. It also allowed learners to share each other's experiences and ideas, and it facilitated in-depth discussions. The findings indicate that the most significant focus area during the FTF conversations was generating ideas. The case study findings also displayed the process of developing subtopics in the course of turn-by-turn oral interaction. However, such information exchange and sharing were not equally distributed between the two learners in an FTF dyad. Similar to the findings in Jones et al. (2006), the opportunities to practice in Chinese during the FTF interactions were unequally distributed between the two participants in a dyad. Some learners appeared to be more dominant than others during the FTF conversations. The reason may be that because only one learner could speak at a time, the learners with relatively better Chinese oral skills or a more extroverted personality tended to speak more, whereas the other interlocutor had to wait for a relatively long time before his or her turn to speak. Intervention would be needed in an instructional setting to make the FTF conversations more equal and reciprocal.

Second, the current study also presents new findings on how learners utilized the collaborative resources generated in the FTF discussions. It was found that learners tended to include in their post-FTF composition only those ideas they themselves raised during the FTF discussion, despite the fact that they exchanged and shared ideas and co-constructed the FTF oral production. The reason may be that the dyadic FTF discussion facilitated learners to become conscious of what they wanted to write regarding the topic instead of simply using all the ideas generated in the FTF discussions.

Third, the learners also provided scaffolding to each other, both in language and ideas. In the linguistic aspect, the more expert peers provided explanations of words and

grammatical patterns when their interlocutors did not understand them, as reflected in the lexicon- and grammar- triggered meaning negotiations. Such support facilitated meaningful communication in the FTF conversation. In terms of ideas, the more expert peers directed the conversation flow and supplied ideas, which resulted in a smoother conversation flow. Thus, the FTF discussions gave rise to a ZPD through both language and content support from peer expert learners.

Fourth, by communicating with a peer in the FTF conversations, learners also developed a better awareness of their communication audience (Weissberg, 2006) and could write with such audience in mind during their composition writing. Activating this kind of social mechanism is considered conducive to the development of L2 writing skill.

Finally, by participating in the FTF conversations, L2 learners gained practice in transforming their interactive spoken Chinese into more formal written Chinese. Such a practice may facilitate learners to develop a better awareness of the characteristics of different Chinese language styles and foster more appropriate usage of different language styles.

In summarizing the answer to research question 2 (i.e., the impact of FTF conversation on subsequent individual L2 Chinese composition writing), it is clear that the findings support the hypothesis with regard to enhanced amount of L2 written production following the participation in FTF conversation. Learners also wrote with consistently high character, lexical, and syntactic accuracy. Consistent with interactionist theory, the FTF conversations allowed comprehensible input and output, as well as negotiations of meaning triggered by lexical and grammatical items. The comprehensible input and output in the FTF sessions were only partially transferred to post-FTF compositions. Learners seemed to integrate into their subsequent composition writing only those ideas that they themselves raised during the FTF discussions. The FTF discussions functioned like an idea brainstorm process and stimulated further thinking in the post-FTF composition writing. Under the framework of collaborative learning theory,

FTF conversation allowed learners to exchange and share linguistic resources, experiences, and ideas. However, the opportunities to practice in Chinese during the FTF interactions were unequally distributed between the two learners in a dyad. Some learners tended to be more dominant than others during the FTF conversations. Certain interventions, such as teacher participation or more specific task instructions, will be needed to make the FTF conversations more equal and reciprocal. The FTF interactions also facilitated scaffolding between learners in linguistic and content aspects, through which learners empowered each other within the ZPD. The participation in the FTF oral conversations also helped L2 learners to develop a better awareness of the writing audience (Weissberg, 2006), which may generate social and cognitive skills that are beneficial for the development of L2 writing ability. The practice of moving from the interactive spoken Chinese to formal written Chinese may also allow learners to better perceive the characteristics of different Chinese language styles so that they can apply them appropriately.

5.4 Answer to Research Question 3

Research questions 1 and 2 dealt separately with the impact of online chat and FTF oral conversation on subsequent composition writing. Research question 3 compares the impact of these two interactive mediums: Does the impact mentioned above differ between the two interactive mediums of online chat and face-to-face oral conversation? If so, in what aspects?

The answer to this question is consistent with the prediction that online chat practice and FTF conversation will have different impacts on Chinese L2 learners' individual writing performance. The two mediums also share similarities. The discussion below first looks at the similarities between the two mediums, and it then turns to the differences between the two mediums. Both interactionist and collaborative learning

theories underlie the discussion. The section ends with a summary of the findings for research question 3.

The findings indicate that both mediums benefited the learning of L2 Chinese writing in ways that are consistent with interactionist theory. First, both mediums gave L2 learners exposure to comprehensible input and opportunities to generate comprehensible output. Such comprehensible input and output was also effectively processed by L2 learners and used in their subsequent compositions. In both post-chat and post-FTF compositions, the linguistic, content, and organizational features were present in the preceding interactive session to some degree. Second, both mediums allowed opportunities for negotiation of meaning triggered by lexical items. Sometimes, learners were also able to carry forward the lexical items discussed into their post-interaction compositions. Third, following the interactive preparations in the online chats and FTF conversations, learners performed with high character, lexical, and syntactic accuracy in the post-interaction writing following both mediums, with percentage scores higher than 90%. The reason with these uniformly high rates might be that learners tended to use only those characters, words, and syntactic structures that they were confident about. However, learners only used an average range of lexical and syntactic items, which might relate to learners' limited lexical and grammatical knowledge. Finally, following both mediums, the L2 Chinese composition writing fluency was improved. For both mediums, the mean composition length of the fifth writing session was longer than that of the first writing session by approximately 100 characters.

With regard to collaborative learning theory, both mediums provided an effective L2 collaborative learning environment. The L2 Chinese learners shared each other's linguistic resources and pooled their ideas. In both mediums, the most prominent focus area was generating ideas. By exchanging ideas with peer learners, the less capable writers might also fill in the logical gaps of their ideas and thinking. Such co-constructed information was later processed and used in the individual composing process (Haynes,

1998; Warschauer, 1999). Furthermore, writing in the text chats or conversing in the FTF oral discussions with a peer helped learners to develop a better awareness of the writing audience (Weissberg, 2006), which is deemed conducive to the development of L2 writing skill, given that writing is essentially a social act.

