

LEARNERS' EXPERIENCES OF WRITTEN COMPLEXITIES DEVELOPMENT THROUGH
DISCUSSION BOARD ACTIVITIES IN CHINESE AS A FOREIGN LANGUAGE CLASS

by

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ABSTRACT

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Under the Supervision of Professor Tatiana Joseph

This qualitative case study examines learners' experiences in the development of written complexities during Discussion Board (DB) assignments in an Advanced university level Chinese class. Discussion Board was chosen as the avenue for written complexity development because it provides learners a supplementary space with additional time and opportunities for low anxiety writing. The data collection for this study came from two sources, DB posts and interviews. This study seeks to fill gap in the literature in two ways: one, this study proposes a measurement of written complexities that consists of propositional complexity, lexical sophistication and accuracy. Second, this study highlights student experiences and explores the learning process from their perspectives. Using Vygotsky's (1978) Sociocultural theory as theoretical framework, the findings of this study generated new knowledge about what tools and strategies Chinese as a Foreign Language (CFL) learners used to develop written complexities during the DB discussion activities. Additionally, this study examined how CFL learners utilized DB activities and interactions on DB to develop written complexities. Finally, this study demonstrates how DB can serve as a supplementary learning space, where if designed appropriately, can lead to opportunities for students to develop their written complexities.

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To
my parents,
my husband,
and especially my daughter, Yiran.

TABLE OF CONTENTS

Chapter	Page
Chapter One Introduction	1
Context of Problem	1
Writing Development in World Language and Chinese Classes.....	1
Discussion Board Usage in Learning.....	3
Personal Experience	5
The Research Purpose and Questions	7
Research Gaps and Significance of the Research	8
Chapter Two Literature Review and Theoretical Framework	10
Background of Chinese Teaching and Learning in the US	10
Changes in Foreign Language Pedagogy: From Structure-based to a Communicative Approach	14
The Role of The American Council of Teaching Foreign Languages	17
Linking with the National Standards: Chinese Language Teaching and Learning	18
Evaluating Writing in Second Language Learning.....	22
Complexity	23
Accuracy	25
Out-of-class Language Learning	26
Discussion Board (DB) as an Out-of-Class Learning Tool.....	28
Definition of DB	28
Benefits of Using DB	29
Benefits of DB in Language Development.....	30
Writing Strategies for DB Assignments	34
Theoretical Framework: Vygotsky’s Sociocultural Theory	36
Social Learning and Development.....	37
Mediation.....	38
Zone of Proximal Development (ZPD).....	40
Chapter Three Research Design	45
Purpose of the Research and Research Question.....	45
Qualitative Methodology	46
Case Study	46
Timeline.....	47
Methods	48
Site Selection	48
Participants	48
Recruitment.....	49

Data Source.....	49
DB Posts	49
Parameters of Designing DB Activities	50
Interview	53
Data Analysis.....	54
DB Posts Data Analysis.....	54
Interview Data Analysis	57
Credibility.....	60
Triangulation.....	60
Member Checking.....	60
Reflexivity	61
Ethical Issues	62
Chapter Four Analysis.....	64
The Setting.....	64
The Classroom	65
Discussion Board	66
Participant Population	67
Findings	70
Written Complexity Analysis	70
Research Question One	85
Research Question Two.....	105
Research Question Three.....	122
Other Findings: Challenges in Composing DB Posts	148
Chapter Five Discussion	154
Research Question One	155
Propositional Complexity	156
Lexical Sophistication	157
Accuracy	157
Research Question Two.....	161
Research Question Three.....	167
The Learning Community	172
Additional Findings.....	175
Final Thought.....	177
Study Limitations.....	179
Future Research	180
Conclusion	181
References	184
Appendix A Recruiting Emails	202

Appendix B: Interview Protocol.....	204
Appendix C: HSK Level 5 Vocabulary List	209
Appendix D: Discussion Board Assignments Prompts.....	210

LIST OF FIGURES

Figure 2. 1	ACTFL Proficiency Scale.....	20
Figure 2. 2	Aspects of Complexity.....	23
Figure 4. 1	Student A’s Written Complexity Trajectories.....	80
Figure 4. 2	Student B’s Written Complexity Trajectories.....	81
Figure 4. 3	Student C’s Written Complexity Trajectories.....	82
Figure 4. 4	Student D’s Written Complexity Trajectories.....	83
Figure 4. 5	Student E’s Written Complexity Trajectories.....	83
Figure 5. 1	Development flowchart on DB	168

LIST OF TABLES

Table 2. 1	Categories of Languages Difficulty	12
Table 2. 2	2016 Fall Language Enrollments and Percentage Change in United States Institutions of Higher Education	13
Table 3. 1	DB Assignment Grading Rubric.....	55
Table 3. 2	Coding Table	58
Table 4. 1	Participant Population.....	67

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Chapter One Introduction

Context of Problem

Writing Development in World Language and Chinese Classes

Writing is an important communication skill and plays an essential role in the world language learning process (Chastain, 1988; Simin & Tavangar, 2009). For world language learners, writing is an intricate activity that involves linguistic knowledge and thinking/writing strategies that allow language learners to express themselves proficiently in another language (Yavuz-Erkan & İflazoğlu-Saban, 2011). Furthermore, writing is considered to be a highly complex process (Dixon et al, 2002; Hinkel, 2006) that conveys information throughout the world (Cahyono, 2009), expresses ideas, and promotes thinking ability (Klimova, 2013). Consequently, as Celce-Mercia (1991, as cited in Yavuz-Erkan & İflazoğlu-Saban, 2011) notes, the accurate and coherent expression of ideas in written form in a world language is a great accomplishment and an invaluable communication skill.

However, among the four domains of language learning/communication (listening, speaking, reading, and writing) writing is considered the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). According to Hyland (2003), the challenges experienced by world language learners in mastering writing are due to the lack of knowledge in grammatical features and vocabulary items, as well as the low motivation of learners, ineffective teaching strategies, and outdated teaching styles (Fareed et al., 2016). This study aims to ameliorate these problems by demonstrating and exploring DB as a supplementary learning environment and discussing pedagogical implications from DB activities.

For students learning Chinese, the task of learning to write is even more difficult. The Chinese writing system is a logographic script that differs from alphabetical scripts in many aspects. As a result, writing is especially challenging for English-speaking Chinese language learners because of the difficulty in recognizing Chinese characters (Zhao, Guo, and Dynia, 2013). Casas-Tost and Rovira-Esteva (2015) mapped Chinese language pedagogy research from 1966 to 2013 and discovered that out of a total of 126 papers devoted to language skills, 42% deal with characters, while only 14% addressed writing. Thus, while the Chinese writing system presents a hurdle in developing writing skills, there is not enough research examining the development of writing skills which incorporates both language and cognitive development. Despite the challenges in the lack of literature around writing, it is safe to conclude that the issue with the lack of writing development in Chinese classrooms is based on the lack of practicing grammar patterns and vocabulary, difficulties in learning Chinese characters, and ineffective teaching methods (Bassetti, 2005; Hsiang, Chang, Chen and Sung, 2017). Thus, this study aims to ameliorate the problem stemming from a lack of practicing grammar patterns by demonstrating how DB provides out-of-class learning opportunities as a supplementary learning environment; and the problem of ineffective teaching methods by providing parameters of designing effective DB assignments.

These challenges all require classroom time and devotion to practice and apply language in writing. Unfortunately, a typical Chinese as a Foreign Language (CFL) class in higher education usually only meets 5 days a week for 50 minutes each class. At the advanced level, class meetings sometimes are reduced to three times per week. Therefore, learners often lack the time to fully develop the four domains and other skills, not to mention, there is usually very little time

or space to encourage the extra effort required to develop the domain of writing. An additional challenge is that learners also have limited access to the Chinese language and culture at American universities. Consequently, it is difficult to develop learning opportunities for students to interact with Chinese native speakers and an authentic Chinese community. This lack of time and exposure are very much in opposition to the expectations for language acquisition of American Council of Teaching Foreign Languages (ACTFL).

In the Standards for Foreign Language Learning: Preparing for the 21st Century, developed by ACTFL, five components are introduced in order for students to develop language proficiency in all domains. The components are: Communication, Cultures, Connections, Comparisons, and Communities (also known as the 5Cs). According to ACTFL, the 5Cs require abundant exposure to the target language, culture and community. Thus, for students with limited language experiences and time, in order to meet the standards of 5Cs and become proficient in the language, it is necessary for teachers to create out-of-class, supplementary learning environment for students to interact in their language.

Discussion Board Usage in Learning

There are a multitude of approaches and resources to support world language learning outside of the classroom. For learners who have limited access to the target language community and who lack connections with native speakers, online language learning resources and tools are useful. They contribute to the construction of an online learning community and makes out-of-class learning possible. Discussion Board (DB) is one of these tools. It is an online platform where learners are required to post responses to the discussion prompts in addition to responding

to posts by other learners. Responses then become a threaded discussion between learners and instructor.

Research on world language education found that DB contributes to learners' language learning in certain ways (Chan, 2016; Gao, 2007;2009; Hyland, 2004). First, while online language learning resources such as watching videos or reading articles emphasize practicing receptive skills (listening and reading) (Manfred, 2012; Maros and Saad, 2016), DB provides the opportunity to practice productive skills (reading and writing) through an exchange of online posts. Additionally, DB spaces often have time allowance features, meaning participants are not required to respond immediately. Instead, they have as much time as necessary to compose answer and utilize various resources, tools and strategies to improve their writing on DB. The extra time offered by DB assignments leads to lower anxiety that can "be conducive to second language acquisition" (Krashen, 1982, p. 38). In addition, DB gives learners the opportunity to produce significantly longer language production (Kern, 1995; Hudson and Bruckman, 2002) and to have higher accuracy rate (Kelm,1992; Warschauer,1996). Finally, DB provides a meaningful language learning environment by promoting learners' social interaction and creating an authentic discourse community (Al-Jarf, 2004; Lam, 2000; Singhal, 1998) based on the interaction between learners. Additionally, students can "incorporate their personal experiences and made connections with contemporary society" (Wang, 2014, p.257). Thus, the learning community on DB not only enhances social interaction but also fosters connections with culture and society.

In sum, DB activities provide supplementary learning opportunities outside of class which can be used to develop writing skills and are particularly useful in Chinese language learning. In the next section, I will share my experiencing using DB in my teaching and learning.

Personal Experience

I have integrated and applied a number of technologies as pedagogical tools in my teaching to create a supplementary learning environment for my students. Technology-assisted learning not only saves time for in-class communicative practice, but also offers flexible accessibility and various online learning resources for learners to develop the four domains of world language learning. Among the various technological tools, Discussion Board (DB) has become an important component of my curriculum in developing learners' language skills.

In my class, students must complete DB activities as supplementary language practice. With careful design and specific prompts, the activities on DB are designed to enhance both language proficiency and thinking complexity. DB activities provide a platform for learners to interact with each other, increase student initiative and responsiveness, and generate multiple perspectives on a given issue (Kern, 1995). In this way, a learning community is constructed collaboratively online. This learning community facilitates student involvement and authentic communication (Sutherland et al., 2003; García-Carbonell et al., 2004) which provides additional opportunities for learners to enhance language skills. In my teaching, DB is used as a vehicle to create a supplementary environment for learners to acquire language. Consequently, DB has drawn my research interest, and I intend to further examine learners' experiences of how they complete DB activities.

In addition to my experience as a Chinese teacher, I have also attempted learning on DB as a doctoral student. I took one course entirely online and several hybrid courses. These courses all involved a DB component and required students to post and comment. I found that DB

effectively facilitated the interaction between students and professors and successfully built a learning community.

I still remember my disbelief when we were instructed to summarize 50-60 pages readings in one sentence on DB. I decided to wait to post in order to see how other students summarized the material. As an international student, using academic English to present my opinion cogently is not an easy task. However, by reading the posts of my peers, I learned many academic and colloquial English expressions. In this way, I was able to reflect and compose the post at my own pace, and to ensure linguistic complexity in my response. Furthermore, reading and commenting on posts provided me the opportunity to enhance the complexity of my thinking. My classmates' comments offered me a multitude of perspectives with which to view the materials. Ultimately, the interactions with the professor and my classmates helped me develop a deeper and more comprehensive understanding of the discussion topic. The results of my own experience with DB catalyzed my interest in the experience of developing complex writing skills through DB activities.

Additionally, the focus of my degree played a big part in finalizing the concept for this study. As I learned from my doctoral program in urban education, K-12 urban schools are facing tremendous challenges in the realm of world languages. This includes limited learning resources, outdated curriculum and minimal opportunities for students to develop language proficiency. I hope that the findings of this study, can help highlight how DB as a supplementary learning space can facilitate learning not only for higher education world language classes, but in K-12 as well. The findings from my study can help reshape the curriculum design and teaching of K-12 world language classes by encouraging integration of technological tools in world language classes. Additionally, the finding in this study will help bring additional opportunities for urban

students who are interested in becoming proficient, as DB spaces can provide an additional space (often free) for students to practice language in all domains.

As such, the focus of this study is to examine a supplementary learning environment to assist the development of language skills outside of the classroom. In this study, DB activities aim to enrich Chinese language learners' writing skills; or more specifically, to improve written complexities. "Written complexities" is a neologism that I created for this study. Written complexities include not only language proficiency, but also cognitive complexity in writing. Written complexities were used as assessment tools to evaluate students' responses on DB in my study. I will discuss the creation of this term in more detail in Chapter Two. Additionally, this study explores how students move within the DB space. I was particularly interested in finding out what tools and strategies students utilized while completing DB activities, how DB as a supplementary learning environment impacted their learning, and how the interaction in DB learning community impacted their learning.

The Research Purpose and Questions

The central research question in this study is: What are the experiences of advanced level CFL students in higher education in developing written complexities during discussion board activities?

Three attendant questions will also guide my research:

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?

3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

Research Gaps and Significance of the Research

The research question for this study comes from the research gaps that I found. There are two major gaps in the field of written complexities and discussion boards that I wish to address. First, in the field of written complexity, language should be framed as being inseparable from thought. An advanced world language learner should be able to demonstrate both sophistication and depth in language and thinking. However, most assessments in written complexity focus on linguistic complexity, such as syntactic complexity (Ginting, 2018), or morphological complexity (Brezina and Pallotti, 2019) without examining sophistication of thought. While these studies are useful, they overlook the importance of complexity of thought as an integral component of advanced language skills. My study provides a new measurement of “written complexities”, which incorporates linguistic complexity, thinking complexity, and accuracy, in order to evaluate learners’ written products on DB. In this way, I will attempt to offer a more comprehensive and holistic understanding of learners’ writing development during a DB assignment.

The second gap comes from the trajectory of written complexity. Studies in written complexity often focus on the development and patterns of written complexities (Mancilla et al., 2017; Raish, 2017; Vyatkina, 2012). Or they focus on demonstrating the effectiveness of applying DB in teaching (Chism, 2000). However, these studies do not access the student experience during DB activities. Thus, the present study asks: How do learners develop written complexities on DB? How does DB as a supplementary learning environment that requires

interaction impact learning? Without a richer understanding a learners' experience, teachers will struggle to design and facilitate better DB activities from learners' perspective.

This study aims to generate new knowledge about what tools and strategies Chinese as a Foreign Language (CFL) learners use to develop written complexities during the DB discussion activities. In addition, this study examines how CFL learners utilize DB activities and interactions on DB to develop written complexities. The findings will challenge existing designs of DB by aiming to develop written complexities in CFL courses. Further the findings of the present study can be expanded beyond CFL instruction and applied to other language-learning courses. This is especially important during remote learning because of the COVID-19 pandemic. Currently, world language learners are facing extreme challenges as they lack in-person opportunities to develop their language. DB as a supplementary learning environment can help K-16 world language instructors to provide additional learning opportunities for students. The findings presented in this study can provide guidance and instructions about how to utilize DB to help students develop their written complexities and other language domains. Additionally, using DB is feasible for educators as many platforms used for DB are free and easy to access, like Canvas, D2L, etc. This is important to note since we know that world language programs, especially in K-12 education, are usually underfunded and have limited access to resources (Welsh and Swain, 2020).

Chapter Two Literature Review and Theoretical Framework

This chapter is organized into the following sections: the background of Chinese teaching and learning in the US, changes in world language pedagogy, the importance of language learning outside of the classroom, the benefits of discussion board (DB) as a learning community, and an examination of the theoretical framework and lens utilized for this study.

Background of Chinese Teaching and Learning in the US

Chinese is becoming more widely taught in the United States as institutions seek to educate students to communicate in Mandarin Chinese for a variety of social, economic, and intellectual purposes (Duff, 2013, p. 10). From 2000 to 2008, the number of students studying Chinese increased dramatically, and currently, it is the fastest growing language being taught in the US. A survey released by ACTFL in 2011 stated that in the period between the 2004-05 school year and the 2007-08 school year, student enrollment in Chinese courses increased from 20,292 to 59,860 (ACTFL, 2011).

The increase in enrollment beginning in the early 2000s is associated with the development of China's political and economic status in the world. Duff (2013) states that the phrase "China rising" is ubiquitous in academic circles and in mass media headlines and reflects the increasing economic power and clout of China. In order to expand its economic and cultural influence, the Chinese government has funded and built a number of educational programs around the world for teaching Chinese and for the professional development of Chinese language teachers (Duff, 2008a). These programs provide a massive number of instructors and material resources which are disseminated through the Chinese National Office for Teaching Chinese as a Foreign

Language (also known as Hanban) (Dodd, 2010; Hanban, 2010). More than 825 Chinese-language Confucius Institutes and Confucius Classrooms (typically for younger learners in public schools) have been established since 2004 in over 100 countries by the Chinese Government (Hanban, 2012). Considerable resources have also been invested in Chinese language education through recent initiatives in the United States, funded by the US government as well as by various other non-governmental agencies and organizations (Wang, 2010; Wen and Grandin, 2010), including Critical Language Scholarship Program, Startalk language training program, etc.

These initiatives from different agencies have had a great influence on Chinese as a Foreign Language (CFL) instruction in K-12 and higher education in the US. CFL teachers come from different educational background and carry distinct teaching philosophies and methods. Therefore, the curriculum design and pedagogy are affected by the teachers' original preparation programs and national standards. For example, teachers sent to US Schools by Confucius Institutes are more familiar with traditional structure-based instruction but may need more training on the national standards on world language learning and the latest pedagogies. However, the group of CFL teachers who come from a mainland Chinese background are often assigned to K-12 classrooms. They often participate in training and workshops that promote ACTFL national standards or receive higher education in world language learning, and thus gradually receive the influence of American educational theory and practice.

Despite the fact that Chinese language learning is rapidly growing in American schools, it is not nearly as widely taught in the United States as French or Spanish (ACTFL, 2011; Furman, Goldberg, and Lusin, 2007). As of 2009, Chinese was the 7th most commonly taught language in higher education (Wang, 2012). However, the percentage of enrollment in Chinese language

courses was only 3.6 % comparing to Spanish, French, German (Wang, 2012). The difference in enrollment is associated with the complexity and difficulty of the Chinese language. Based on research conducted by the Defense Language Institute in California, Chinese has been classified as a world language that requires more hours of formal instruction for Anglophone learners to acquire advanced proficiency in it than most other languages typically taught in the US. As shown in the table below, Chinese shares a level IV difficulty classification with Japanese, Korean, and Modern Arabic (Liskin-Gasparro, 1982). See Table 2.1 below:

Table 2. 1 Categories of Languages Difficulty

Difficulty Categories	Duration of instruction	Languages
I	26 weeks	French, Italian, Portuguese, Spanish
II	34 weeks	German, Indonesian
III	48 weeks	Dari/Persian Farsi, Hebrew, Hindi, Russian, Serbian/Croatian, Tagalog, Thai, Turkish, Uzbek, Urdu
IV	64 weeks	Arabic (Levantine, Iraqi), Chinese, Japanese, Korean, Pashto

The table above shows that it takes Chinese language learners much more time to reach the same level as other language learners. This is due to the unique features of Chinese language systems including the writing system. As a result, developing proficiency in Chinese requires instructors to offer out-of-class supplementary learning opportunities, as regular class meeting time is limited.

In recent years, enrollment in Chinese language classes has dramatically decreased, however, this is true and reflective of the general decline in world language enrollment (Looney and Lusin, 2018). Refer to Table 2.2 for enrollment changes of different languages in 2016 Fall.

Table 2. 2 2016 Fall Language Enrollments and Percentage Change in United States Institutions of Higher Education

Fall Language Enrollments and Percentage Change in United States Institutions of Higher Education (Languages in Descending Order of 2016 Totals)

	2006	2009	% Change, 2006–09	2013	% Change, 2009–13	2016	% Change, 2013–16
Spanish	822,148	861,015	4.7	789,888	-8.3	712,240	-9.8
French	206,019	215,244	4.5	197,679	-8.2	175,667	-11.1
American Sign Language	79,744	92,068	15.5	109,567	19.0	107,060	-2.3
German	94,146	95,613	1.6	86,782	-9.2	80,594	-7.1
Japanese	65,410	72,357	10.6	66,771	-7.7	68,810	3.1
Italian	78,176	80,322	2.7	70,982	-11.6	56,743	-20.1
Chinese	51,382	59,876	16.5	61,084	2.0	53,069	-13.1
Arabic ¹	24,010	35,228	46.7	33,526	-4.8	31,554	-5.9
Latin	32,164	32,446	0.9	27,209	-16.1	24,866	-8.6
Russian	24,784	26,740	7.9	21,979	-17.8	20,353	-7.4
Korean	7,146	8,449	18.2	12,256	45.1	13,936	13.7
Greek, Ancient ²	22,842	21,515	-5.8	16,961	-21.2	13,264	-21.8
Portuguese	10,310	11,273	9.3	12,407	10.1	9,827	-20.8
Hebrew, Biblical ³	14,137	13,764	-2.6	12,596	-8.5	9,587	-23.9
Hebrew, Modern	9,620	8,307	-13.6	6,698	-19.4	5,521	-17.6
Other Languages	33,800	39,349	16.4	34,746	-11.7	34,830	0.2
Total	1,575,838	1,673,566	6.2	1,561,131	-6.7	1,417,921	-9.2

As seen from the table, the percentage of students enrolled in Chinese has decreased 13.1% between 2013 and 2016. This may be associated with overall world language enrollments in the US, which is falling by 6.7%. It is not clear whether the drop represents an anomaly in the growth of language enrollments, which had risen yearly since 1998, or if it marked the beginning of the first sustained downward trend since the 1970s. (Looney & Lusin, 2018, p. 9).

K-12 world language classes are facing challenges as well. According to the Foreign Language Enrollment Report (American Councils for International Education, 2017), there are only approximately 20% of the total school age population enrolled in world language classes and only 11 states have world language graduation requirements. Among all the world language

classes, Chinese language courses are only 2.13% of the total student enrollment for all world language classes (American Councils for International Education, 2017). This downward trend has impacted Chinese language teaching as Chinese programs and teachers all seek effective ways to attract students and increase the retention rate in higher level classes. The current decrease of enrollment in Chinese demonstrates needs for effective approaches to language development.

Changes in Foreign Language Pedagogy: From Structure-based to a Communicative Approach

Changes in Chinese language pedagogy have followed the changes in the field of Second Language Learning (SLL). In the 1950s, the prevailing views on second language (L2) learning were derived from behaviorist theories of learning, which emphasized the role of environmental factors in language learning. According to these theories, the L2 was learned by responding to stimuli and receiving feedback on the correctness of their production. The principal mechanisms of learning were imitation, repetition, and reinforcement (Ellis, 1997, p. 3). However, in 1968, Newmark and Reibel (1968) noted a change in approach; the new approach shifted away “from mastery of language use to mastery of language structure” (p. 132). While “mastery of language use” emphasizes the mastery of language used to perform everyday tasks, “mastery of language structures” emphasizes the form, and measures proficiency through familiarity with linguistic knowledge. According to Newmark and Reibel (1968), this shift in emphasis was the result of the application of structuralism to applied linguistic research.

The approach of structure-based pedagogy emphasizes the factors in the learning environment that include stimuli provided by the instructor and corrections of errors so that the

correct linguistic structures can be reinforced. This approach was challenged in the 1950s by applied linguists such as Chomsky (2007), Newmark (1966), Corder (1967) and Selinker (1972) who advanced theories of second language (L2) learning that de-emphasized the role of the environment and gave greater recognition to learner internal factors (Ellis, 1997, p.3). In this new theory of language acquisition, the learning mechanism includes universal grammar constructed by learners themselves which is innate to humans (Chomsky, 2007). This provided foundation to Chomsky's another theory of language learning: transformational-generative grammar, and the concept of competence and performance became the focus among both in applied linguists and pedagogy specialists (Xing, 2006). According to Chomsky (1965), competence refers to "the learner's knowledge of his language," while performance is defined as "the actual use of language in concrete situations" (p. 5). He further states that in the study of "linguistic performance, we must consider the interaction of a variety of factors and the underlying competence is only one" (Chomsky, 1965, p.4). This claim provided substantial implication to language learning that learners' performance should be studied as the focus and their knowledge of language itself is only a factor that affects performance. Following Chomsky's discussion of competence and performance, Hymes (1971) introduced the concept of communicative competence into language pedagogy and research. Communicative competence focuses on the use of language, the social dimension of language, and the concern with language as a form of communication. This led to the communicative-based approach. The communicative-based approach emphasizes interaction as both the means and the objective of learning. This approach involves not only language components, but also considers the relationship between speakers and the society in which the language is used (Wertsch, 1994). In other words, the end goal is for learners to learn language for the purpose of communicating in authentic settings. As a result,

communicative-based syllabi, curricula, teaching materials, and teaching and learning guidelines have been utilized by every language teacher who is interested in the current developments in language pedagogy in the twentieth century (Lů 1981, Rivers 1983, Richards & Nunan 1990, Liu 2002).

The communicative approach was then applied to the acquisition of every component of a language: sound system, orthography, sentence structure, discourse and culture. It promotes fluency over accuracy and emphasizes the communicative function of words and sentences, namely, their appropriateness in discourse and communication (Van Ek 1976, Widdowson 1978, Rivers 1983, Zimmerman 1997, Nation 2001). According to Xing (2006), this fluency-over-accuracy theory has generated a lot of discussion in the last two decades.

Another approach based on the communication approach, known as the proficiency-based approach also emerged in the language teaching community. Focusing on language in use, proficiency refers to what individuals can do with language in terms of speaking, writing, listening, and reading in real-world situations in a spontaneous and non-rehearsed context (American Council of Teaching Foreign Languages Guidelines, 2012). In sum, the changes in world language pedagogy shifted from heavily relying on linguistics theories to the ultimate goal of learning world languages: what learners can do with a language. The focus has moved from learning the knowledge about the language to learning to use the language in real-world contexts. As to nowadays, the ACTFL guidelines have been guiding the world language classrooms and advancing develop learners' proficiency so that they can survive/maneuver in the target language world.

The Role of The American Council of Teaching Foreign Languages

Founded in 1967, the American Council of Teaching Foreign Languages (ACTFL) is an American organization with more than 13,000 language educators and administrators from elementary through graduate education, as well as government and industry. This organization is dedicated to improving and expanding the teaching and learning of all languages at all levels of instruction. The ACTFL Proficiency Guidelines and the Oral Proficiency Interview (OPI) are based on a rating scale and an assessment procedure that was originally developed in the 1950s by the Foreign Service Institute of the U.S. Department of State. Since then, it has been used by various federal agencies that are involved in teaching and measuring proficiency in a second language (Liskin-Gasparro, 2003, p.483). These guidelines focus on the skills and knowledge that students deploy in communicative contexts and the framework offers tools to guide teaching practices (Liskin-Gasparro, 2003, p.487).

In 1996, ACTFL published its first set of learning standards, titled “Standards for Foreign Language Learning: Preparing for the 21st Century”. Broadening the content range of language learning by venturing well beyond the four traditional communication skills, the new standards dramatically changed the paradigms under which teachers have taught in the past (Phillips, 1999). In “Standards for Foreign Language Learning: Preparing for the 21st Century”, five content areas are addressed: Communication, Cultures, Connections, Comparisons, and Communities. They are also known as the 5 Cs.

- The Communication standard was designed to help students to gain communicative competence in a foreign language.

- The Culture standard aimed to help students gain knowledge and understanding of the culture in which the foreign language is used.
- The Connection standard encouraged students to use a foreign language to explore interdisciplinary content.
- The Comparison standard was meant to develop students' insight into the nature of and relationship between language and culture.
- And, lastly, the Community standard provided students with guidance in using a foreign language in communities where the language is spoken as a native language.

The ACTFL guidelines have provided standards for world language teaching and learning. As a result, Chinese as a Foreign Language (CFL) went through significant changes to meet the national standards. The next section describes these changes.

Linking with the National Standards: Chinese Language Teaching and Learning

Traditionally, Chinese language learning has focused on four skills: listening, speaking, reading, and writing, and occasionally includes study of culture (McGinnis 1999, Kubler 1997a, Ross 1997, Walker 1996). In the past two decades, pedagogy specialists (e.g., Chi 1996) have come to propose the term “proficiency-based” to describe the nature of their curricula. Some (e.g., Ning 1993) have developed what is called a performance-based curriculum, while others (e.g., Chu 1999) have suggested a learner-centered curriculum which is tailored to students' level of proficiency, need, age, and interest. No matter the name and focus of the curricula, they all coincide with ACTFL proficiency guidelines.

In 2006, Xing (2006) proposed that the scope of pedagogical grammar in Chinese language courses should also include, but not be limited to, learning five additional skills: pronunciation,

characters and words, sentences, discourse-pragmatic and culture (p. 29). He argued that pronunciation, characters, and vocabulary were necessary foundational skills; without learning them, students cannot speak, understand, read or write. He further argued that the latter three skills are instrumental for students to be successful in communicating. Subsequently, an integrated curriculum that focused on these four skills in Chinese language competence came to the attention of instructors and pedagogy specialists. A typical integrated curriculum places an equal emphasis on listening, speaking, reading, and writing. Instructors are expected to design activities and exercises for in class and outside of class to enhance comprehension of these components (Xing, 2006, p. 32).

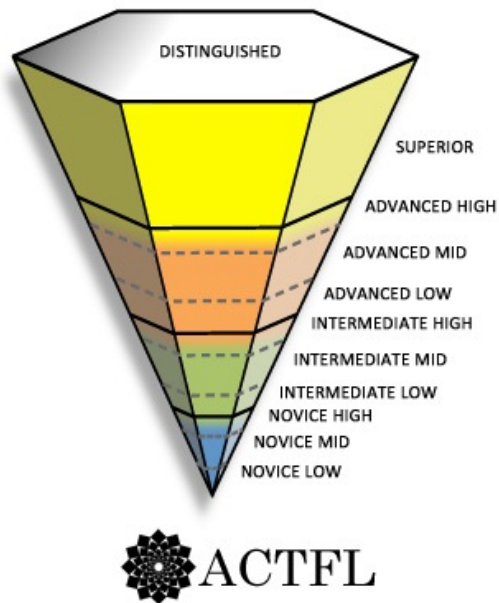
Building upon the 5Cs in ACTFL guidelines, the Chinese standards were developed in 1998, then revised in 2012, expanding and tailoring the progress indicators and learning scenarios with Chinese language specific examples, as outlined below.

- Communication (沟通): Students engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions in Chinese. Students understand and interpret written and spoken language on a variety of topics in Chinese. Students present information, concepts, and ideas to an audience of listeners or readers on a variety of topics.
- Cultures (文化): Students gain knowledge and understanding of the cultures of the Chinese-speaking world. Students demonstrate an understanding of the relationship between the practices and perspectives of the cultures of the Chinese-speaking world. Students demonstrate an understanding of the relationship between the projects and perspectives of the cultures of the Chinese-speaking world.

- Connections (贯连): Students connect with other disciplines and acquire information. Students reinforce and further their knowledge of other disciplines through the study of Chinese. Students acquire information and recognize the distinctive viewpoints that are only available through Chinese language and culture.
- Comparison (比较): Students develop insight into the nature of language and culture. Students demonstrate understanding of the nature and concept of language and culture through comparisons of the Chinese language and culture with their own.
- Communities (社区): Students participate in multilingual communities at home and around the world. Students use the Chinese language both within and beyond the school setting. Students show evidence of becoming lifelong learners by using Chinese for personal enjoyment and enrichment.