Although the two mediums shared similar impacts as discussed above, their impacts also differed from each other in several major respects. Such differences are first discussed using the guidelines of interactionist theory, and then within the principles of collaborative learning theory.

First, from the interactionist perspective, although both mediums allowed opportunities for comprehensible input and output, the transfer analysis and case study findings indicated that such input and output were used to different degrees in the post-chat and post-FTF compositions. The transfer of learning performance from the chat sessions to post-chat compositions displayed a more parallel pattern, whereas the transfer from the FTF sessions to post-FTF compositions indicated a more selective pattern. Specifically, the post-chat writings resembled the chat sessions to a great degree in lexical and syntactic items, idea units, and content structure. There may be three reasons for this parallel transfer. First, during the chat discussions, due to the time needed for typing and waiting for responses, the ideas developed tended to be limited and the content structure was also relatively simple. Such limited resources resulted in simplified information processing. Second, because the discussion in the chats was fairly limited, deeper thinking processes failed to be activated. As the result, learners tended to repeat what they discussed in the chat sessions. Third, because the language and ideas generated in the online chats were displayed in printed characters, it was a more straightforward process to transfer the language items and ideas to the composition writing. In other words, the similarity between the online chats and composition writing promoted a more parallel learning transfer.

In contrast, although the FTF discussions provided learners with various potential ideas to use, learners transferred a limited portion of the FTF discussions to their post-FTF compositions and continued to develop new content in the composition writing. Thus, the post-FTF composition writing represented an expansion of the FTF discussions. This selective transfer pattern may relate to the fact that during the FTF discussions learners were able to discuss a good variety of ideas with certain depth. This more coherent discussion stimulated deeper thinking about the topic and learners continued to develop ideas and contents in the post-FTF composition writing.

The case study findings also supplied interesting data regarding the different transfer patterns between the two mediums. Although there was a relatively rich discussion in dyad C/D's FTF discussion 5, the FTF interactive preparation did not seem to be helpful for learner D in composing her subsequent essay. Learner D, who claimed to be a slow writer in both Chinese and English, also commented that she had special difficulty in developing writing structure. At the end of dyad C/D's FTF discussion 5, the learners reached different conclusions regarding what could represent Chinese and American cultures. Learner D, however, failed to carry forward her own ideas to further develop them in the composition writing. The overall contents in learner D's post-FTF composition 5 were very general and not much concrete information could be found. Her organizational and holistic scores for post-FTF composition 5 were relatively low: 2.5 on a 5-point scale. In contrast, learner C, who claimed that he could write quickly as long as he had ideas, displayed different usage pattern following the same FTF discussion 5. The FTF discussion seemed to provide him with a clear writing focus. He carried forward the ideas he developed in the FTF discussion and continued to develop them in his composition. His organization and holistic scores were both 3.5 on a 5-point scale, which were higher than those of learner D. Thus, for learner C, the FTF discussion helped brainstorm ideas and stimulated further thinking. During the interview, learner C commented that during the FTF discussions he was able to discuss more things as

compared to the chat sessions, which helped him to formulate and organize his ideas. Learner D, however, was not able to carry forward her own ideas and further develop them by herself. The case study findings indicate that learner D seemed to feel more comfortable with the relatively simple but clear content structure developed in her chat session 4 and transferred that content structure faithfully into her post-chat compositions. These data suggest that an interactive medium may interact with learning styles in different ways and display different characteristics. Payne and Ross's (2005) study also provided evidence that online chat had the potential to affect the development of L2 oral proficiency, especially for L2 learners with low working memory.

Although the chat discussion prepared learner D with a more ready-to-use structure for her composition writing, this learning process failed to activate the deeper thinking process that is important for the development of the L2 writing skill. Simply repeating what she discussed in the chat session did not facilitate learner D to practice and develop her writing structure. In contrast, the FTF discussions stimulated deeper thinking, and learners continued to develop and restructure their ideas during the individual composing task. Such a process may help cultivate the higher-level cognitive skills and writing strategies that are conducive to L2 writing, especially for those L2 writing tasks that are cognitively more complicated. For learners who have difficulty in organizing ideas and developing writing structure, it may be useful to allow them to take notes during FTF conversation, which will provide them with more structural support when they write individually.

The second difference between the two mediums from an interactionist perspective concerns the aspects of meaning negotiations. First, the meaning negotiations occurred in the two mediums with different frequencies. In contrast to the four lexicon-related meaning negotiations found in the online chat sessions, 16 of them were found in the FTF conversation medium, spread out in various FTF sessions. Four cases of grammar-based meaning negotiations were also found in a few FTF sessions, in contrast

to zero instances found in the chat sessions. Such difference may have stemmed from the fact that during the chat sessions, the visual display of the information enabled easier meaning processing and reduced the need for negotiations on lexical items or grammatical forms. In addition, asking for clarification or explanation during chat sessions can be time-consuming and, therefore, may have been avoided. Furthermore, in the chat sessions, learners could circumvent their failure to understand by initiating a new sub-topic. While in the FTF conversations, when certain information was not understood, learners had to resolve the complication first before moving on with the conversation. In addition, asking for clarification in FTF conversation tended to be more time-efficient. Second, the lexical items negotiated in the online chats tended to be used in the post-chat compositions, i.e., three out of four were used. However, the lexical items negotiated in the FTF sessions were frequently not incorporated into the post-FTF compositions. Only three out of the 16 negotiated lexical items were used in the post-FTF compositions. The reason for this difference could be that in the online chats, due to the lower time pressure and reduced immediacy of conversation flow, learners could negotiate for meaning at their own pace (Fernández-García & Martínez Arbelaiz, 2002), thus allowing them to process the information more fully. During the FTF discussions, however, the contents were richer and learners needed to retain all the information in their working memory and at the same time carry on the conversation, with the result that the attention they could allocate to specific linguistic items might be limited. Thus, FTF conversation was found to generate more opportunities for focus on form and lexical items as compared to the chat medium.