Additionally, ACTFL proficiency guidelines (2012) divide proficiency levels into the following major levels: novice, intermediate, advanced, superior, and distinguished. Each major level has three sublevels: low, mid, and high. The division and specific descriptions of proficiency levels apply to different world languages including Chinese.

Figure 2. 1 ACTFL Proficiency Scale



According to ACTFL proficiency guidelines (2012) in writing, writers at the Advanced level are characterized by the ability to write routine informal and some formal correspondence, as well as narratives, descriptions, and summaries of a factual nature. At the sublevels, writers at the Advanced High sublevel are able to write about a variety of topics with significant precision and detail. Writers at Advanced Mid sublevel have a good control of the most frequently used target-language syntactic structures and a range of general vocabulary. When called on to perform functions or to treat issues at the Superior level, Advanced Mid writers will manifest a decline while Advanced high writers can maintain the quality and/or quantity of their writing.

Therefore, being able to perform at the Superior level is one important measurement for a solid Advanced level writer. According to the proficiency guidelines, the Superior level includes the ability to explain complex matters, and to present and support opinions by developing cogent arguments and hypotheses. In order to perform these functions, writers must have effective use of structure, lexicon, and writing protocols, and a high degree of control of grammar and syntax,

of both general and specialized/professional vocabulary which is precise and varied. These requirements lead to the discussion in the next section on language complexity and how to measure different categories of complexity.

In the new paradigm of proficiency-based pedagogy, all four domains of communication skills are considered equally important. However, as previously noted, writing is the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). Additionally, there is not enough class time devoted to developing writing domain (Zhang and Lu, 2014). Therefore, instructors need to build additional opportunities to practice writing. How do we evaluate writing in second language learning to connect to the ACTFL national standards? The following section proposes a more holistic assessment that evaluates both linguistic and thinking perspectives.

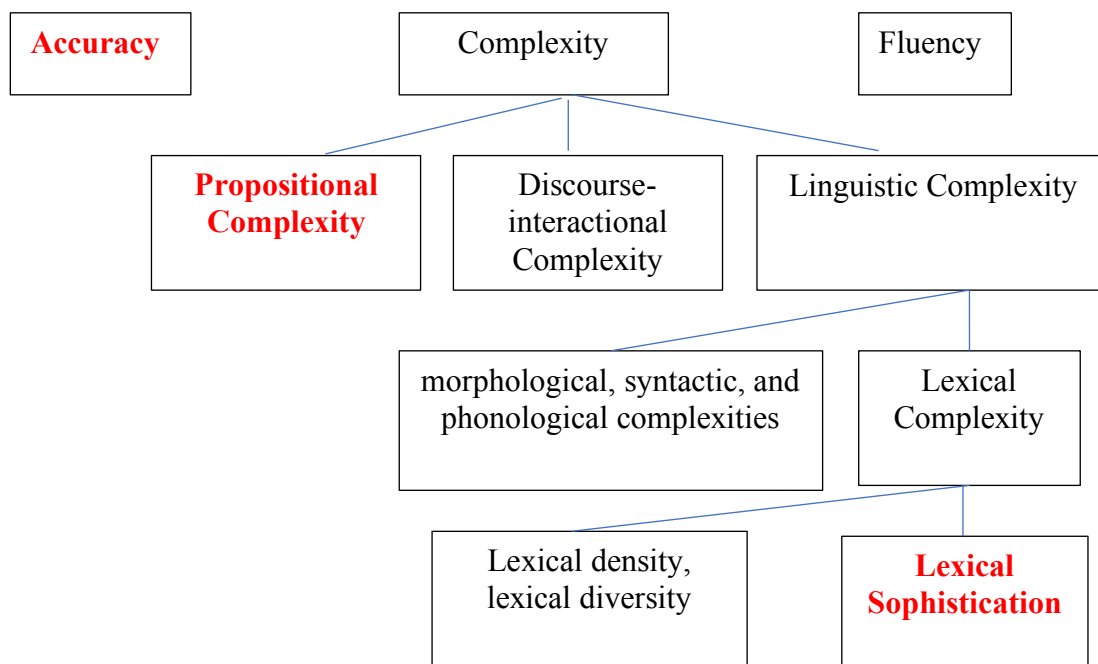
Evaluating Writing in Second Language Learning

In the second language (L2) classroom, complexity, accuracy, and fluency (CAF) are used as performance indicators (Kusyk, 2017) to evaluate the development of language. Complexity refers to the extent to which language users produce sophisticated or elaborated language and represents the maximum capability of language use (Ellis & Barkhuizen, 2005). Accuracy describes how well the target language is produced according to its rule system (grammar) (Skehan, 1996). Fluency refers to the production of language without undue pausing or hesitation (Ellis & Barkhuizen, 2005). Below I will describe complexity and accuracy in greater detail as they are the two indicators I will focus on for my data collecting.

Complexity

According to Bulté & Housen (2012), the broader notion of L2 complexity consists of three components: propositional complexity, discourse-interactional complexity and linguistic complexity.

Figure 2. 2 Aspects of Complexity



The current measurements of writing mainly focus on linguistic complexity and accuracy. This is understandable since the linguistic structures in the writing is most straightforward content to evaluate. However, this measurement should be expanded to a broad notion of complexity that contains cognitive/propositional complexity which is an integral component of advanced language skills. I will discuss the categories of complexities under the broad notion of complexity one by one and explain my criteria of choosing what aspects to measure in this study.

Propositional complexity refers to the number of information or idea units which a speaker/writer encodes in a given language task to convey a given message content (Zaki & R.

Ellis, 1999; R. Ellis & Barkhuizen, 2005). In Ellis and Barkhuizen's definition, an idea unit is defined as "a message segment consisting of a topic and a comment that is separated from contiguous units syntactically and/or intonationally" (p.152). Idea units were further differentiated on the basis of "major" and "minor" idea units, with major idea units consisting of those which "convey the essential content of the message", and minor idea units consisting of "those which relate to details that embellish the message but are not essential" (p. 152). For the purpose of evaluating student writing on DB, propositional complexity was chosen because the DB assignments in advanced level Chinese class aimed to deepen learners' understanding toward certain topics. Learners' propositional complexity might have opportunities to develop through the interactions with peer learners and teacher. In this study, the propositional complexity was measured by dividing the number of major idea units by total words.

The second aspect of complexity is discourse-interactional complexity. It refers to the number and type of turn changes that learners initiate and the interactional moves and participation roles that they engage in (e.g. Du,1986; Gilabert, Barón & Llanes 2009; Pallotti 2008). This category of complexity applies to oral conversation when there are turn changes, so it was excluded from my study.

The third aspect of complexity which is also a major part is linguistic complexity. It is defined as "the number of discrete components that a language feature or a language system consists of, and the number of connections between the different components" (Bulté and Housen, 2012, p.24). There are four categories under linguistic complexity: lexical, morphological, syntactic, and phonological. Because of the limited scope of this research, I only focused on lexical complexity in this study.

Lexical complexity measurement taps into three different aspects: lexical density, lexical diversity and lexical sophistication (Skehan 2003; Bulté et al. 2008). In this study, each DB post was required to be at least 100 Chinese characters long. The length of the post was not long enough to include enough diversity and density for the analysis. Therefore, lexical density and diversity are not suitable as measurement in this study. Lexical sophistication is defined as the percentage of sophisticated or advanced words in a text. It was chosen as one category in this study based on the rationale from ACTFL Advanced level writing proficiency guidelines. According to the guidelines, both general and specialized/professional vocabulary need to be employed when discussing about abstract topics for advanced level learners. In this study, the lexical sophistication was measured by dividing the number of advanced level words by total words.

Accuracy

Lastly, accuracy was included as well to consider the quality of language product. Accuracy refers to how correct learners' use of the language system is. Learners might create a writing with multiple idea units and a set of sophisticated vocabulary but the idea units are presented incorrectly or vocabulary is used in a wrong way.

In conclusion, propositional complexity, lexical sophistication, and accuracy constitute the three categories of “written complexities” in this study. This measurement evaluated learners' written product from two perspectives: linguistic and thinking complexities. In addition, the measurement will be quantified and be demonstrated in descriptive statistics which will present the developmental trajectories of learner's written complexities.

As discussed before, as a type IV language, Chinese requires more hours of formal instruction for Anglophone learners to acquire advanced proficiency in it than most other languages typically taught in the US. This is true as well for writing development. Because of the limited time, the in-class time is not enough to strengthen the Chinese language learners' written complexities from both linguistic and thinking perspectives. It requires the instructor to go beyond the classroom to create out-of-class learning opportunities for learners to apply language in meaningful context. The following section justifies the importance of language learning beyond the classroom and hence the use of DB.

Out-of-class Language Learning

According to world language research (Ohashi, 2016; Orhon, 2018; Kocatepe, 2017), there are various approaches and resources to support world language learning inside and outside of classroom. For example, learners can visit the target language speaking communities and participate in the community activities. For learners who do not have access to the target language community nor physical connection with native speakers, instructors must create opportunities for students to use language outside of class. Online language learning resources like social media, online forum, movies, TV programs, news and among others are possible venues. These learning tools and resources contribute to constructing an online learning community and make out-of-class learning possible.

Benson (2001b) defines out-of-class learning as “any kind of learning that takes place outside the classroom and involves self-instruction, naturalistic learning or self-directed naturalistic learning” (p.62). According to Benson (2011a; 2011b), there are a number of elements that constitute out-of-class learning: context, activities and relationships. Context refers

to the setting that can be physical or virtual spaces in which out-of-class learning occurs, and the activities and relationships that characterize that particular setting.

Studies conducted on out-of-class language activities suggest that they contribute to learners' language learning in certain ways. Chan (2016) carried out a study to explore how students can use popular culture and out-of-class learning to contribute to their language learning. The results indicate that learners displayed control of self-determined learning agendas beyond the classroom as they chose to engage in activities that served to both facilitate their learning and create favorable social identities. Gao (2007; 2009) identified online forums as providing out-of-class supportive learning spaces to Chinese EFL learners. He explains that participation in these spaces exemplified a willingness to learn and enhanced learners' levels of self-confidence, making them more expressive and more assertive than usual.

Other studies (Hyland, 2004; Manfred, 2012; Maros and Saad, 2016) also found out that the out-of-class language learning tend to focus on receptive skills (listening and reading skills). Hyland (2004) investigated out-of-class English language learning activities in Hong Kong. The results indicated that most of the students spent considerable time studying and practicing English beyond the classroom, but most of the time was devoted to receptive skills. Manfred (2012) and Maros and Saad (2016) found similar results in their studies investigating learners' strategies outside of class. They found that ESL learners tend to be involved in activities that develop receptive skills, instead of productive skills (speaking and writing).

In conclusion, it is beneficial for world language learners to engage in out-of-class learning. However, without careful design, the out-of-class learning experience will merely focus on receptive skills without incorporating productive skills. With careful design, DB as an out-of-classroom learning tool may support productive skills development. For example, Ohashi (2016)

created a DB platform for the ESL class aiming to provide out-of-class opportunities for English communication. In this group, teacher and learners collaborate to facilitate access to English-language resources, increase motivation to study and use English, and create an online learning community. The platform provides opportunities to practice both receptive and productive skills in out-of-class learning context.

In sum, out-of-class learning tools contribute to learners' language learning in unique ways by helping construct a learning community. As discussed previously, writing is the most difficult skill to acquire. In my personal experience as a teacher, writing is also the most difficult skill to include in the classroom, as it is difficult to arrange writing activities within the limited class time. Therefore, Discussion Board (DB) is used to provide additional opportunities of writing to develop writing domain.

Discussion Board (DB) as an Out-of-Class Learning Tool

As an out-of-class learning tool, DB provides supplementary learning opportunities for learners to practice outside of class. In addition to the overall benefits as out-of-class learning tool, DB provides unique benefits in language learning. This section will start with a definition of DB, the benefits of using DB, then state the benefits of DB in language development, and lastly describe a good learning community on DB.

Definition of DB

Discussion board (DB) is an online platform in which learners are required to post a response to the discussion question and then respond to a specific number of posted responses by their peers. Responses become a threaded discussion between students and instructor. The use of

online threaded discussions supports social constructivist learning by engaging learners, asking them to express their knowledge, and integrating with others as they negotiate, co-create, and expand meaning (Shaul, 2007). The above interactions constitute a learning community on DB which provides out-of-class learning opportunities.

Benefits of Using DB

DB can contribute to development of four domains (speaking, listening, reading and writing) with carefully designed activities. Wang (2014) utilized DB in a hybrid course titled Advanced Business Chinese for Professionals. In her study, she claims that there are three types of benefits for incorporating online forums when teaching. First, she argues that it improves students' acquisition of grammar because "students were expected to pay special attention to the structures and forms of the target language during the online exchanges" (Meskill & Anthony, 2005, p. 92). This is due to the time allowance feature of DB that allows learners to look at the text as many times necessary and for as long as they wish without disruption of the online conversation (Meskill & Anthony, 2005).

The second benefit is that students share their personal views and are required to engage with each other and "unconsciously initiate the role that is usually played by a teacher in a regular classroom" (Wang, 2014, p. 256). DB activities provide learners opportunities to compose, share, defend, and refine their own opinions in a less stressful environment compared to that of face-to-face discussion. The final benefit according to Wang is that students "incorporated their personal experiences and made connections with contemporary society" (Wang, 2014, p. 257). During the discussion, learners make connections to their personal experience or their own community for a holistic understanding of the topic.

According to Kern (1995), DB reduces communication anxiety, and provides more freedom in a more informal atmosphere. Kern further notes that students are encouraged to express different opinion and contribute individual perspectives because of the freedom and less stressful environment. Consequently, Kern concluded, online platforms “increased student initiative and responsiveness, generated multiple perspectives on an issue, voicing of differences and status equalization” (Kern, 1995, p.470).

Benefits of DB in Language Development

This section focuses on benefits of DB in language development. It introduces how the features of DB facilitate second language acquisition by lowering anxiety level and how DB introduces cultural resources that can be connected to learners’ own experience. It also describes positive learning outcomes in world language classes and elucidates what a productive learning community looks like on DB.

Time Allowance and Removing Affective Filters

Using DB in world language classes provides extra time for teacher to determine teachable moments and for students to reflect and grasp the learning opportunities without the constraints of in-class time. According to Meyer (2003), the face-to-face classroom exchanges are restricted to the instructor’s ability to remember and respond to issues on the spot, however, the threaded discussions allow the instructor to reflect on a question and develop better, more detailed feedback. For learners, they have the opportunity not only to see the language being used to communicate, but to look at it as many times and for as long as they wish without disruption of the online conversation (Meskill & Anthony, 2005).

Because of the time allowance feature, DB assignment helps lower anxiety level in learning Chinese language since it provides extra processing time, relieves anxiety and offers flexibility. Learning anxiety is something that hinders language acquisition (Krashen, 1982). MacIntyre and Gardner (1994) defined language anxiety as “the feeling of tension and apprehension specifically associated with L2 contexts including speaking, listening, and learning” (p. 284). Some researchers (Cheng, 2004; Cheng et al.,1999) have expanded this notion to include the written language as well. Unfortunately, according to Horwitz (1986) a level of anxiety is experienced by many world language students. In his study, 49 % of his participants shared the following sentiment "I start to panic when I have to speak without preparation in language class"(Horwitz, 1986, p.129). This is where DB can lower anxiety levels for students. Composing DB posts allows extra processing time, instead of asking students to respond immediately. The lower anxiety level on DB leads to better language acquisition and writing development.

Cultural Context and Learning Community

DB provides rich cultural and social context to the online learning community. Wang (2014) claims that there is more efficient, more up-to-date and richer cultural and social content in online discussion forum. For example, external resources like news, videos, pictures can be easily retrieved from internet and added to DB to support the student’s argument. Instructors also can design teaching materials drawing upon the authentic multimedia materials from the real world and make necessary modification based on learner’s needs and curriculum goals. These resources bring the rich cultural and social content of the target language into the classroom and

allows second language learners to connect with the target language society and professional field of knowledge (Wang, 2014, p.251).

This connection is bidirectional. Not only the target language society world is brought in, but also students “incorporated their personal experiences and made connections with contemporary society” (Wang, 2014, p.257). The connections to personal experiences also allow learners to reflect on their own culture and society and enhances cultural awareness.

Positive Learning Outcomes

Studies have shown that world language learners have significantly longer language production on DB. On the DB of a French course, Kern (1995) discovered that students produced 85% and 88% of the total number of sentences, while in Interchange, a live discussion forum, they produced 37% and 60% of the total T-units and more variety of discourse functions. Hudson and Bruckman (2002), compared the results of discussions in a face-to-face classroom with an online discussion led by two instructors of French, found that the instructors produced 82% and 84% of the total words in face-to-face classes whereas in the online classroom they produced only 6% and 14% of the total words.

Additionally, the language production on DB has a higher accuracy rate as “students were expected to pay special attention to the structures and forms of the target language during the online exchanges” (Meskill & Anthony, 2005). Because of the visual salience of written discourse on DB, learners are pushed to focus on form and to use their cognitive skills and metalinguistic awareness to solve language problems (Lee, 2004b; Meskill & Anthony, 2005). The “stop-the-clock” feature in DB also allows learners to have sufficient time to process input, monitor and edit output (Kelm,1992; Warschauer,1996). According to St. John and Cash (1995),

through the interaction with the peers, learner is able to correct lexical mistakes by noticing differences between a student's usage and the usage of peers with higher language competence, and pragmatic competence improves quickly as the student successfully adopts useful expressions and phrases.

A Good DB Learning Community

In terms of building a learning community, DB provides a natural language learning environment by promoting learners' social interaction and creating an authentic discourse community (Al-Jarf, 2004; Lam, 2000; Singhal, 1998). The dialogue built on DB among learners is interactive and meaningful since they express opinion on discussion topics and exchange ideas with each other.

What is a learning community? The interactions produced therein facilitate student involvement in authentic communication through language use in real social contexts, as well as the development of relationships with other students, professionals or members of the scientific community, thus creating a real learning community (Sutherland et al., 2003; García-Carbonell et al., 2004). DB discussions comply with the three elements described by Tinto (2005) necessary to form a learning community: mutual engagement, shared repertoire and joint enterprise. Learners on DB work collectively to construct their knowledge on one discussion topic. Their understanding on this topic is enhanced through constant interaction and conversation in a supportive atmosphere.

Writing Strategies for DB Assignments

In order to complete any writing assignments, learners often use a repertoire of writing strategies. It is essential to learn about these writing strategies so that we can explore from a student's perspective how these strategies are adopted during DB assignments. This section will discuss writing strategies. Previous studies on writing strategies provided foundation for me to identify and analyze tools, resources and strategies participants utilized in this study.

Writing strategies are “the actions or methods that learners consciously take to make writing more effectively” (Cohen, 1998). He, Chang, and Chen (2011), who defined a writing strategy as “behaviors adopted by writers to complete their tasks” (p. 401) also identified 21 distinctive writing strategies used to complete essay writing by college students learning English as a foreign language (EFL). Among these strategies were compensation strategies, such as consulting online dictionaries or using search engines to locate appropriate word choices or expressions. Monitoring or revising strategies were also identified from these students' behaviors of checking their writing for grammatical and semantic concerns, estimating quality of written discourses, assessing the match between print and intended meanings, or rewriting misleading or erroneous structures.

In another study, Peñuelas (2012), researched the strategies used by college students and formulated a six-type taxonomy that includes Memory Strategy, Cognitive Strategy, Metacognitive Strategy, Compensation Strategy, Social Strategy, and Affective Strategy. According to Peñuelas (2012), Memory Strategy comprises strategies that retrieve information to produce written discourses. For example, two strategies from the questionnaire in this research are: “I relate my composition topic to my background knowledge.” (p.109) The range of this

strategy can also be expanded to all class resources and materials that can be retrieved during writing.

Cognitive Strategy consists of individual strategies that have the behaviors of understanding and producing written discourses. For example, two strategies from the questionnaire in this research are: “I reformulate the linguistic expression when I am not sure it is right.” “I review previous sections of the text when I find a mismatch between my written text and the ideas I want to express.” (p.109)

Strategies that reveal writers’ deliberate management to facilitate writing quality are classified as Metacognitive Strategy. For example, two strategies from the questionnaire in this research are: “I plan my composition in advance or while writing either mentally or in writing.” “I plan the content and organization of my composition.” (p.110)

Strategies that bridge the gap between intended ideas and language deficits are grouped into the Compensation Strategy category. For example, two strategies from the questionnaire in this research are: “I use the dictionary to find out words that I do not know how to express in English.” “I use sources when I do not have enough ideas to complete my composition.” (p.110)

Social strategies seek to improve writing by involving interaction with other people. For example, three strategies from the questionnaire in this research are: “I seek assistance when I have linguistic problems that I cannot solve, or I ask another person to revise my composition.” “I give my writing to a friend or someone who is good at writing so that I have an opinion about my writing.” “I compare my composition with my classmates’ compositions.” (p.112)

Affective strategies reflect the distinguishable behaviors of writers’ regulating their emotions. For example, two strategies from the questionnaire in this research are: “I try to

overcome feelings of frustration, sadness, etc. when my writing is not as good as I would like to.” “I encourage myself to find a better solution to a linguistic problem in my composition.” (p.112)

The writing strategies discussed above were summarized from learners’ experience during formal essay writing. However, it remains unclear if they are applicable on DB platform as a supplementary learning space as writing is perceived as more “informal”. If so, it supports that DB as a supplementary learning space is able to provide formal writing setting for students to develop written complexities through DB assignments. Therefore, the writing strategies will shed light on my research question one: What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?

Theoretical Framework: Vygotsky’s Sociocultural Theory

Vygotsky’s sociocultural theory will serve as the framework for my dissertation research. The central research question in this study is: What are the experiences of advanced level CFL students in higher education in developing written complexities during discussion board activities?

Three attendant questions also will guide my research:

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?

3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

Sociocultural Theory was developed by the Russian scholar Lev Vygotsky. He offered an adequate scientific view of the complex processes of learning and development. According to Vygotsky (1978), the development of abilities does not automatically take place when exposed to the environment. Instead, the development is a result of interaction with the social world. Within this theory, there are several tenets that connect to my research questions. They are social learning and development, mediation, and Zone of Proximal Development (ZPD). I will discuss them below.

Social Learning and Development

One important notion in sociocultural theory is that human mental functioning results from participation in, and appropriation of, the forms of cultural mediation integrated into social activities (Wertsch, 1985). Learners participate in interaction with people and environment, adapt information in a way that is meaningful to them and use knowledge as their own which is appropriation. There are also forms of mediation involved to ensure the process complete. Mediation refers to the use of certain tools within socially organized activity in order to reach the goals. The tools include both human being mediators and activity mediators.

This notion was developed based on Vygotsky's two learning stages: the interpsychological stage; defined as the interaction between learner and the people and environment at a social learning setting, and the intrapsychological stage; defined as the internalization of knowledge. Vygotsky (1981a) used the metaphor of two planes to formulate a general law of cultural development:

Any function in the child's cultural development appears twice, or on two planes, first it appears on the social plane, and then on the psychological plane, first it appears between people as an interpsychological category, and then within the child as an intrapsychological category (p.163).

According to Vygotsky's theory, learning occurs when transformation takes place from interpsychological plane to intrapsychological plane. This means that learning starts with interaction with other people and environment and completes when the knowledge is internalized. Social learning and development connect to my three research questions. My first research question concerns how learners utilize the writing strategies to facilitate the transfer to happen. My second research question concerns how learners interact with the DB environment and my third question concerns how learners interact with instructor and peers. Together, they investigate how the development of written complexities happens when learners transfer from interaction stage to internalization stage.

Mediation

The second important tenet in Vygotsky's sociocultural theory is mediation. Mediation refers to the intentional interjection of items between environment and self in order to modify and gain specific benefits. Vygotsky stipulates that the development of the child's higher mental processes depends on the presence of mediating agents in the child's interaction with the environment (Kozulin,2003, p.16). According to Kozulin (2003), there are two types of mediations: mediation through another human being and mediation in a form of organized learning activity which is also a symbolic mediator. The psychological function which is the objective of development appears twice in the development, once in the form of actual

interaction, and the second time as an inner internalized form of this function (Vygotsky, 1978). Kozulin (2003) also indicated the difficulty of identifying different forms of mediation as there are types of mediation and techniques of mediation. For example, structuration and organization of students' work belonged to the type of mediation, demonstrating the first step or providing hints belonged to the technique of mediation (Bliss, Askew, and Macrae, 1996).

This has significant implications on second language teaching and learning. As Ellis (2005) indicates, language learning takes place in interaction, and not merely as a result of interaction. This is evident in language classes, as the social interactions are in the form of activities. It is important for the language teacher, as a human mediator, to design well-structured activities to facilitate the appropriation of language using via an activity that involves human interaction. The design and the implementation of activities should involve rich opportunities for learners to make inquiry, to interact and exchange opinions, and to reflect and revise their original thoughts.

As noted about, the tenet of mediation informs my three research questions: During the interaction, the DB assignments perform as activity mediation, and the instructor and other students perform as human mediators. Learners first interact with the learning environment through the assignments to compose their opinion about discussion topics. Then, they must interact with each other to exchange and defend ideas and revisit their original ideas for changes. Writing strategies are adopted during composing the posts and asking and answering questions steps. The tenet of mediation provides the lens to examine what roles DB and instructor and classmates perform in this study.

Zone of Proximal Development (ZPD)

The original definition of ZPD is: “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86) or “what the child is able to do in collaboration today he will be able to do independently tomorrow” (Vygotsky, 1934/1987, p. 211, see also, 1934/1998b, p. 202). There are two derived concepts from ZPD: development levels and imitation. They helped me to examine what tools and strategies learners utilize to move from actual developmental level to potential developmental level. I will explain these two concepts below.

Definition of ZPD in Second Language Acquisition (SLA)

Ohta (2001) has adapted Vygotsky’s definition of the ZPD making it more suitable for the context of classroom in Second Language Acquisition (SLA): “For the L2 learner, the ZPD is the distance between the actual development level as determined by individual linguistic production, and the level of potential development as determined through language produced collaboratively with a peer or teacher” (p.9). This definition points out that we need to consider both development levels in language learning: the actual development level which is based on the language product that the learner completes independently, and potential level which is based on the language product that the learner created with help from other people. The actual development level is a new starting point for the learner, and curriculum design must focus on how to elevate the learners’ level to potential level.

Development Levels and Inquiry-oriented Curriculum

Based on the concept of ZPD, inquiry-oriented curriculum is advocated to elevate learners' level from actual level to potential level. According to Vygotsky, potential level is more indicative of mental growth than actual development: "a learner who is able to respond to such help [that provided by a teacher or more experienced peer] must be considered to be at a more advanced developmental level than the one who fails to do so, because the learner who responds to help can be expected to show a more rapid rate of actual development" (Aljaafreh and Lantolf 1994, p.468).

A child's actual developmental level defines functions that have already matured; that is, the final product of development (Vygotsky, 1978, p.86). However, if a teacher initiates a solution, and the child completes it or solves it in collaboration with other children, the functions are in the process of maturation, but are currently in an embryonic state (Vygotsky, 1978, p.86). Educators need to take these embryonic functions into consideration and use ZPD development to "delineate the child's immediate future and his dynamic developmental state, allowing not only for what already has been achieved developmentally but also for what is in the course of maturing" (Vygotsky, 1978, p.87).

The concepts of actual and potential development levels helped me to understand how learners respond to instructor or peer's mediation during the DB activities. In addition, the inquiry-oriented curriculum which is built upon the concepts of two levels provided parameters to design DB activities. The DB activities were inquiry-based, and the topics were related to students' interest. The prompt questions or activities were open-ended so that students could express their opinion from different perspectives. The objective of DB activities was to elevate learners' language skills and deepen their understanding toward the discussion topics, in another

word, propositional complexity. In the method chapter, I will discuss parameters to design DB activities in detail. In the process of moving from actual level to potential level, behavior of scaffolding will emerge as one of the learning strategies. The following section will discuss scaffolding in detail.

Scaffolding

In sociocultural theory, knowledge is not simply handed down from one to the other, but is instead constructed through “scaffolding” (Bruner, 1975) and collaborative activities. As a subtenet of ZPD, scaffolding is described as “the mediator’s adjusting the complexity and maturity of the teaching interaction to facilitate the child’s mastery of the task; providing support when necessary; and providing encouragement and prompts to the child to move ahead when ready” (Lidz, 1991, p. 80). Scaffolding can take place as the instructor and students are both present, but also be designed as scaffolded activities especially in online learning environment. For example, the DB assignments in this study contained four steps: compose own post, read others’ posts, ask insightful questions, and respond to peers. In addition, the scaffolding can go beyond just between teacher and students. Following Vygotsky’s sociocultural theory, Forman & Kraker (1985) hypothesized that learners can, in certain circumstances, provide the same kind of support and guidance for each other. Donato (1994) explored the notion of “mutual scaffolding” among second language (L2) learners. Her analysis of classroom interaction between a pair of Japanese language learners, one more advanced than the other, evidences the beneficial effects of peer collaboration on language development. Not only did her less advanced learner profit from the other’s assistance, advanced learner had an opportunity to adjust, refine, and experiment with her own language through the interaction.

The tenet of scaffolding shed light on my study by offering a vehicle to explore this constructive process through the design of scaffolded DB activities and the interaction between learners. I observed and analyzed DB posts to identify scaffolding moments. In addition, I also interviewed learners to see if there were any scaffolding moments during the writing process and examined how the scaffolding between each other impacted the development of written complexities. For example, I explored propositional complexity; which refers to the number of information or idea units via interaction with other students, a student might find their ideas reinforced, challenged, or changed by the questions raised by other learners. The reason might be that each learner is required to post insightful questions after reading others' post. The insightful questions might trigger deeper and reflective thinking in the mind of this learner and lead to more ideas. During the developmental process, behavior of imitation will emerge as well. The following section will discuss imitation in detail.

Imitation

Imitation refers to “all kinds of activity of a certain type carried out by the child ... in cooperation with adults or with another child” (Vygotsky, 1934/1998b, p. 202), and includes “everything that the child cannot do independently, but which he can be taught or which he can do with direction or cooperation or with the help of leading questions” (Vygotsky, 1934/1998b, p. 202). Imitation is a sub-tenet of ZPD because it takes place when a lower-level learner receives help from a higher-level learner or teacher, including demonstrating how to complete a given task. The lower-level learner imitates by following the instructions. Imitation is frequently observed in world language learning. Learners start with imitating short sentences provided by teachers or higher level learners before they can independently create with language. Learners

might imitate or borrow the grammar structure and knowledge from other learners by reading others' posts and comments. I was able to identify the learning moments when learners used imitation strategies. Therefore, examining imitation further informed my third research question regarding how learners were impacted by the interaction with instructor and classmates.

In conclusion, the main tenets of Vygotsky's theory: social learning and development, mediation, and ZPD provided ideal lens for my research. The interplay between the above themes allowed an exploration into learners' experience in developing written complexities through DB activities. The research design and analytical path will be discussed in the next chapter.

Chapter Three Research Design

Purpose of the Research and Research Question

This study focuses on the experiences of CFL learners on written complexities development during DB activities through a Vygotsky's sociocultural theoretical lens. This study aims to generate response to the question: What are the experiences of advanced level CFL students in higher education in developing written complexities during discussion board activities?

Three attendant questions will also guide my research:

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?
3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities development, during DB activities?

The intricate nature of these questions necessitated that I ground the design of the study in descriptive, qualitative, and case study research because this study is "... a design of inquiry... in which the researcher develops an in-depth analysis of a case." (Creswell, 2014, p. 14). The case study is an Advanced level CFL class with multiple learning individuals at an American university. Case studies are bounded by time and activity (Stake, 1995; Yin, 2009, 2012), and the present study is bounded within one quarter and includes five DB discussion activities. Below I will outline, in more detail, why my study is a qualitative case study.

Qualitative Methodology

Qualitative methodology is “an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world” (Van Maanen, 1979, p.520). My research aims to explore learners’ experience during DB activities in Advanced CFL classes. I interviewed participants and investigated “how” questions from participant responses. As such, this study examines the learning experiences of a particular group of CFL learners at a particular university. I aim to extract the meaning from the complex development process (DB activities) during a particular period of time (one quarter) which is in accordance with a qualitative approach (Schwandt,1994).