Third, the findings show that the post-interaction written output yielded fairly different performance data between the two mediums. First, the mean post-FTF composition length was significantly greater than that of the post-chat compositions. This finding applied to both the group and individual learner data. This finding may relate to the fact that, within the same time frame, learners were able to produce more language in

the FTF oral conversations than in the text chat sessions. Thus, the ideas were more abundant in the FTF sessions and therefore more available for transfer to the compositions or stimulating learners to further develop ideas for the topic. Second, although the lexical quality, grammatical quality, and content quality of the FTF conversations were better than those in the online chats for both the group and dyad data, they did not lead to better performance in the post-FTF compositions, as indicated by the two raters' ratings. Instead, for the whole group, the character accuracy and lexical richness of the post-chat compositions were significantly better than those in the post-FTF compositions. Although not statistically significant, the mean organizational and holistic scores of the post-chat compositions were also higher than those of the post-FTF compositions. For individual learners, the mean character accuracy and syntactic richness in the post-chat compositions were greater than those in the post-FTF compositions. The fact that learners wrote with higher character accuracy following the chat sessions was self-evident. In the chat sessions learners had visual access to characters, which thus could help them recall how to write characters that they might use in their compositions. The reason that the post-chat compositions had better lexical and syntactic richness as well as better organizational and holistic scores may be due to the fact that learners basically transformed the chat contents into their composition writing. With such second-time writing, learners were likely to generate better quality in various measures. However, as discussed above, in the post-FTF composition writing, learners continued to develop new contents and idea structures that were not present in the FTF discussions. Although writing with new linguistic features and content may not guarantee a polished product, the presence of these new elements indicates a deeper thinking process, which is critical in cultivating the higher-level cognitive skills and writing strategies that are important to the development of L2 writing skills.

With regard to collaborative learning principles, the two mediums also displayed different characteristics. First, although in both mediums learners were expected to

collaborate with each other, the dyadic chat interactions displayed a relatively equal collaborative pattern, while the collaboration in the FTF discussions appeared to be relatively unequal. This confirms the findings of a number of previous studies (Beauvois, 1998; Kern, 1995; Warschauer, 1996, 1997). On the other hand, the equal collaboration in the online chats provided each learner more power to manage his or her own learning process. Such an equitable collaborative pattern is especially beneficial for L2 learners with relatively lower L2 ability and a shy personality. The current study, however, also provided new insights regarding equal collaboration. The case study findings revealed that, although the contribution percentages between the two learners in a chat dyad tended to be equivalent, some learners might play a more leading role by directing and controlling the flow of conversation. On the other hand, the FTF discussions exhibited a relatively unequal collaborative pattern. Some learners in the FTF dyadic interactions tended to dominate the discussion more than the other learner in the dyad. The reason might lie in that during the FTF conversations, only one learner could speak at a time. A learner with relatively better Chinese speaking skills or a more extroverted personality tended to speak more, while the other interlocutor had to wait a relatively long time for his or her turn to speak. Certain pedagogical interventions such as a clearer definition of each learner's role will be needed to make the FTF conversations more equal and reciprocal for each learner.

The second discussion point relevant to collaborative learning theory is that in the post-chat compositions, learners tended to integrate each other's language and ideas into their individual writing. The reason may be that the ideas generated in the chat sessions were limited and so learners tended to use most of them in their composition writing. In contrast, in the post-FTF compositions, learners tended to include in their compositions only those ideas that they themselves raised during the FTF discussions, despite the fact that they exchanged ideas with their partner and co-constructed the FTF oral product. The reason for the more self-conscious usage of the FTF conversation resources might relate

to the fact that the FTF discussions stimulated a deeper thinking process and learners were more conscious about what they wanted to write regarding the topic instead of simply using all the ideas in the FTF discussions.

Third, the discussion focus areas were also different between the two mediums. Social greetings were a focus area to which turns were devoted in most of the chat sessions. By contrast, few instances of social greetings were found in the FTF sessions, which might relate to the fact learners saw each other face-to-face and an official social greeting was not perceived as necessary. The online chats also had a few character-related episodes, whereas understandably, no character-related episode was found in the FTF sessions. Such a difference is self-evident because online chat allows visual access to characters and FTF conversation does not.

In reviewing the results for research question 3 (the impact difference of online chat and FTF conversation on subsequent individual L2 Chinese composition writing), it is clear that the two mediums resemble each other in that both mediums allowed L2 learners exposure to comprehensible input and output and negotiation of meaning. In both mediums L2 Chinese learners exchanged and shared linguistic resources and ideas. Writing to or conversing with a peer learner in the two interactive mediums helped learners to develop a better awareness of the writing audience (Weissberg, 2006), which is conducive to developing the social cognitive skills needed for L2 writing development. Following the two mediums, a trend of improved composition writing fluency was detected among the learners. Learners also performed with high character, lexical, and syntactic accuracy in the post-interaction writing following both mediums, with percentage scores higher than 90%. The two mediums also differed in several aspects. The FTF conversation outperformed online chat with respect to lexical, grammatical, and content qualities. The FTF conversation also generated more opportunities for focusing on form and lexical items. Although the collaboration during chatting was relatively equal in terms of language contribution, sometimes a learner might play a more leading

role by directing and controlling the conversation flow. The FTF dyadic collaboration displayed a relatively unequal pattern. The transfer of learning from the chat sessions to post-chat compositions displayed a more parallel pattern. This parallel preparation was especially helpful for slow writers and learners who had difficulty in developing writing structure. However, the chat preparation failed to activate deeper thinking processes. The transfer of learning from the FTF sessions to post-FTF compositions revealed a more selective pattern. The FTF discussions helped learners formulate ideas and stimulated deeper thinking about the writing topic. Learners continued to develop ideas in the post-FTF composition. This deeper thinking process may help cultivate the cognitive skills and writing strategies that are beneficial for the development of L2 writing skills. Furthermore, in the post-chat writing, learners tended to integrate each other's language and ideas, while in the post-FTF composition writing, learners tended to include only those ideas that they themselves raised during the FTF discussions. The reason may lie in that the FTF discussions stimulated a deeper thinking process and learners were more self-conscious about what they wanted to write regarding the topic, instead of simply using all the ideas in the FTF discussions. By contrast, in the chat discussions a limited number of ideas were developed and learners tended to use most of them in writing their composition. Finally, although the post-FTF compositions were longer, the post-chat compositions were evaluated as qualitatively superior compared to post-FTF compositions across the rating scales of character accuracy, lexical and syntactic richness as well as organizational and holistic scores.