Lastly, as indicated in Chapter One, I am not only a teacher who designed DB activities, but I was also a student who experienced DB learning firsthand. During my research, I systematically reflected on myself as researcher as well as how my own experience shaped the study (Creswell, 2014). This reflexivity provides an honesty and openness to research (Mertens, 2003), and also offers a unique perspective.

Case Study

Case study research is a qualitative approach in which the investigator explores a bounded system or multiple bounded systems over time, through detailed, in-depth data collection involving multiple sources of information, and reports a case description and case-based themes (Cresswell, 2007). The present study is a qualitative case study because it focuses on one particular advanced Chinese course at a particular American university and is thus a bounded system. There is “a limit to the number of people involved who could be interviewed or a finite

time for observations” (Merriam, 2009, p.41). The limit to the number of students for interview was the total number of class enrollment (8). There was also a finite amount of time for observation and data collection (10 weeks). Lastly, the specific university and program setting, students’ learning background and learning motivation were taken into consideration as specific case features.

Moreover, the current study is a case study because “it is the unit of analysis that determines whether a study is a case study” (Merriam, 2009, p.42). By concentrating on a single phenomenon or case, the interaction between learner’s development and factors from DB activities this research aims to uncover the interaction of significant factors characteristic of the phenomenon (Merriam, 2009, p.43). In conclusion, the case study approach is optimal for my research because the research entity is a bounded system with limits, it is also an instance drawn from a class, and it examines the interaction of significant factors.

Timeline

I obtained the IRB approval from both University of Wisconsin-Milwaukee and my research site in January 2020. After obtaining permission, I contacted the instructor to obtain students’ email address and sent out recruiting emails. A reminder email was sent in one week to follow up. From February to March 2020, I conducted DB posts analysis, and collected data from DB to evaluate written complexities. The semi-structured interviews took place through Zoom because of the pandemic from March to April. I used the months of April to November to code, interpret, and write.

Methods

Site Selection

This study examines learners' experience of written complexity development during DB activities in an Advanced level CFL class at an American University. The criteria of finding the most descriptive site include:

1. A Chinese program at an American university.
2. The program curriculum aligns with ACTFL guidelines so that the teaching method is communicative and interactive.
3. Advanced level Chinese class is offered. There are two reasons why advanced level class is chosen. First, in the advanced level class, the topics begin to go beyond personal life and start to explore community and societal topics. Therefore, discussion activities become practical and feasible at this level. Second, it is at this level when learners' language proficiency levels start to show gaps despite the fact that learners are still placed in the same class. This feature will be helpful for researcher to observe the interaction between learners with different proficiency levels and explore ZPD.
4. DB activity is part of the course design. Students will be required to post their opinion toward one prompt after completion of one chapter.

Participants

The participants in this study were students who were enrolled in one section of advanced level Chinese class at an American University. At the time of recruitment, the enrollment of the class selected for this study was 8 and 5 students volunteered to participate in this research. The

only selecting criteria was that students were enrolled in the advanced level Chinese class. The study body is a mix of heritage and non-heritage speakers. The advanced level Chinese course is not a mandatory course for undergraduate students but might be required for graduate students who are in China-related programs. Therefore, the enrollment reason of participants mostly is personal interest instead of being required.

Recruitment

I obtained the email addresses of students who were enrolled in an Advanced level CFL class through the instructor, and asked students directly through email (see Appendix A) to gauge interest in participation. Students were not concerned their performance would affect their final grade because I was not the instructor. Therefore, I was able to obtain honest responses. Students who were not willing to participate, were removed during data collection and their posts were not collected. Students were also told the benefits of participating in this study; including an analysis of their written complexities and evidence of improvement.

Data Source

I collected data from two sources: DB posts and interviews. Below I will explain my sources in further detail.

DB Posts

The advanced level Chinese course spent about one week covering one chapter. At the end of each chapter, there was one DB activity assigned for students to complete. The DB activity contained three steps: first, students needed to compose a post in response to a given prompt;

second, students must read at least three other students' posts and post insightful questions underneath; third, students must respond to the questions under their own posts. Therefore, the audience of the DP posts were classmates, not just the instructor.

In order to have access to the posts, I asked the instructor to add me to the Canvas site. I copied and saved the posts, questions and responses from the participants on DB. In addition to that, the data also came from observing and analyzing the interaction between students and between the teacher and the student on DB. There were different ways of interaction to be documented. For example, whose posts were chosen to comment; if any students borrowed new words from other posts; if any students asked for clarification, etc. This type of observation is less intrusive (Creswell, 2007) because I was not present to observe on DB.

Parameters of Designing DB Activities

As discussed in Chapter Two, DB serves as an out-of-class learning tools to create supplementary learning opportunities for learners. However, DB is a platform that does not guarantee the learning outcomes, and it is the activities designed to create learning opportunities. Therefore, in order to ensure students receive the best opportunities to develop their writing skills, the DB activities need to be carefully designed. I worked with my colleague to design the DB activities since we taught two parallel sections. There were five parameters in total.

1. First, the post must relate to the content that students learned from the current chapter.

Additionally, the post must require students to perform advanced-level functions per ACTFL guidelines. For the purpose of this study, students will focus on the ACTFL function of social topic discussion. This is related to the course learning objective (ACTFL Advanced-low level) that involves topics related to community and society. For instance, after

completion of chapter “Health”, the prompt is “Considering skinny as beautiful has been the trend in the current society. The promotion of this kind of aesthetics is dominant in social media. Do you agree with this opinion? From your perspective, what impact could this aesthetics bring to our society?” The prompts were open-ended questions so that opinion from different perspectives were encouraged.

2. Secondly, the prompt must explicitly include requirements of length and number of advanced-level vocabulary to use. For instance, the prompt for chapter “Health” includes the following requirement: “your post must be at least 100 characters long and using at least 15 new vocabulary.” This requirement is also related to the learning objective: ACTFL Advanced-low level where learners can elaborate in organized paragraphs. 100 characters with 15 new vocabulary are not too lengthy but long enough to be an organized paragraph.
3. Thirdly, the prompt must explicitly require students to read certain number of posts, post questions and comments, and respond to questions under original posts. For instance, the prompt for chapter “Health” includes the following requirement: “on the next day, you need to read at least three posts from your classmates and leave comments and insightful questions (please see teacher’s question as example). On the day after next day, you need to respond to the questions below your own post.” Only when students complete all three steps: post, comment, and respond, can they receive full credits. The requirement of asking questions and responding is designed to create the interaction and challenge students’ propositional complexity on the discussion topics.
4. Fourthly, the instructor needs to provide modeling of asking “insightful questions” under the first post to show students. The “insightful questions” aim to trigger poster’s deeper thinking and reflection on the original post. Without correct modeling, it is possible that learners will

post random and easy questions under classmates' posts in order to simply meet the requirement. This step can ensure the quality of questions students ask and it is an important step to enhance students' propositional complexity.

5. Lastly, the instructor needs to read every student' post and correct their language errors below. In addition to correcting, the instructor also needs to point out where the language can be elevated to advanced level. In this way, students can get explicit feedback on accuracy and lexical sophistication. Students are provided with a detailed grading rubric which will be demonstrated in Chapter Four.

Below is a complete example of DB prompt for chapter "Health":

Considering skinny as beautiful has been the trend in the current society. The promotion of this kind of aesthetics is dominant in social media. Do you agree with this opinion? From your perspective, what impact could this aesthetics bring to our society? Your post must be at least 100 characters long and using at least 15 new vocabulary words.

Post due: Friday 8:00pm

Questions due: Saturday 8:00pm

You need to read at least three posts from your classmates and leave comments and insightful questions (please see teacher's question as example).

Responses due: Sunday 8:00pm

You need to respond to the questions below your own post.

Interview

I conducted one semi-structured interview with each participant at the end of the quarter. Each interview was about one hour long. I recruited 5 participants so there were 5 interviews in total. One interview was conducted face-to-face and four were through Zoom because of the COVID-19 pandemic.

Interviews offered insightful data for my research because I wanted to explore what is “in and on someone else’s mind” (Patton, 2002, p.341) and “enter into the other person’s perspective” (p.340-341) to explore the learning experience during DB activities. Using the Interview as a data source is compatible with my theoretical lens as well. One important notion in sociocultural theory is that development goes through two stages: interpsychological and intrapsychological stages. Interpsychological stage refers to the interaction between learner and the people and environment at a social learning setting and the intrapsychological stage means the internalization of knowledge. The first stage can be investigated through DB observation and DB posts analysis, but the second stage can only be explored from interview. The experience of written complexities development can be examined through interview by opening up learner’s perspective and find out what is on their mind.

With regards to the questions provided to participants, the protocol was constructed using semi-structured questions, which is a mix of more and less structured questions. According to Brinkmann (2014), semi-structured interviews have two advantages: semi-structured interviews contain more potentials of dialogues by allowing more room for following up on the points are deemed important by the interviewee; and, compared with unstructured interviews, the

interviewer in semi-structured interview has a more solid control in focusing the conversation on topics that are deemed important in relation to the research project.

During the interview, participants were offered a PDF file of his/her posts so that they can skim through and recall their thoughts when writing these posts. The data analysis from the DB posts helped me to generate interview questions for the participants. These included questions such as how they choose whose posts to comment, their experience of imitation, etc. (see the Appendix B for interview protocol).

The interviews were originally planned to be conducted face-to-face. This allows for the responses to be recorded, and for the facial expressions, gestures and body languages to also be noted. These data were also important because they provided hints for researchers to understand interviewees' feelings and emotions. However, because of the COVID-19 pandemic, I had to switch the other four interviews to Zoom. Therefore, I was not able to observe participants' body language, but I was still able to feel their emotions and feelings through camera.

Data Analysis

I conducted the data analysis for two data sources introduced above: DB posts and interview.

DB Posts Data Analysis

There were two types of data analysis for DB posts: written complexities analysis and DB interaction analysis. This allowed me to measure learners' written complexities and analyze the interactions on DB.

Written Complexities Analysis

The DB posts were collected to measure learners' written complexities. The written complexities were measured from accuracy (error/total words), propositional complexity (idea units/total words), and lexical sophistication (advanced words/total words). In addition, students needed to complete post with length and vocabulary requirement, and question others' posts and respond to questions to receive full credits. The following grading rubric was used for each DB activity.

Table 3. 1 DB Assignment Grading Rubric

Category	8-10 points	6-8 points	<6 points
Question and respond	Exceed or fully meet the requirement	Partially meet the requirement but not fully.	Does not comment three posts, fail to raise insightful questions, or fail to respond to questions.
Accuracy	Completely correct or with minor errors but does not affect comprehension for readers who are not accustomed to deal with nonnatives.	There are some mistakes that hinder the comprehension for readers who are not accustomed to deal with nonnatives.	It is very difficult to understand and follow for readers who are not accustomed to deal with nonnatives.

Propositional complexity	Five or more idea units in the length of 100 characters.	Three to four idea units in the length of 100 characters.	Less than three idea units
Lexical sophistication	Use more than 15 advanced level vocabulary words in the total length of 100 characters.	Use 10-14 advanced level vocabulary words in the total length of 100 characters.	Use less than 10 advanced level vocabulary words in the total length of 100 characters.

To measure accuracy and propositional complexity, I counted the numbers of errors and idea units then divided by the total words in the post. To measure the lexical sophistication, I utilized the HSK level 5 vocabulary as the standard since ACTFL does not have an advanced level vocabulary list. HSK is Hanyu Shuiping Kaoshi, which is the Chinese Proficiency Test used in Mainland China. It is the standardized test of Standard Chinese language proficiency of China for non-native speakers such as foreign students and overseas Chinese. It includes six levels and level 5 is designed for learners who can read Chinese newspapers and magazines, watch Chinese films and are capable of writing and delivering a lengthy speech in Chinese. The vocabulary list of HSK level 5 contains 2500 commonly used Chinese vocabulary words. I underlined all possible advanced words in the DB posts and searched them in the document of HSK level 5 vocabulary list to confirm.

After I obtained the number of errors, idea units and advanced words divided by the total words from every single post, I created descriptive statistic chart for each participant to illustrate

their trajectories of written complexities development. There were three lines representing accuracy, propositional complexity and lexical sophistication in each participant's chart. The trajectory of the three aspects provided foundation for generating my interview questions.

DB Interaction Analysis

I obtained data, including comments and responses and the interactions between students from DB activity observation. Then I connected the data with the tenets from Vygotsky's sociocultural theory like social learning, mediation, and ZPD. The data collected from the written complexities measurement and DB interaction analysis provided foundation for the interview later.

Interview Data Analysis

There are two types of coding styles in qualitative research: deductive and inductive qualitative research (Ellis & Barkhuizen, 2005, p.257). In deductive qualitative research, investigators begin with specific hypotheses or research questions and set out to prove or answer them, or they may have in mind a set of pre-defined, expected themes which they then go on to examine (Ellis & Barkhuizen, 2005, p.257). Inductive qualitative research "examines the data first to see into what kind of chunks they fall naturally and then chooses a set of concepts that helps to explain why the data fell that way" (LeCompte and Schensul, 1999, 46). Generally, qualitative researchers use both induction and deduction throughout their analysis, and to classify a study as wither only one or the other would be an oversimplification (Ellis & Barkhuizen, 2005, p.259). In this research, I combined two types by 1) embedding the research questions and

theoretical lens in mind and look for corresponding themes; 2) paying attention to repetitive patterns and themes and choose appropriate concepts to explain them.

As Merriam (2009) claims, data analysis is a complex process that involves moving back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, between description and interpretation. My overall process of data analysis began by identifying segments in the data set that were responsive to my research questions (Merriam, 2009). Then, as Merriam (2009) suggests, I compared one unit of information with the next in looking for recurring regularities in the data. These recurring regularities served as categories or class which came from theoretical lens. In the process, the criteria for allocating data to one category or another became clear.

To be more specific, the analysis started with open coding by first reading interview transcript and other written documents collected in the study and making notations next to bits of data that were potentially relevant to answering my research questions. Secondly, I went back over the notations and used “axial coding” (Corbin & Strauss, 2007) to group the open codes under certain categories. Thirdly, the initial categories underwent some revision. Some categories were subdivided, and others subsumed under more abstract categories” (Dey, 1993, p.44). Marshall and Rossman (2006) visualize these categories as “buckets of baskets into which segments of text are placed” (p.159). I revisited and refined the labels of these “buckets” through the writing up of the findings. Below is my coding table:

Table 3. 2 Coding Table

Overarching themes	Sub-themes
Tools and strategies	Tools

	Resources: class resources; out-of-class resource Writing strategies to develop propositional complexity, lexical sophistication and improve accuracy
DB as a supplementary learning environment	Introduction of DB tasks and features Provide Opportunities to Apply Learned Language from Class Development of writing and reading domains
Interaction	Propositional complexity: interaction with teacher, interaction with peers Language development (lexical sophistication and accuracy): interaction with teacher, interaction with peers

At last, the coding process moved from concrete description to abstract description of the phenomena using the theoretical lens. This level of analysis involved “making inferences, developing models, or generating theory” (Merriam, 2009, p.188). Miles and Huberman (1994) write about this process as “moving up from the empirical trenches to a more conceptual overview of the landscape”. (p.261).

Overall, the process of analysis was not a fixed procedure but “the cognitive process of discovering or manipulating abstract categories and the relationships among those categories” (LeCompte, Preissle, & Tesch, 1993, p.239). I followed Merriam’s (2009) suggestions to speculate how the preliminary categories and subcategories may be interrelated, reduce and refine them, and then link together to develop a model. In this way, the analysis transcended the formation of categories and sought to explain a practical problem through a theoretical lens.

Credibility

There were several strategies adopted to ensure the quality of the research.

Triangulation

According to Patton (2002), triangulation is used for “comparing and cross checking the consistency of information derived at different times and by different means”. In this study, triangulation was achieved by utilizing such as descriptive statistics, DB observation, and interview. These data collection tools not only cross checked the findings with each other, but also provided multiple perspectives to the researcher to explore the research questions.

Member Checking

The researcher invited the instructor of the selected advanced level CFL class to check the research process as an external viewer. The instructor was invited to check the data and analysis frequently during the research process. The perspective of the instructor helped the researcher to avoid bias and double check the data collection and analysis.