5.5 Answer to Research Question 4

Research questions 1 through 3 address the linguistic and interactional features of the interactive sessions and the individual compositions written following those sessions. Research question 4 focuses on the learners' perceptions of the experience of these two

different modes of pre-writing discussion: How do Chinese L2 learners perceive the use of computer chat or face-to-face conversation as tools for learning to write in Chinese?

The researcher predicted that Chinese L2 learners would perceive the computer chat medium or FTF conversation as beneficial tools for learning Chinese writing, particularly in the aspects of enhancing grammatical accuracy, fluency and complexity of L2 production, providing a low-stress environment for L2 practice, and facilitating a higher motivation for L2 learning. The analysis results confirm most of the hypotheses and present some new findings. The findings below present the similarities and differences between the two mediums as perceived by the learners, using the framework of both interactionist and collaborative learning theories.

Based on the interview and questionnaire data, the learners pointed out that both mediums shared certain benefits consistent with interactionist theory. First, both mediums allowed chances for lexical and grammatical practice. During the interview the learners commented frequently on the usefulness of the two mediums to help recall and use vocabulary. Learners also had access to each other's lexical and grammatical items and were able to use them in their own composition writing. This language preparation helped learners to improve their L2 Chinese composition writing fluency.

In relation to collaborative learning principles, the learners said that both mediums allowed opportunities to brainstorm and formulate ideas that were beneficial to them. The two mediums also facilitated the two learners in a dyad to share information, specifically vocabulary and ideas. Such idea generation and information sharing helped learners to prepare an initial content structure, which made the subsequent composition writing an easier and smoother process. Similar to previous studies (Beauvois & Eledge, 1996; Jurkowitz, 2008; Kelm, 1992; Sotillo, 2000), the peer collaboration also resulted in increased motivation to write and more positive attitudes towards L2 writing. Learners found it easier to start writing following the practice provided by the online chats and FTF conversations. Chatting online or conversing with a peer prior to the individual

writing also helped to generate more content and longer compositions. Students reported the overall experience in the online chat and FTF conversation practice as highly rewarding.

The interview and questionnaire data also indicated that the two mediums had their respective distinct characteristics. First, from the interactionist perspective, the online chats allowed chances for character practice. Learners felt that the visual aspect of chatting was beneficial for practicing and reinforcing character knowledge. The FTF conversations did not allow opportunities for character learning. Second, the linguistic practice was more restricted in the online chats compared to the FTF conversations. Third, the language style in the online chats was perceived by learners to be even less formal than that in the FTF conversations even though it was in written mode. Learners perceived that the language they used in the chats was quite distant from the formal language style they would need to use in writing a composition. This perception contradicts the findings of Warschauer (1996), in which he argues that the language produced in computer chats often contains a higher level of lexical and syntactic complexity than oral language and is more similar to written texts. However, other studies have had findings similar to those of the current study. These studies (Collot & Belmore, 1996; Jurkowitz, 2008; Kern, 1995; Sotillo, 2000) also found that the messages students produced in synchronous computer-mediated communication (S–CMC) were short and contained simple sentence structures. A common explanation for this finding is that the need to keep up with the pace and flow of messages in S–CMC results in fragmented discourse (Jurkowitz, 2008; Kelm, 1992; Kern, 1995; Sotillo, 2000). Fourth, the communication flow in the online chats was relatively slow. The main reason was that typing in Chinese, reading messages, and waiting for responses consumed time during the chat sessions. Finally, the slow pace of communication in the online chats also resulted in a limited number of ideas generated. The learners reported that they were able to generate more ideas and discuss at greater depth during the FTF discussions.

According to the learners, because the FTF discussions went into greater depth, they were able to have better retention of the contents generated by themselves in the FTF conversations.

In regard to collaborative learning, learners perceived that the FTF conversation environment presented a higher stress level because they were under more pressure to produce language quickly. In contrast, learners could follow their own pace to manage discourse while in the online chat medium, which corroborates findings in previous studies (Chun, 1994; Warschauer, 1997).

In regard to research question 4 (Chinese L2 learners' perception of using computer chat and FTF conversation for learning L2 Chinese writing), in general, learners perceived both mediums as beneficial to the learning of L2 Chinese writing by allowing for engaging in linguistic practice, formulating ideas, sharing each other's linguistic resources and ideas, and improving L2 composition writing fluency. However, learners perceived the FTF conversation practice to be more helpful than chat practice because it allowed more opportunities for linguistic practice and also facilitated discussions at a deeper level.

The previous sections of this chapter focused on the discussions of the study findings. The purpose of the remaining sections is to suggest some implications for SLA research and teaching practice, and state the limitations of the study.

5.6 Research Implications

This study provides insights into using interactive planning to nurture L2 writing ability. It adds knowledge to an understanding of using S–CMC and FTF conversation to improve individual L2 Chinese writing, shedding light on how interactive and collaborative mechanisms in online chat and FTF conversation can transform the approach to and process of individual L2 writing. Overall, the findings suggest that the interplay between interactive L2 planning and individual L2 writing ability is positive.

Such interplay also interacts with factors including interactive focus, interactive discussion depth, collaborative equality, task difficulty, and students' learning style and personality. However, the findings of this study have not provided a clear answer to the question of whether online text chat provides better or closer practice for L2 writing than L2 FTF conversation. The assumption that online chat facilitates more opportunities to focus on form or other linguistic aspects as compared to FTF conversation may also be challenged. The transfer of learning from FTF conversation to individual composition writing also does not appear to be a straightforward one.

It is essential to investigate further the transfer effect from L2 interactive planning to L2 individual writing. This study shows that FTF oral planning is useful in activating a deeper thinking process that may cultivate the cognitive skills and learning strategies needed for the development of L2 writing ability. How the interactive and social mechanisms in FTF conversation transform the individual L2 writing process needs to be examined with more diversified task types, especially those writing tasks that are more complex in nature.

Further studies are also needed to understand whether online chat interaction may produce different impacts depending upon different task length, task instructions, and learning settings. The current study also did not discover much evidence of focus on form during the chat session, which does not necessarily indicate that learners did not attend to linguistic forms during the chatting. Thus, we also need to direct more attention to what L2 learners are prone to notice during the chat conversations. Such noticing pattern needs to be subjected to empirical investigation.

Another area for future research is an analysis of the interaction between interactive medium and learning style. The current study disclosed that depending on learners' learning styles, an interactive medium may have a different impact. How learners with different learning styles benefit from different interactive and collaborative patterns deserves further investigation.

Although the current study was conducted in a study abroad setting, the implications of study abroad learning context were not considered in the research design. Comparative research between study abroad and domestic L2 learners on the current research topic will be a meaningful topic for future study.

Future studies with more participants may adopt a quantitative perspective to obtain more powerful statistical evidence with regard to the relationships between different types of interactive learning and various constructs of individual L2 writing ability.

5.7 Pedagogical Implications

Clearly, implications from this study are most relevant for L2 writing pedagogy. The findings provide insights into L2 Chinese learners' writing process in both cognitive and social dimensions. First, in light of interactionist and collaborative learning theories, building L2 Chinese writing skills need no longer be viewed solely as an individual act, but rather as a process that can be enhanced through interactive and collaborative planning activities with other learners. Interactive planning, when used in a pedagogically sound manner, may prove valuable by supplying individual learners with more ready linguistic and idea resources. Collaboratively co-constructing language and meaning may help generate the social cognitive skills that are needed for the development of L2 writing. Sharing language and idea resources may also help reduce writing stress and facilitate the L2 writing process. In the L2 classroom, a writer community can be formed, in which peer learners "serve each other as tutors, coauthors, sounding boards, and critical readers" (Weissberg, 2006, p. 2) through social interaction.

Another classroom implication of this study is the value of establishing stronger speaking-to-writing activities. The current study proves that allowing L2 learners to articulate their ideas before writing individually is very beneficial. Talking about a subject can be an essential part of the writing process (Raimes, 1992). An important

advantage is that FTF conversation can stimulate deeper thinking processes and prompt students to continue generating ideas. Connecting speaking and writing creates a social learning environment in the L2 classrooms and creates a bridge between interactive speaking and individual learning of L2 writing. To truly prepare L2 learners for collaborative writing may require a restructuring of classroom teaching and assessment practices. The question facing L2 teachers is how frequently and in what manner they should encourage learners to work jointly on writing tasks. Measures should also be taken to facilitate more equal and reciprocal learner participation in the FTF activities.

Third, using online chat in L2 classrooms also requires caution. The current study findings indicate that learners tended to use fairly informal language and short sentences during the chatting, and little effort was found that they focused on form. One previous study also questioned whether networked exchanges fostered formal accuracy, stylistic improvement, and global coherence (Kern, 1995). To make online chat useful for language practice, more innovative design is needed to encourage students to use a variety of lexical and grammatical patterns. To make the chat interaction reciprocal, it is also important to encourage each learner to actively participate by offering ideas and by providing explanations and feedback to each other.

Fourth, when planning and integrating interactive activities into the teaching of L2 writing, instructors also need to consider students' L2 proficiency levels, individual difference in learning styles and personalities. For example, online chat may provide benefits for learners who have a shy personality. Chats may also provide effective rehearsal for L2 learners who have difficulty developing writing structure or have poor working memory (Payne & Ross, 2005). The quick conversation flow in the FTF conversation, however, helps to stimulate deeper thinking and cultivate higher-level cognitive skills that are important for cognitively more complex writing tasks.

Last, but certainly not least, a new approach will also be needed for teacher training. It is important for L2 teachers to gain insights into the link between different L2

mechanisms involved. The findings in this study support the use of online chat and FTF conversation prior to students' individual writing. Online chat facilitates a more parallel rehearsal for learners' composition writing, while FTF conversation stimulates a deeper thinking process and activates higher-level cognitive skill. The main conclusions to be drawn from the study results are that both online chat and FTF conversation bring benefits to the development of L2 writing ability, in both cognitive and social dimensions. The two mediums however interact with variables of proficiency level and learning style. Overall, results from this study partially agree with findings of previous studies regarding the aspects of comprehensible input and output, negotiation of meaning, and ZPD and collaborative environments. The study also presents new findings to the Interactionist Hypothesis as well as on the interplay between L2 interactive speaking and L2 individual writing, and between L2 interactive chatting and L2 individual writing.

To conclude this dissertation, as very few empirical studies have investigated Chinese L2 writing, it is hoped that the findings in this study may shed light on our understanding of using interactive practice to develop L2 Chinese writing ability and spark more interest in this issue.

APPENDIX A. STUDENT INFORMED CONSENT DOCUMENT

Project Title: The Impact of Interactive Discussions on L2 Chinese Composition Writing

Principal Investigator: Jianling Liao

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This consent form describes the research study to help you decide if you want to participate. This form provides important information about what you will be asked to do during the study, about the risks and benefits of the study, and about your rights as a research subject.

- If you have any questions about or do not understand something in this form, you should ask the research team for more information.
- You should discuss your participation with anyone you choose such as family or friends.
- Do not agree to participate in this study unless the research team has answered your questions and you decide that you want to be part of this study.

WHAT IS THE PURPOSE OF THIS STUDY?

This is a research study. We are inviting you to participate in this research study because you currently are a third-year Chinese language student.

The purpose of this research study is to investigate how students interact with other students in face-to-face conversations or computer chat environment and how students practice Chinese writing. This will help to improve the use of technological tools, such as online chat in future Chinese language classrooms.

HOW MANY PEOPLE WILL PARTICIPATE?

Approximately six people will take part in this study.

HOW LONG WILL I BE IN THIS STUDY?

If you agree to take part in this study, your involvement will last for about ten weeks.

WHAT WILL HAPPEN DURING THIS STUDY?

As part of your class assignments you will be asked to complete the following activities:

1) In spring 2009, each Thursday morning during the last session of your Chinese class, you will be paired with another classmate to for a 20-minute pair discussion task

either face-to-face or via online chat. The topic of the discussion task will be based on chapters covered during the week.

2) The online-chat and face-to-face sessions will alternate, i.e. an online chat session will take place on the Thursday of Week 1 and a face-to-face session on Thursday of Week 2, an online chat session on Thursday of Week 3, and so on, for a total of 10 weeks.

3) The chat logs from your on-line chats will be saved by the researcher and transcribed for the study. The Face-to-face sessions will be recorded as .mp3 files and will be later obtained by the researcher and transcribed for the study.