The researcher also invited a few participants to share with preliminary description, analysis and themes. I sent these participants the document preliminary description, analysis and themes and asked for their feedback. The purpose of doing so was to check if there is any information missing or misunderstood and to view if the researcher’s reflexivity has affected the data analysis and interpretation.

Reflexivity

As a Chinese language instructor, I have been seeking for more effective pedagogical tools to improve my teaching and DB has been one important component in my teaching. I believe that to understand learners' experience I need to communicate with them, to listen to different stories and voices, to make adjustment and accommodations for individual for future improvement. This research deepened my understanding of how students develop written complexities through DB activities and provided pedagogical implications. I also put aside the subjectivity of an instructor and not commenting on students' language level during the research process. I was objective during the interviews and made the relationship with students relaxed and casual so that they were able to share their experience with me.

At the stage of description in my research, I fully engaged in the communication with research participants to hear the voices, was a translator of my own witnessing, and recorded narratives of the students' learning process and feelings. In the stage of analysis and interpretation, I worked to minimize bias, maximize accuracy and report impartially, while, acknowledging that my subjectivity shapes the interpretation of the generated data. I realized that the role of instructor limits my ability to analyze the data from emic perspective (Kirkland, 2014). But with my past experience of learning English as a foreign language, I had better sympathy and unique insight into students' feelings and how they make sense of studying Chinese.

As an instructor, I have interest in explaining the gap between students' acknowledgement and instructor's expectation. I agree with Kinloch (2014) that we should "allow room for conflict, complications, silences, and pauses to exist" (p. 30) because your own world is not the

only valid one. Therefore, the reported conclusions and claims allowed sufficient room for different opinions and even conflict from students' perspective, as well as the reflection of my subjectivities, emotions and positions.

I constantly kept in mind that reflexivity is playing a part in my research. Total objectivity is not possible so I turned my subjectivities into useful tools that was beneficial to my research. For example, my instructor subjectivity helped me understand teacher's role in my observation; and my English learner subjectivity offered an insider's lens and certain dimensions to examine the data.

Ethical Issues

This study went through the careful examination of IRB committee which "requires the researcher to assess the potential for risk to participants in a study, such as physical, psychological, social, economic, or legal harm" (Sieber, 1998). The researcher had participants sign informed consent forms agreeing to the provisions of the study before it starts. Meanwhile, the researcher also obtained permissions from the program director and instructor of the selected class.

At the beginning of the study, the researcher explicitly disclosed the purpose of the study and explained the consent form extensively when participants had questions. Most importantly, the researcher did not force participants to participate. Instead, the researcher emailed students to ask if they are interested in participating in this study. The students were not in the researcher's class so they will not worry their grades would be affected if they refused to participate.

The researcher also made sure that all participants received the benefits. In this particular study, participants got to know their written complexities analysis first, and then the interview led them go back to the learning moments and reflect on their learning experience.

The data in this study will be kept for between 5 to 10 years as recommended by Sieber (1998) for future possible use.

Chapter Four Analysis

As discussed in Chapter One, the purpose of my research is to understand the experiences of advanced level CFL students in higher education in developing written complexities during discussion board activities. My three research questions are:

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?
3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

This chapter will first introduce the setting of the study (University X) and the Chinese program where the study was conducted. Second, this chapter will introduce the participants in this study. Finally, the data collected and analyzed from discussion board assignments and interviews will be presented.

The Setting

University X, where the study was conducted, is a prestigious private university located in a metropolitan American city. Students at this university are required to take at least one year of world language. Because the language requirement is only one year, students who continue to take a second year or third year of Chinese are very strongly motivated to learn the language and culture. Many students who continue to upper level courses are also majoring or minoring in East

Asian Languages and Civilization (EALC). The website of University X's Chinese program states:

The Chinese language program courses of modern Chinese language in different levels.

There are two tracks of courses offered to non-heritage students as well as Chinese heritage students. The aforementioned courses are offered during the regular semesters. Moreover, there are intensive summer courses provided at different sites.

In regards to the Chinese curriculum:

The curriculum and instruction of Chinese program aligns with American Council of Teaching Foreign Languages (ACTFL) guidelines and principles. The courses offered in the program aim to develop learners' language proficiency and to expand their understanding of Chinese society and culture. (University X Chinese program website, 2020)

University X has very high standards for admitting students and the students are mostly very self-disciplinary in studying. As many students enrolled in Chinese courses are majoring or minoring in EALC, they particularly are motivated in learning Chinese. The nature of the University X and the background setting is important to keep in mind as they explain the learning motivation of advanced Chinese class students is strong and out of personal interest.

The Classroom

This study was conducted in one section (302) of a third-year Chinese sequence. The program operates on a quarter system, and third-year Chinese consists of three sequence courses: Chinese 301, Chinese 302, and Chinese 303. In order to enroll in Chinese 301, students need to complete two years of Chinese or equivalent courses. Therefore, some students in third year Chinese are from second year Chinese at University X and some students are placed into this

course based on their previous Chinese learning experience somewhere else. By the end of third year Chinese, students are expected to reach the learning objectives as follows:

Language learners at this level will be able to minimally narrate, describe, compare, and handle uncomplicated tasks. The social situations for communication require an exchange of basic information related to their work, school, recreation, particular interests, and areas of competence. Learners can perform four skills (listening, speaking, reading and writing) at both informal and some formal settings. They can also perform using connected discourse of paragraph length. (Chinese 303 syllabus)

In the third-year sequence, the curriculum aims to elevate students' level to Advanced-Low by completing various activities; discussion board assignment is one of them.

Discussion Board

The topics for the discussion boards ranged from beauty standards to music appreciation, marijuana legalization, love, and poverty. The discussion board assignments were offered at the end of each chapter in order to apply the grammar and vocabulary learned in class during this chapter. Additionally, the discussion board assignments allowed students to expand their understanding and opinion of the social topics.

The students all completed five different discussion board assignments. These assignments were written a specific way to elicit a type of student response. For example, four of the five assignments were analytical and asked for students' opinion about social topics. One of the five assignments was role-play activity and required students to compose a narrative from a certain characters' perspectives.

Participant Population

There are five participants in total in this study. Below is a chart that demonstrates their basic information.

Table 4. 1 Participant Population

Student	Heritage background	Language learning experience
A	Chinese heritage student whose parents are Chinese but are not influent in Chinese	Learned Spanish for two years in middle school, took Chinese in high school and was placed in third year Chinese after entering college.
B	Chinese heritage student whose parents are Chinese but are not influent in Chinese	Attended international school in Shanghai from fifth to eighth grade and took beginner Chinese classes for three years; moved back to US in high school and took Latin for four years and was placed in third year Chinese after entering college.
C	Non-heritage student	Took Spanish for two years in eighth grade and ninth grade. He started to take first year Chinese after entering college and continued till third year Chinese.
D	Non-heritage student	Besides Chinese, has also done Spanish and French in elementary school, although not too much of each. She started to take first year Chinese after

		entering college and continued till third year Chinese.
E	Non-heritage student	Doctoral student in EALC studying Korean literature. Speaks Korean in addition to Chinese. He started to take first year Chinese after entering college and continued till third year Chinese.

As mentioned above, the 3rd year Chinese course sequence is not a requirement for most students at University X and students in this sequence chose to take the courses. In order to understand the decision to take the 3rd year sequence, one interview question asked participants why they chose to enroll. I will address their responses in the following paragraphs.

For student A, who is a Chinese heritage speaker, continuing to take Chinese after high school was necessary to ensure that she learned both formal and informal Chinese. She shared that she would like to use it to communicate with people either at a job or at a personal event in the future. To ensure language fluency, she enrolled in the third-year sequence because she had taken Chinese in high school and she wanted to make sure she retained her speaking and writing skills. For student B, also a Chinese heritage speaker, enrolling in the third-year sequence connected her back to her primary language. She said that she had forgotten how to read and write Chinese. She enrolled in this course based on advice from her parents. According to her parents, knowledge of the Chinese language is becoming very important because economic and global development is centered around China right now. She wants to use the language to achieve her potential.

For student C, interest in Chinese was initially born out of the university's language requirement. He was not interested in continuing to learn Spanish and was seeking a new challenge. As a result, he enrolled in Chinese and really liked it. He found it fun to learn Chinese and was enjoying his classes. He believes that learning Chinese will be very useful to his future. Student D expresses a similar opinion. For Student D, knowing another language is important, as that Americans are only interested in speaking English and are too "American-centric". Student D is interested in learning Chinese because it is a completely different system of writing, and like Student C, a new challenge.

The final participant, Student E, is a doctoral student researching Korean literature. He wants to learn Chinese because most Korean literature scholars learn Japanese as their second language, and he wanted to be unique. He noted that his field is primarily rooted in the comparison between Korean and Japanese literature, but he wants to compare Korean and Chinese literature. Therefore, he wants to learn Chinese so he can learn to read Chinese literature from the 20th century and can be in conversation with colleagues who are in Chinese studies. He explained that learning Chinese was just a requirement to him at first, but he now wants to keep learning and speaking Chinese. Moreover, he wants to enjoy and engage with Chinese culture.

All of the participants were very motivated to learn Chinese in this course. They shared several explanations for their motivation. These ranged from past language learning experiences, to family influence, to personal interest and academic pursuits. Their varied motivations led to a shared objective: they all aim to elevate their written complexities and deepen their understanding of China-related social topics. This is important to highlight, as motivation is often overshadowed by the difficulty of learning Chinese. Motivation is also important to note, as it is a vital factor in helping students navigate DB assignments.

Findings

The data for this study was collected at the end of the Chinese 302 class. During this time, I conducted a semi-structured interview with each participant. Each interview was about one hour long. One face-to-face interview was conducted, and the other four interviews were done through Zoom due to the COVID-19 pandemic and the Stay at Home Order. After the interviews, I also followed up with a few of the participants via emails.

Below, I will present the data in two ways. First, is the descriptive data from DB post analysis that demonstrates the written complexities of each post. Here, I will show how I analyzed the three aspects of written complexities by taking students' posts as examples. Then I will present the descriptive data per participant to show the strengths and weaknesses in each student's posts. Analyzing and presenting the descriptive data in this way helped me to develop additional follow-up questions during the interview. Further, this allowed me to explore the participant's experiences and how they navigated the DB space based on their performance. The second part of this chapter will present the data from the interview questions in a thematic way using the three research questions as anchors. Consequently, I will transition from individual data analysis to thematic analysis in the second section of my findings.

Written Complexity Analysis

I used the rubrics discussed in Chapter Three to evaluate the written complexities of each post. The purpose of this analysis was to describe the learning development of participants' written complexities, not in comparison to one another, but on an individual basis. To analyze the data, I saved all participants' post from DB and analyzed the written complexities from three aspects: propositional complexity, accuracy and lexical sophistication. Promotional complexity

was measured by dividing idea units by the total characters number. Accuracy was measured by dividing error numbers by the total characters number. Lexical sophistication was measured by dividing advanced words number by the total characters number. Below I will use some of the prompts to demonstrate my assessing process. Please see Appendix D for the full list of DB assignment prompts.

Student A's level of propositional complexity was above average among the participants. In one particular discussion board assignment, Student A had 9 idea units which contained 335 characters. Therefore, the propositional complexity of this post was calculated by dividing 9 by 335 which was 0.027. The prompt of this DB assignment was:

In your opinion, what are the same or different requirements of people at different ages when looking for their partners? For example, appearance, inner beauty, age, educational level, family background, job, fame, wealth, etc. Please express your opinion.

Her original post is pasted below.

要是我们想讨论理想的爱情，那不同年龄段的人找对象的时候只会在乎性格合适的人，然后会无条件地珍惜那个人。不过，这种看法太不现实了。有些人说有了爱情就有了一切，但是这毕竟只是一个幻想。随着社会和经济发展，年轻人、中年人和老年人的爱情困扰都受到了社会期待和经济压力的影响。年轻人的爱确实有点儿天真而激烈，没那么多要求，但是有些年轻人却为了钱会跟有前途或者年龄大的“傍大款”在一起。中年人会受到家人和社会的压力，特别是女性需求嫁一个有名利和财富的人。老

年人可能会在乎对象的内在美，想跟陪伴平平安安地过剩下的日子，但是如果他们是为了社会期待才结婚的话，而且不是真正的爱彼此，那他们也会感觉很苦恼。虽然我的看法有点儿悲观，但是从现代的角度来说，我觉得这还是比“情比金坚”的看法更切实。

Translation with idea unit marks: 1. If we would like to discuss ideal love, then people in different age groups would only care about whose personality is compatible and cherish the right one unconditionally. However, this idea is too unrealistic. 2. Some people say that they have everything when they have love, this is just an illusion. 3. Along with the societal and economic development, the love concerns of young people, middle-aged people and senior people have been affected by the societal expectations and financial pressure. 4. Young people's love is indeed a little naïve and fierce without too many requirements. 5. But some young people would choose to find a powerful or wealthy “sugar daddy” for the interest of money. 6. Middle-aged people would face the pressure from family and society, especially female needs to marry someone who has fame and wealth. 7. Senior people would care about inner beauty of a marriage partner, accompany each other and spend the rest of life peacefully. 8. But they would feel tormented if they choose to marry for societal expectation instead of true love. 9. Although my opinion is a little pessimistic, I still think it is more practical than “love solid than gold” from modern perspective.

In contrast, I will use an example from student D that was in response to the same prompt to demonstrate what lower propositional complexity looks like. In Student D's response, there were

6 idea units which contained 307 characters. Therefore, the propositional complexity of this post was calculated by dividing 6 by 307 which was 0.02. The response was:

我觉得找爱情的时候，人们的年龄没有太大的影响。凡是人都想在恋爱，有一个人他们可以无条件的珍惜。我觉得虽然爱情在不同的年龄可能有不同的感觉（比如说，年轻的时候，爱情还新所以可能有极端的感受）但是人的条件大多不会变了。几乎每个人都第一看一个人的外表因为那终究是人性，但是见面一个人以后，性格真重要。要是你可以跟一个人好好玩儿，信任他们，这都是好的东西，会有一个长久的爱情。我觉得要是你的条件变了，就是由于现实的原因。长大以后，到神与年龄，人也得开始考虑要是他们的男或者女朋友也想有孩子因为要是他们不同意，这是很大的问题。再说，虽然有的人不太在乎他们的爱人有没有钱，有的人觉得财富比较重要因为有钱的人一定可以支持一个家。

Translation with idea unit marks: 1. I do not think there is too much influence of people's age when they are looking for love. Everyone wants to be in love and have someone to cherish unconditionally. 2. I think although love may have different feelings at different ages (i.e. love is still fresh so it might feel extreme when people are young), but people's conditions mostly will not change. 3. Almost everyone looks at people's appearance at the first sight because it is humanity anyway, but personality is truly importance when you meet someone. 4. If you can hang out with one person and trust them, these are good stuff, will have a long-lasting love. 5. I

think if you changed your conditions, it must be because of the reality. When you grow up and reach childbearing age, people have to start to consider if their partners want to have children and it will be a big problem if they do not want to. 6. Additionally, although someone does not care if their lovers have money or not, someone thinks fortune is important because rich people definitely can support a family.

One of Student E's posts had higher lexical sophistication than the other participants. In this particular post, there were 17 advanced vocabulary words; additionally, the post contained 212 characters. Therefore, the propositional complexity was calculated by dividing 17 by 212 which was 0.08. The prompt of this DB assignment was:

Some people think that marihuana is a drug, but not cigarettes and alcohol. On the contrary, some people think cigarettes and alcohol are even more harmful compared to marihuana. Which side do you agree with and why? Please raise examples to illustrate your opinion.

Below is his original post with highlighted vocabulary words based on the HSK Level 5 vocabulary list:

我覺得香烟和酒肯定是毒品。染上煙癮和酒癮的人數比染上毒癮的人數多得多。在美國嗜酒者 (alcoholic)的數目達到了總人口的百分之十三，染上煙癮的人數達到總人口的百分之十四。在二十世紀的歷史上，大麻就是非法的毒品，持有大麻和販賣大麻的人有罪，在法庭被判好幾年徒刑。我覺得很多人把大麻和許多嚴重的罪聯繫在一起，比如：敲詐、通姦、暗殺、貪污、賣淫等等。老實說，雖然有的地方合法化大麻，但因為大麻比酒或者香烟更貴，所以我覺得大麻還是沒有酒和香烟那麼危險。

I translated the post and highlighted advanced vocabulary in English as well. The translation is below.

I think cigarettes and alcohol are definitely **hard drugs**. People who are **addicted to** (considered as two words in Chinese) cigarettes and alcohol are much more than people who are addicted to drugs. In the U.S. the **number** of alcoholic has **reached** 13% of the total population, and 14% for people who are addicted to cigarettes. In the history of 20th century, marijuana was **illegal** drug and people who **possessed** or **trafficked** marijuana would be considered guilty and **sentenced** a couple of years in **prison** in the **court**. I think many people link marijuana with serious crimes, such as **blackmail**, **adultery**, **assassination**, **corruption**, **prostitution**, etc. To be honest, although some places have **legalized** marijuana, I do not think marijuana is as dangerous as cigarette and alcohol because marijuana is more expensive.

In terms of lower lexical sophistication, I will use student C's post to a different prompt to make contrast. There were 7 advanced vocabulary in total in his post which contained 193 characters. Therefore the lexical sophistication of this post was calculated by dividing 7 by 193 which was 0.04. The prompt was:

We often see the promotion of “being thin is being pretty” on the media. Do you agree with this opinion? In your viewpoints, how did this aesthetics originate from? How does this concept influence our society?

Below is his original post with highlighted advanced vocabulary words.

我完全不同意这个看法。我觉得这个看法出现是因为人们原来觉得瘦等于健康。不

过，这不是真的。即使你是一个很瘦的人，你也可能身体不好。无论有哪种身体，人

们一概都得吃很多蔬菜和蛋白质，要不然你的血压和血脂都会很快地增加。现在，恐怕这个看法会让一些健康的人忌吃一些甜点。另外，恐怕这个看法会让很瘦的人相信他们不需要严格饮食。实际上，大家应该选用很健康的原料，可是他们也不应该从来不吃自己最喜欢的菜。

Here is the translation with highlighted advanced level vocabulary words in English: I completely do not agree with this opinion. I think this opinion emerged because people used to think that thin equals to health. However, this is not true. Even though you are a skinny person, you could be unhealthy. No matter what type of body, people have to eat a lot of vegetables and protein without exception, otherwise your blood pressure and blood lipids will increase rapidly. Now, I am afraid this opinion will make some healthy people avoid eating dessert. Additionally, I am afraid this opinion will make skinny people believe that they do not need strict diet. Actually, people should choose healthy ingredients, but they should not never eating their favorite dishes.

As to the accuracy aspect, I counted the mistakes in each DB post and divided the number by the total characters number. The error rate could be as low as 2 errors out of 244 characters which presented a high accuracy or as high as 10 errors in the writing of 257 characters which showed a lower accuracy. Below is Student A' example which has 2 errors highlighted. The prompt is about marijuana, alcohol and cigarettes.

我觉得大麻没有香烟和酒那么伤害人体。从科学角度来说，吸大麻不会很容易让人染上毒瘾，而且多数吸大麻的人一次只会吸少量的大麻。再说，大麻也有医疗用途，比

如说减轻头痛。老实说，香烟和酒比大麻更严重，因为很多人染上烟瘾或者酒瘾之后，烟瘾或者酒瘾发作的时候，就会不顾一切地抽烟或者喝酒，连自己的健康和家庭都完全不理。有些人喝了太多酒以后，甚至会出车祸、殴打别人或者虐待他们的家人，故意地或者不知不觉地犯罪。可是，由于香烟和酒在我们社会的营销，还有社会对大麻的诋毁，很多人还是觉得大麻比香烟和酒更有害。

Here is the translation with errors highlighted: I do not think marijuana hurts human body as much as cigarettes and alcohol. From the scientific perspective speaking, smoking marijuana does not easily get addicted, and most smokers only consume very little amount every time. Additionally, marijuana has medical usage, such as alleviating headache. Honestly, cigarettes and alcohol are more serious than marijuana because after many people got addicted, when they have cravings, they would smoke or drink regardless, even completely pay no attention to their own health and family. Someone even has car accidents, beat other people or abuse their family, purposely or unconsciously commit crime. However, because of the marketing of cigarettes and alcohol in our society and defame of marijuana, many people still think marijuana is more harmful than cigarettes and alcohol.

Below is an example from student D which has 10 errors in 257 characters. The prompt is:

The government recently initiated a program that can assist the homeless. The homeless can apply for this financial aid. Please write an application letter as a homeless person. First, narrate your life story and your life difficulties, and then explain your purpose of applying for this aid.

The original post is pasted below with errors highlighted.

我想申请这个笔经费项目。我以前有不错的工作，能支持我的家人，但是我们熬出头，去年沦落无家可归的地步。我的儿子去年生病了，所以我得夜以继日照顾他。但是，我得花很多时间跟他一起，不能去工作，我竟被解雇了。因为我的孩子生病了，我得买药，也得付医生费。但是，我没有收入所以我们失败了。我们先卖我们的东西，甚至卖我们的房子和车，但是我们现在倾家荡产，什么都没有。我没有办法。我的家现在住在地铁站。我试试一边照顾我的儿子，一边打零工赚一点儿钱。要是政府可以帮帮我们，我们可能振作，重新开始。我们会免得继续在这种生活。请救命我们！

Here is the translation with errors highlighted: I would like to apply for this funding program. I used to have a nice job which can support my family, but we had gone through all types of ordeal, and come down to homeless situation. My son got sick last year, so I had to take care of him day and night. But I had to spend a lot of time with him and could not go to work, I was fired. Because my child was sick, I had to buy medicine and pay for the medical bills. But I do not have income so we failed. We decided to sell our stuff first, even sold our house and car, but now we are broke and have nothing. I do not know what to do. My family lives in metro station now. I am trying to take care of my son and do part-time job to make some

money. If the government could help us, we may put ourselves together and start over. We will avoid continue living in this way. Please help save us.

Based on the examples above, we can see how each DB post was assessed from the three aspects of written complexities. Furthermore, the level of the three aspects fluctuated not only among participants, but also among the posts of the same participants. Therefore, it is important to depict the written complexity trajectories of each participant and explore their experience during the interview step. Here I am going to show one complete example of analyzing one post from participant A. The translation of her post is on page 77. I marked the idea units in numbers and there are 6 idea units in total. There are 14 advanced level vocabulary words underlined and 2 errors highlighted below.

1 我觉得大麻没有香烟和酒那么伤害人体。2 从科学角度来说，吸大麻不会很容易让人染上毒瘾，而且多数吸大麻的人一次只会吸少量的大麻。3 再说，大麻也有医疗用途，比如说减轻头痛。4 老实说，香烟和酒比大麻更严重，因为很多人染上烟瘾或者酒瘾之后，烟瘾或者酒瘾发作的时候，就会不顾一切地抽烟或者喝酒，连自己的健康和家庭都完全不理。5 有些人喝了太多酒以后，甚至会出车祸、殴打别人或者虐待他们的家人，故意地或者不知不觉地犯罪。6 可是，由于香烟和酒在我们社会的营销，还有社会对大麻的诋毁，很多人还是觉得大麻比香烟和酒更有害。

The total characters number of this post is 244. Therefore I divided the number of idea units, advanced words and errors by the total characters number in order to calculate the three aspects of written complexities. Below is the final data to document in participant A's chart:

Total characters: 244

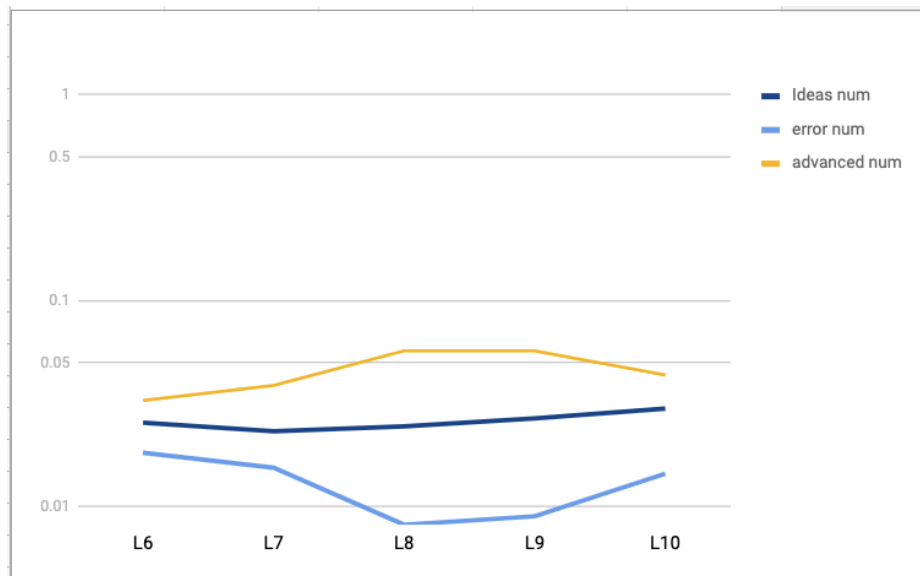
Propositional complexity: $6/244=0.025$

Lexical sophistication: $14/244=0.057$

Accuracy: $2/244=0.008$

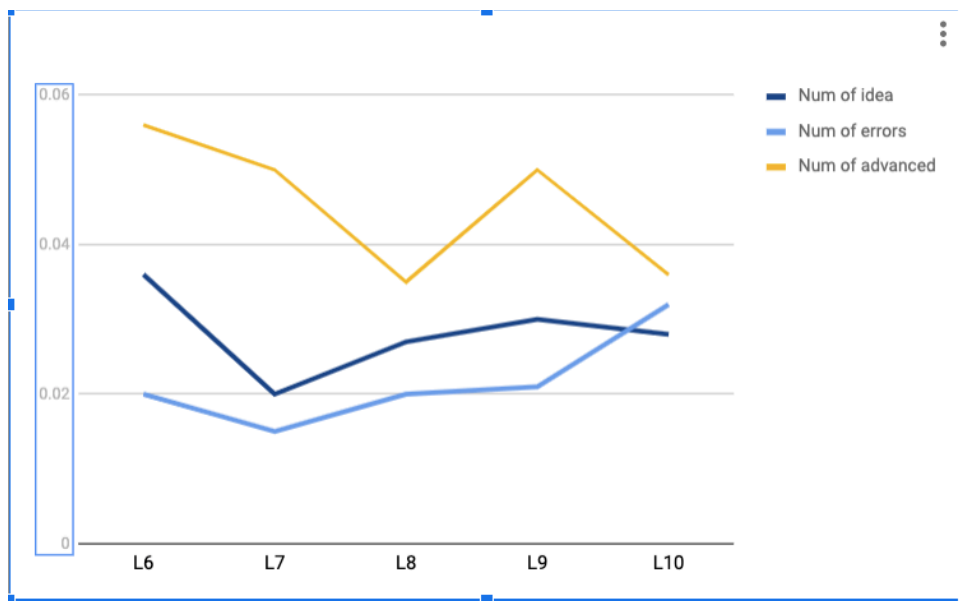
In this way, I obtained five sets of data from participant A's five DB posts. Based on the five sets of data, I created one chart for each participant showing the written complexity trajectories. You will notice three lines in these charts, the one in dark blue shows propositional complexity, the one in light blue shows accuracy, and the one in yellow shows lexical sophistication. The left side column showing the ratio and the ratio range was adjusted in each chart so that the changes can be enlarged to show.

Figure 4. 1 Student A's Written Complexity Trajectories



The written complexities of student A’s posts were stable. First, pertaining propositional complexity(number of idea units), her posts contained abundant ideas in her elaboration. During the interview, I specifically asked her how she structured and expanded her ideas. Second, the accuracy (number of error) was above average but the error number was high in Lesson 6 and decreased in Lesson 8 and Lesson 9. Therefore, I specially asked her how she felt about the errors and the fluctuations in Lesson 6, 8 and 9 during the interview. Third, the overall lexical sophistication (number of advanced words) was very impressive and I found that her posts had higher advanced word rate but lower error rate in Lesson 8 and 9. Therefore, I asked her to share specific experience when she wrote posts for these two lessons in the interview.

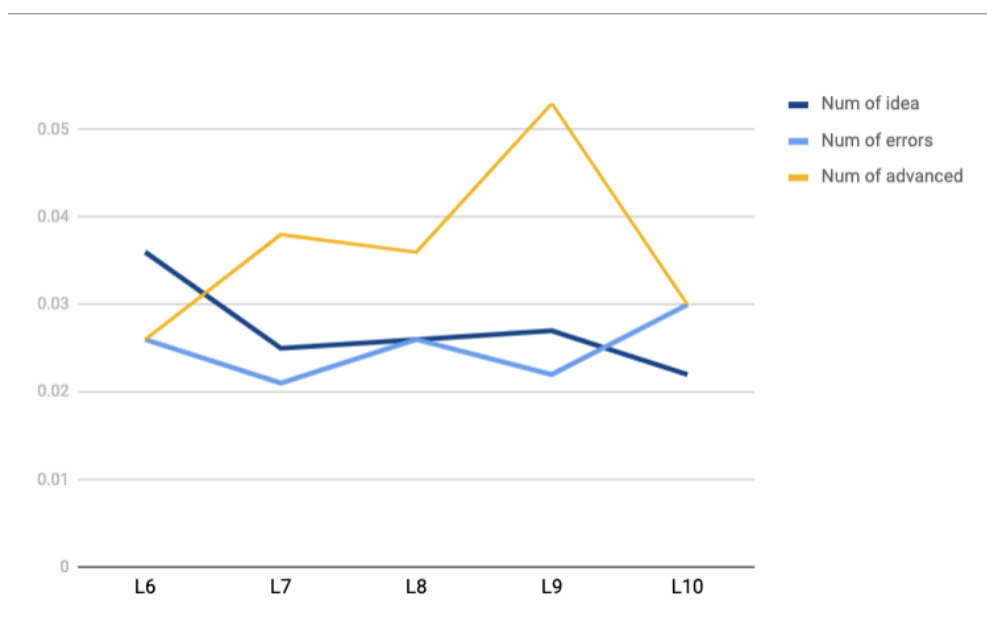
Figure 4. 2 Student B’s Written Complexity Trajectories



The written complexities of student B’s posts were fluctuant. The propositional complexity (number of idea units) was high in Lesson 6’s post but dropped in Lesson 7’s. During the interview, I specifically asked her how she felt about these changes. Second, the overall accuracy (number of errors) was good and the error rate rose in Lesson 8 and reached a peak in Lesson 10.

Therefore, I specially asked her how she felt about the errors and the fluctuations in Lesson 8, 9 and 10 during the interview. Third, the lexical sophistication line (number of advanced words) was very fluctuant. It decreased dramatically in Lesson 8, increased in Lesson 9, and dropped again in Lesson 10. Therefore, I asked her to share experience when she wrote posts for these three lessons.