4) You will be asked to write individually a 350-character essay on the same topic that was used in the face-to-face or online-chat session during the same class session each Thursday and hand in to your teacher. If you agree to be in the study, your teacher will give a copy of the essay to the researchers for use in the study.

For the study you will be asked to:

1) In the middle of the research period, i.e. end of April, you will be interviewed by the researcher about your perceptions of using online chat or face-to-face to practice writing. You are free to skip any questions that you would prefer not to answer. The interview will be conducted outside of class and will be held in a private location where the discussion will not be overheard.

2) At the end of the spring 2009 semester, you will be asked to complete a questionnaire about your perceptions of using online chat or face-to-face to practice writing. You are free to skip any questions that you would prefer not to answer.

3) You will be asked to complete a questionnaire that asks your name, age, gender, e-mail address, name of the Chinese course, length of time you have been in China, about your study of Chinese, and how you would rate your skills in writing Chinese compositions. You may skip any questions that you do not wish to answer.

Audio/Video Recording or Photographs

One aspect of this study involves making audio recordings of your conversations in class about the writing topics and your face-to-face interviews with the researcher. The audio recordings will help me to understand how you interact with each other during the face-to-face interactive sessions. All the audio recording files will be saved as .mp3 files and stored on the researcher's personal computer, which requires a password to access. Only the researcher will have access to it. After the information on the electronic records has been transcribed, it will be saved on the researcher's password-required computer for 2 years, and will then be deleted permanently.

WHAT ARE THE RISKS OF THIS STUDY?

You may experience one or more of the risks indicated below from being in this study. In addition to these, there may be other unknown risks, or risks that we did not anticipate, associated with being in this study.

You may be concerned that your decision whether or not to participate in the study will would affect your grade in the course. Information collected for this study will not be used to determine your course grade and your decision whether or not to be in this study will not be used by the course instructor to determine course grades.

WHAT ARE THE BENEFITS OF THIS STUDY?

You will not benefit personally from being in this study. However, we hope that, in the future, other students might benefit from this study because the results of the study will improve our understanding of how online chat can be effectively used in the language classroom.

WILL IT COST ME ANYTHING TO BE IN THIS STUDY?

You will not have any cost for being in this research study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO IS FUNDING THIS STUDY?

The research team is receiving no payments from other agencies, organizations, or companies to conduct this research study.

WHAT ABOUT CONFIDENTIALITY?

We will keep your participation in this research study confidential to the extent permitted by law. However, it is possible that other people such as those indicated below may become aware of your participation in this study and may inspect and copy records pertaining to this research. Some of these records could contain information that personally identifies you.

- federal government regulatory agencies,
- auditing departments of the University of Iowa, and
- the University of Iowa Institutional Review Board (a committee that reviews and approves research studies)

To help protect your confidentiality, we will use a code number and not your name to identify your study information. The master key linking your study code number and your name will be stored in a locked cabinet file and no one will have access to it. Any

paper study materials will be kept in a secure storage area. All electronic study files will be stored on password protected computers in password protected files. If we write a report or article about this study or share the study data set with others, we will do so in such a way that you cannot be directly identified.

IS BEING IN THIS STUDY VOLUNTARY?

Taking part in this research study is completely voluntary. You may choose not to take part at all. If you decide to be in this study, you may stop participating at any time. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

WHAT IF I HAVE QUESTIONS?

We encourage you to ask questions. If you have any questions about the research study itself, please contact: Jianling Liao Tel: +86.21.62230050*829. If you experience a research-related injury, please contact Judy Liskin-Gasparro Tel: +01.319.335.2248

If you have questions, concerns, or complaints about your rights as a research subject or about research related injury, please contact the Human Subjects Office, 340 College of Medicine Administration Building, The University of Iowa, Iowa City, Iowa, 52242, (319) 335-6564, or e-mail irb@uiowa.edu. General information about being a research subject can be found by clicking "Info for Public" on the Human Subjects Office web site, http://research.uiowa.edu/hso. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

This Informed Consent Document is not a contract. It is a written explanation of what will happen during the study if you decide to participate. You are not waiving any legal rights by signing this Informed Consent Document. Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Subject's Name (printed):

_____

Do not sign this form if today's date is on or after EXPIRATION DATE: N/A.

_____

(Signature of Subject)   (Date)

Statement of Person Who Obtained Consent

I have discussed the above points with the subject or, where appropriate, with the subject's legally authorized representative. It is my opinion that the subject understands the risks, benefits, and procedures involved with participation in this research study.

_____   _____

(Signature of Person who Obtained Consent)   (Date)

APPENDIX B. DEMOGRAPHIC QUESTIONNAIRE

(Please Print/Write Legibly)

Name _____   Age _____

Gender (circle one): Female / Male   Email _____

Chinese course name _____

How long have you been learning Chinese?	_____ Years in high school _____ Semesters in college/university in the U.S.
How long have you been in China?	____ Weeks ____ Months ____ Years
Have you ever studied Chinese in a Chinese-speaking country before this semester? If yes, please specify.	_____ Yes _____ No ____ Weeks ____ Months ____ Years
What are your goals in studying Chinese?	Check the one that applies to you best: _____ Complete the language requirement; I do not intend to study more Chinese after that. _____ I am here mainly for the requirement, but I like Chinese and may continue after this semester. _____ I plan to minor/major in Chinese. (circle one)
How would you rate your skills in writing Chinese compositions?	Excellent ____ Good ____ Fair ____ Poor____
Have you taken any course where Chinese writing was the primary emphasis of the course? If yes, please specify.	_____ Yes Name of the course_____ _____ No

APPENDIX C. FREE-DISCUSSION TASK 1 (ONLINE-CHAT

SESSION)

Topic: Differences between Chinese and Western education

From what you have learned about education in China, what are some major differences between Chinese and American high school educations? In your opinion, what are the advantages and disadvantages of each system?

Directions for the online chat session:

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic above. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX D. FREE-DISCUSSION TASK 2 (FTF SESSION)

Topic: How could Chinese students survive better in American culture?

Nowadays a lot of Chinese students are pursuing study in the United States, and many even look for job opportunities in the United States after graduation. In your opinion, do those Chinese students fit well in American culture? Why or why not? How could the Chinese students survive better in American culture?

Directions for the face-to-face conversation session:

You have 20 minutes to discuss the topic above with your partner. You will use only Chinese to communicate with each other. Your communications should focus on the topic only. Use appropriate vocabulary and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX E. FREE-DISCUSSION TASK 3 (ONLINE-CHAT

SESSION)

Topic: Pressures on the Chinese single-child generation

The first Chinese single-child generation is now grown up and is facing the pressure of having to take care of four elders in their families. This has becoming a social issue in China, partially because the Chinese welfare system is not well developed. In your opinion, what are some measures that can be taken to release the pressure that the single-child generation is facing?

Directions for the online chat session:

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic above. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX F. FREE-DISCUSSION TASK 4 (FTF SESSION)

Topic: The views of American and Chinese college students on love, marriage, and family

In your knowledge, what are the views of Chinese college students on love, marriage, and family? How do they differ from those in the United States?

Directions for the face-to-face conversation session:

You have 20 minutes to discuss the topic above with your partner. You will use only Chinese to communicate with each other. Your communications should focus on the topic only. Use appropriate vocabulary and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX G. FREE-DISCUSSION TASK 5 (ONLINE-CHAT

SESSION)

Topic: How does commercialism affect the traditional festivals in China and the United States?

In your opinion, how does commercialism affect the way people celebrate the traditional festivals in China and the U.S. respectively? Does commercialism have an effect on how you celebrate these festivals? Explain.

Directions for the online chat session:

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic above. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX H. FREE-DISCUSSION TASK 6 (FTF SESSION)

Topic: Spending habits of American and Chinese college students

In your opinion, what are some typical spending habits of American college students? How do those differ from the spending habits of Chinese college students? What could be causing the differences? Explain.

Directions for the face-to-face conversation session:

You have 20 minutes to discuss the topic above with your partner. You will use only Chinese to communicate with each other. Your communications should focus on the topic only. Use appropriate vocabulary and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX I. FREE-DISCUSSION TASK 7 (ONLINE-CHAT

SESSION)

Topic: How has the Internet affected people's lives?

In your opinion, in what aspects has the Internet affected people's lives? Do you think these impacts are positive ones? Why or why not? Explain.

Directions for the online chat session:

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic above. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX J. FREE-DISCUSSION TASK 8 (FTF SESSION)

Topic: The level of urbanization in China and the United States

The level of urbanization is often considered as an important index of a nation's power. In your opinion, what is the situation of urbanization in the United States and China, respectively? How do they differ? How does the urbanization process affect people's life in the rural area?

Directions for the face-to-face conversation session:

You have 20 minutes to discuss the topic above with your partner. You will use only Chinese to communicate with each other. Your communications should focus on the topic only. Use appropriate vocabulary and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX K. FREE-DISCUSSION TASK 9 (ONLINE-CHAT

SESSION)

Topic: Morality and economic development

Some people say that economic development leads to an increase in morality in a society. Others, however, believe that improvements in the economy lead to a decrease in morality, because people become more practical. What is your opinion about this issue?

Directions for the online chat session:

You have 20 minutes to communicate online with your partner in the computer chat room regarding the topic above. You will use only Chinese characters to communicate with each other. Your communications should focus on the topic only. Use correct characters, appropriate vocabulary, and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX L. FREE-DISCUSSION TASK 10 (FTF SESSION)

Topic: Cultural icons in China and the United States

What are some current representative cultural icons in China and the United States, respectively? In your opinion, what has caused these things to become so popular and so widely recognized as cultural icons? What types of influences do these icons have in their respective society?

Directions for the face-to-face conversation session:

You have 20 minutes to discuss the topic above with your partner. You will use only Chinese to communicate with each other. Your communications should focus on the topic only. Use appropriate vocabulary and correct grammar. You should ask your partner questions for clarification when you do not understand.

Directions for the post-interaction individual composition writing:

You have 30 minutes to write individually on paper about the topic above that you have discussed with your partner. You will use only Chinese characters to write. Try your best to use correct characters, appropriate vocabulary, and correct grammar. Your writing should be around 350 characters. When you finish writing, check your text for character, words, and grammatical accuracy.

APPENDIX M. INTERVIEW PROTOCOL

Interviewee's name _____ Time of the interview_____ Chinese level_____

Part I: General questions

1) How often do you write in Chinese? Do you like to write in Chinese? Why or why not?

2) What do you think about the learning of Chinese writing in general? What aspects are easy for you? What aspects are difficult for you?

3) What do you usually do to practice Chinese writing?

4) Do you consider yourself a good writer in Chinese? What do you think are your strengths and weaknesses in Chinese writing?

5) Do you chat online in Chinese? If yes, when and with whom? If not, why not?

Part II: Discuss the process of moving from chats/FTF session to individual writing

1) What kind of practice did you get from the online chat sessions? How did it affect your writing afterwards? Please explain.

2) What kind of practice did you get from the FTF sessions? How did it affect your writing afterwards? Please explain.

Part III: Discuss the perceptions of using online chat/FTF conversation to learn Chinese writing

1) How do you feel about using chats in general as a means for practicing Chinese writing? What are the advantages and disadvantages? Please explain.

2) How do you feel about using FTF conversation in general as a means for practicing Chinese writing? What are the advantages and disadvantages? Please explain.

3) In the future, are you likely to use online chat to help you with your Chinese writing? Why or why not? Please explain.

4) In the future, are you likely to talk about your ideas with another person before you write by yourself? Why or why not? Please explain.

APPENDIX N. END-OF-STUDY QUESTIONNAIRE

Name:_____

1) In your viewpoint, what are the advantages of chatting online with your classmate before you write individually about the topic? List as many as you can think of.

2) In your viewpoint, what are the disadvantages of chatting online with your classmate before you write individually about the topic? List as many as you can think of.

3) In your viewpoint, what are the advantages of discussing face-to-face with your classmate before you write individually about the topic? List as many as you can think of.

4) In your viewpoint, what are the disadvantages of discussing face-to-face with your classmate before you write individually about the topic? List as many as you can think of.

APPENDIX O. HOLISTIC RATING SCALE TO MARK A

COMPOSITION

Revised based on Song and Caruso (1996)

Score	General qualities
5	The composition provides a well-organized response to the topic. Contents are well-developed and have a good variety of ideas. Vocabulary is proper and well-suited and demonstrates good diversity. Sentences structures are suitable and accurate and demonstrate good variety. Grammar, character form, and punctuation are generally free from errors.
4	The composition provides an organized response to the topic. Contents are clear for most of the time and have some variety of ideas. Vocabulary is suitable and correct for the most part and demonstrates some diversity. Sentences structures are grammatically correct for most of the time and demonstrate some variety. There are some errors in grammar, character form, and punctuation, but do not interfere with reader's comprehension.
3	The composition provides a basic response to the topic. Contents are understandable but are unsophisticated. Vocabulary in general is appropriate but has limited diversity. Sentences structures are limited and there are also some grammatical errors. There are frequent errors in grammar, character form, and punctuation, and occasionally interferes with reader's comprehension.
2	The composition provides a response to the topic but it's not developed. Contents are repetitive and undeveloped, and hard to follow sometimes. Vocabulary is restricted and often misused. Sentence structures are limited and there are grammatical errors. There are serious errors in grammar, character form, and punctuation, which significantly interfere with reader's comprehension.
1	The composition has no discernible pattern in organization. Contents in general are not understandable. Vocabulary is narrow in range and often misused. There are only a few basic sentence patterns and errors exist. Frequent errors in grammar, character form, and punctuation make the writing hard to understand.

APPENDIX P. FOCUS AREAS IN THE ONLINE-CHAT SESSIONS

Table P–1 Dyad A/B's focus areas in the online-chat sessions

Number and percentage of turns on each focus area					
Focus area	Chat 1	Chat 2	Chat 3	Chat 4	Chat 5
Social greetings	3 (9.7%)	NA	11 (17.2%)	4 (9.3%)	3 (7.7%)
Task management	2 (6.5%)		1 (1.6%)	0	5 (12.8%)
Interpreting task prompt	0		1 (1.6%)	0	2(5.1%)
Generating ideas	26 (83.9%)		36 (57.1%)	36 (83.7%)	29 (74.4%)
Lexicon-related episodes	0		2 (3.1%)	3 (7%)	0
Grammar-related episodes	0		0	0	0
Character-related episodes	0		1 (1.6%)	0	0
Talking off-topic	0		12 (18.8%)	0	0
Total number of instances	31		64	43	39

Table P–2 Dyad C/D's focus areas in the online-chat sessions

Number and percentage of turns on each focus area					
Focus area	Chat 1	Chat 2	Chat 3	Chat 4	Chat 5
Social greetings	2 (6.1%)	NA	2 (4.2%)	4 (11.4%)	4 (13.8%)
Task management	5 (15.2%)		4 (8.3%)	2 (5.7%)	1 (3.4%)
Interpreting task prompt	1 (3%)		1 (2.1%)	0	1(3.4%)
Generating ideas	24 (72.7%)		39 (81.3%)	26 (74.3%)	23 (79.3%)
Lexicon-related episodes	0		2 (4.2%)	3 (8.6%)	0
Grammar-related episodes	0		0	0	0
Character-related episodes	1 (3%)		0	0	0
Talking off-topic	0		0	0	0
Total number of instances	33		48	35	29

Table P–3 Dyad E/F's focus areas in the online-chat sessions

Number and percentage of turns on each focus area					
Focus area	Chat 1	Chat 2	Chat 3	Chat 4	Chat 5
Social greetings	2 (6.1%)	1 (3.1%)	6 (13%)	5 (20.8%)	2 (11.1%)
Task management	0	2 (6.3%)	2 (4.3%)	0	0
Interpreting task prompt	1 (3%)	10 (31.2%)	0	0	0
Generating ideas	30 (90.9%)	19 (59.4%)	33 (71.7%)	19 (79.2%)	16 (88.9%)
Lexicon-related episodes	0	0	2 (4.3%)	0	0
Grammar-related episodes	0	0	0	0	0
Character-related episodes	0	0	0	0	0
Talking off-topic	0	0	3 (6.5%)	0	0
Total number of instances	33	32	46	24	18

APPENDIX Q. FOCUS AREAS IN THE FTF CONVERSATIONS

Table Q–1 Dyad A/B's focus areas in the FTF sessions

Number and percentage of turns on each focus area					
Focus area	FTF 1	FTF 2	FTF 3	FTF 4	FTF 5
Social greetings	0	NA	2 (10%)	0	0
Task management	0		0	0	3 (10%)
Interpreting task prompt	0		1 (5%)	0	0
Generating ideas	39 (95.1%)		10 (50%)	40 (72.7%)	27 (90%)
Lexicon-related episodes	2 (4.9%)		4 (20%)	11 (20%)	0
Grammar-related episodes	0		0	0	0
Character-related episodes	0		0	0	0
Talking off-topic	0		3 (15%)	4 (7.3%)	0
Total number of instances	41		20	55	30

Table Q–2 Dyad C/D's focus areas in the FTF sessions

Number and percentage of turns on each focus area					
Focus area	FTF 1	FTF 2	FTF 3	FTF 4	FTF 5
Social greetings	0	NA	0	0	0
Task management	0		0	0	0
Interpreting task prompt	0		1 (3.1%)	0	3 (13%)
Generating ideas	27 (87.1%)		28 (87.5%)	20 (83.3%)	19 (82.6%)
Lexicon-related episodes	4 (12.9%)		2 (6.3%)	4 (16.7%)	1 (4.3%)
Grammar-related episodes	0		1 (3.1%)	0	0
Character-related episodes	0		0	0	0
Talking off-topic	0		0	0	0
Total number of instances	31		32	24	23

Table Q–3 Dyad E/F's focus areas in the FTF sessions

Number and percentage of turns on each focus area					
Focus area	FTF 1	FTF 2	FTF 3	FTF 4	FTF 5
Social greetings	1 (2.4%)	1 (2.1%)	0	0	0
Task management	0	0	0	0	0
Interpreting task prompt	0	0	0	0	1 (2.9%)
Generating ideas	36 (85.7%)	41 (87.2%)	42 (79.2%)	25 (80.6%)	33 (94.3%)
Lexicon-related episodes	5 (11.9%)	5 (10.6%)	8 (15.1%)	4 (12.9%)	1 (2.9%)
Grammar-related episodes	0	0	3 (5.7%)	2 (6.5%)	0
Character-related episodes	0	0	0	0	0
Talking off-topic	0	0	0	0	0
Total number of instances	42	47	53	31	35

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