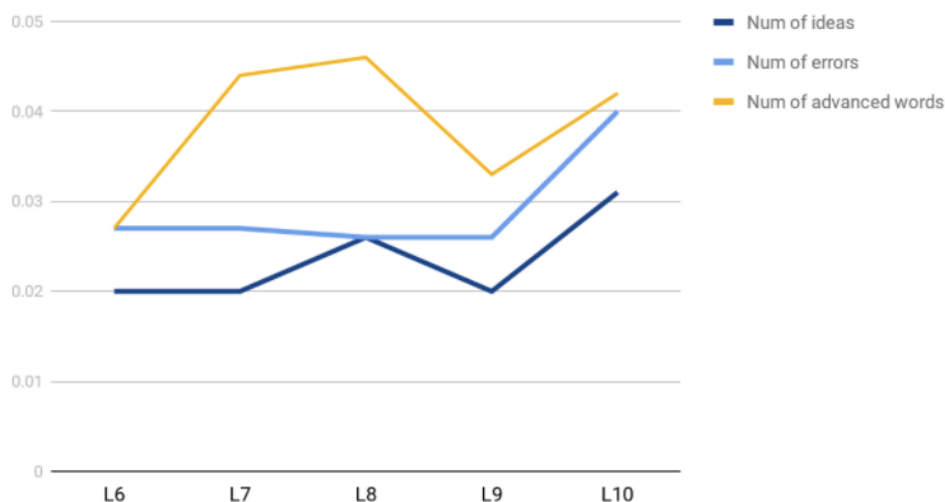
Figure 4.3 Student C's Written Complexity Trajectories



There were two lines in the written complexities of student C's posts relatively stable and one line more fluctuant. The propositional complexity (number of idea units) was highest in Lesson 6 but decreased in the other posts. During the interview, I specifically asked him how he felt about and explained these changes. Second, the overall accuracy (number of error) was good and stable. The error rate was higher in Lesson 6, 8 and 10, and lower in Lesson 7 and 9. Therefore, I asked him how he felt about the fluctuations during the interview. Third, the overall lexical sophistication line (number of advanced words) was very fluctuant. There was a huge

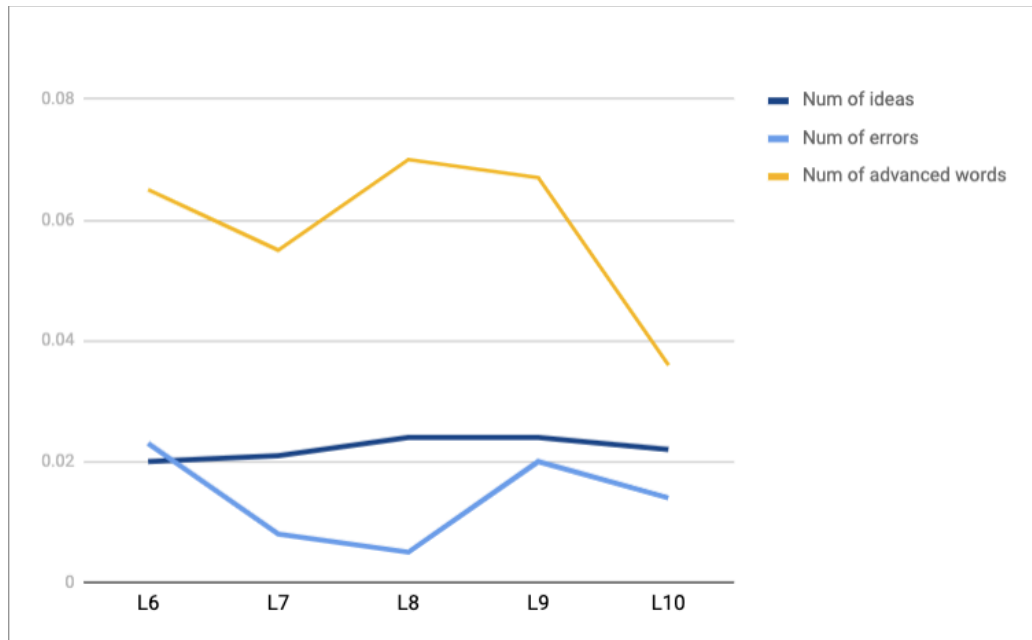
peak in Lesson 9 and dropped in Lesson 10. Therefore, I asked him about these fluctuations during the interview.

Figure 4. 4 Student D's Written Complexity Trajectories



There were two lines in participant D's written complexities chart showing similar pattern. The propositional complexity line (number of idea units) and accuracy line (number of error) both dropped a little in Lesson 9 and went up in Lesson 10. During the interview, I asked her how she felt about this pattern and if there were any association between these two categories. The line of lexical sophistication (number of advanced words) showed dramatic changes. It went up in Lesson 7 and 8 and greatly dropped in Lesson 9 but rose again in Lesson 10. I asked her how she felt about these fluctuations and to share her experience in the interview.

Figure 4. 5 Student E's Written Complexity Trajectories



The propositional complexity line (number of idea units) was very stable in participant E's chart. I asked him how he managed incorporating plentiful information in his posts in the interview. Participant E's accuracy and lexical sophistication were very impressive. The error rate was low especially in Lesson 7 and 8. And the lexical sophistication (number of advanced words) was very high, especially in Lesson 6, 8 and 9 but dropped greatly in Lesson 10. I asked participant E to share his experience about maintaining low error rate and his feeling about the changes in lexical sophistication.

The data analysis worked as a guiding map for me to understand how the participants navigated the DB space during DB activities (i.e. how they maneuvered to overcome obstacles and challenges). I used this data as discussion points during semi-structured interviews to explore participants' experiences. Below I will present my findings from interviews in a thematic manner in order to answer my three research questions.

Research Question One

Question 1: What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB (Discussion Board) activities?

The participants were all presented with the first question pertaining to tools and strategies used while completing DB activities. Several different tools and strategies were mentioned by the participants. A recurring response was familiarity with the topic. Three students reported feeling more comfortable with completing the post if the topic was relevant to their personal life. The degree of familiarity also depended on how much content preparation they had received from class and the textbook prior to the post assignment. This was true for Participant E, C and D.

I think every discussion post kind of correlated with how comfortable I was with the lesson and how much support I had in class to extent. For L8, there was mention of drugs in it but limited to the words I could use because there were only like a certain amount of words that could be like tied to like drugs. For L7 music, (a lot of advanced words and little errors, idea units number is ok) I think a of good yeah mostly advanced which I use from the textbook that helped me a lot because the vocab in the textbook offer a lot more support (Participant E, interview, April 2020).

And then I think Lesson 9 (Love), I just found the actual textbook lesson fairly interesting. So I just think I liked that lesson more, I guess. And then I was able to incorporate things. I do not know the topic so much, but I think... just like bit of the

story that I found just pretty interesting. I was not prepared that this guy went to talk to a monk (Participant C, interview, April 2020).

To trace the advanced word usage and then ideas and each lesson is definitely related to how much reference material I am using (Participant D, interview, April 2020).

This sense of familiarity was lost during the role-play type task. Participant A felt the role-play activity was harder to compose because the task type required them to think from a perspective different than their own.

Sometimes it is a little bit trickier like there is a role play scenario that you have to be certain character and fill out with vocabulary. I have more trouble with those DB posts. I feel it is not that relevant to my life, so it is hard to compose (Participant A, interview, March 2020).

However, other participants found the role-play activity more creative and natural because a story was easier to compose. They all shared a belief that a benefit of this type of writing was that they learned to write from another's perspective, which is an important skill to grasp.

This one (post) was written in first person, but it's from like a perspective, that's not your so like I'm writing in the first person. But I'm not myself which is a bit of a different mindset. So I tried to, like the other one where I was making cohesive story but as to prove a point. This one's just like a story. That's like a pretty much the same mapped out style, but the mindset behind it is different (Participant B, interview, March 2020).

I felt like maybe the poverty one [role-play task] is most interesting. I guess just because it made you write in a completely different mindset like as the topic as a whole. It helped me understand more (Participant E, interview, April 2020).

We had one discussion board posts, where it was like, you pretend you're like somebody who needs help from the government. So, I think it was helpful. Just because like usually that's not a frame of mind, I would try to be writing from...another person's mindset. It's helpful to use words differently or just write differently than you normally would, which I think is a good skill (Participant D, interview, April 2020).

In conclusion, all of the participants found familiarity to be an important theme, and noted that familiarity correlated with their comfort in writing the posts. This theme connects to the tenet of Zone of Proximal Development (ZPD) in Vygotsky's sociocultural theory. As mentioned in Chapter Two, ZPD refers to "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). The definition above mentions that there are two important levels in ZPD: the actual developmental level and the potential developmental level. From the data presented above, the participants felt more comfortable writing about the topics they were familiar with because these assignments were at their actual developmental level and they could be completed independently. As to the topics that participants were not familiar with, they reported using a strategy like conducting online research for background knowledge, or utilizing online tools to look up new vocabulary words, or utilizing resources to get help from native speakers, etc. During the process of utilizing tools, resources and strategies, participants were

elevating their level from the actual developmental level to the potential developmental level as the latter one is based on the language product that the learner created with help (Ohta, 2001). The following three sections depict the tools, resources and strategies as mediators participants utilized during the completion of DB assignments.

Tools

All participants shared that they used online tools such as Google Translate and Pleco (an online English Chinese dictionary application) for assistance with their writing. They used these tools to look up words they did not know, and also to check if their Chinese writing matched their ideas in English.

If there is a specific word that I did not know, I will use this app Pleco on my phone to help me (Participant A, interview, March 2020).

Then sometimes when I'm writing a certain phrase or vocab or something that I will not know how to use, so I might look that up on Google Translate. And then generally at the end just to make sure it's like actually just somewhat cohesive like properly readable. Just put it back into Google Translate and had to go to English and see that I'm not writing like a wrong character somewhere that I missed as a checkup.) Yeah, I'm just gonna check. Because then sometimes I find like oh I wrote in pinyin and then I press like fine but then it turns out like one of the characters have the same pinyin but is a different word (Participant A, interview, March 2020).

Later in the response I talked about “editing the photos” and I did not know how to say that. I looked that one up online (Participant B, interview, March 2020).

But if it was a word I was not sure what context to use, I would probably... I'm not sure exactly which like translator online...but some of them have options where you can see how the word is using a sentence, and I would do that (Participant B, interview, March 2020).

I type it all up in a Word document. And when I wanted to check it. I'd like copy paste over like a sentence or two and check with google translate (Participant C, interview, April 2020).

I typed out the entire thing I wrote before using Google translate these. There'd be like sections, I'd be like, pretty sure, did not make sense. And I go back and use Google Translate to be like, all right, what is this saying. And then I go back and try to fix the sentence. Then use Google Translate to check again to make sure it's starting to make more sense (Participant D, interview, April 2020).

Ah, I'll do like reverse translation in Google. I will write my sentence in Chinese, and if it's something that I do not know how to say already Google and if it looks really weird in English. Then I'll try to fix it. And then if I have enough time. I'll double check using the Google search and see (You searched the whole Chinese sentence?) Yeah, looks like parts of it to see if people ever say it (Participant E, interview, April 2020).

Utilizing these online tools, participants were able to not only articulate their opinion but also ensure the accuracy level of the language. With the assistance of these tools, participants attempted to lower the error rate and improve their written complexity. Using these tools is a clear connection to Peñuelas' (2012) compensation strategy. According to Pañuelas (2012), compensation strategy bridges the gap between intended ideas and language deficits. The participants bridged their gap when they utilized the online tools to look up words. Additionally, the participants also used Pañuelas' (2012) metacognitive strategy. According to the author, this strategy helps to facilitate writing quality. This is evident when participants reported checking if their Chinese writing matched English ideas.

The tools, Google translate and Pleco described above also connect to the tenet of mediation in Vygotsky's sociocultural theory. Mediation refers to the intentional interjection of items between environment and self in order to modify and gain specific benefits. According to Kozulin (2003), there are two types of mediations: mediation through another human being and mediation in a form of organized learning activity which is a symbolic mediator. The tools used by the participants served as symbolic mediators in the development process of learners' written complexities. Through deliberate usage of this symbolic mediator, learners explored content in order to expand understanding, learn language and use language in context. In addition to the tools, participants also utilized resources to develop written complexities on DB.

Resources

There were two main resources that participants reported using to compose posts: class resources and out-of-class resources. Class resources refer to resources that are accessible in class; such as the course textbooks and in-class readings. Out-of-class resources refer to

resources that are accessible outside of class; including online dictionaries and websites.

Resources will be described in greater detail below.

Class Resources. The most common resource mentioned by all participants was the course textbook. DB assignments were related to textbook topics, and students were required to use 10 vocabulary words from the text to compose the posts. Therefore, it was natural for students to reference the vocabulary words and grammar points from the textbook to organize their writing. For Participant B, C and E, having the textbook opened while working on the DB posts was very important. According to Participant A, “in the process I had my textbook open, and looked at the vocab list and grammar structures and see what I can fit in my response during the writing (Participant A, interview, March 2020).” Similarly, Participant C commented that he used the book as reference. According to Participant C, “I used the book to reference the grammar points in the book, in the text as well (Participant C, interview, April 2020).

Using the textbook as a resource also allowed students to imitate the writing from the book in their own discussions. According to Participant D, “I would use the textbook to get, like I guess, inspiration or sometime. Just pretty much the exact sentences to make sure (Participant D, interview, April 2020). When asked for clarification, she discussed how she used the book as a model for writing her own sentences in her posts.

Another in-class resource that was mentioned by participants was the practice of vocabulary and grammar in class discussions. Participants found these practices helpful because it allowed them to become familiar with the topics, grammar, and vocabulary before constructing their posts. In addition to grammar/vocabulary practice and in-class discussion, class activities sometimes included reading practice in which the participants had an opportunity to read articles

that discussed similar topics. Participants shared that they borrowed the words from the article read in class when they composed DB posts.

I think I might have been sort of relying more on sort of templates and answers that we discussed in class or in the dialogue (Participant D, interview, April 2020).

So that article really helps because the articles are usually much harder than the textbook readings with lot more complex words and structures... discussing every different age group so that discussion gave me any perspective on all the differences and I took the things that stood out the most to me from that article and use the words from the textbook...I think that a lot of people in the class would have incorporated ideas in the reading. The reading was before the discussion and it was pretty much the same topic (Participant C, interview, April 2020).

The class resources matches the Peñuelas' (2012) memory strategy. Memory strategy refers to retrieving information in order to produce written discourses. In this study, participants retrieved information from class textbook and in-class readings to compose posts. Additionally, the in-class resources also played the role of symbolic mediators in the development process of learners' written complexities. In addition to in-class resources, participants also obtained assistance out of class.

Out-of-Class Resources. For out-of-class resources, participants A, C, and D shared that they received support from native speakers, including friends and family members, or from an advanced level learner, such as a roommate.

I think another helpful thing is my roommate. She studies Chinese too. Sometimes I ask her for help, and she would help me too (Participant A, interview, March 2020).

And then I also have a friend from China who helped me a lot with the first quarter discussion posts. That have I'd write it and be like, hey, I, I know this is not right. Like how someone would actually say this. With the winter quarter discussion posts, I think she might have helped me on the very first one. Then after that I did them all by myself (Participant C, interview, April 2020).

My mom speaks a little mandarin. She mainly speaks Cantonese. so I would ask her for her help when I was not sure about which word to use if I was writing that post when she called in (Participant D, interview, April 2020).

According to Peñuelas (2012), learners adopted social strategy to improve writing by involving interaction with other people. This was evident in this study when participants reached out to native speakers or higher-level learners for help. Learners interacted with native speakers or higher-level learners by checking accuracy and asking for advice on language use. These behaviors contributed to their improvement of writing. This finding also connects to the tenet of mediation in Vygotsky's (1981) theory. Native speakers or higher-level learners as out-of-class resources served as human mediator. Learners reached out to native speakers or higher-level learners they knew purposely to obtain specific benefits which are to improve vocabulary use or to check accuracy. Through the interaction between the participants and native speakers or higher-level learners, participants learned advanced level expressions and correct ways to use language.

In sum, participants used a multitude of resources (the course textbook, in-class practice and readings, and assistance from native speakers) to write their DB posts. When I analyzed the participants posts, it became obvious that these resources helped students develop written

complexities in several ways. First, students used the resources to elaborate ideas. By utilizing these resources, participants were able to structure their opinion in paragraphs. Second, these resources helped participants to incorporate advanced vocabulary in their posts. Whether the vocabulary words came from in-class or out-of-class resources, these resources helped participants to develop sophisticated writing. Finally, with the help from native speakers and advanced level learner, participants were able to ask these resources to check their writing and therefore improve accuracy and language production.

Strategies

Besides tools and resources, participants also reported using several strategies to ensure quality DB posts. Below I highlight the strategies mentioned by the participants in this study. In the interviews, participants talked about using five strategies that are common in writing. The strategies mentioned by participants were: outlining, incorporating vocabulary words, conducting online research, drawing upon personal experiences, and asking insightful questions.

Outlining. Participants noted planning out posts before writing. Initially outlines were prepared in English, and as the semester went on, as they felt more confident in the language, they switched to outlining in Chinese.

Because whenever there is a DB activity, I will open up a google doc, and kind of plan out my response and then write it out (Participant A, interview, March 2020).

I outlined what I want to say in English first then I go through what I want to say and start to write in Chinese in google doc (Participant B, interview, March 2020).

So for the first post I structured by I thought about my response in English first, I think this is different because in the future I think after this for other discussion I would just write in Chinese and come up with ideas along the way (Participant C, interview, April 2020).

This strategy provided students with an opportunity to organize their writing and their thoughts. As it facilitates writing quality, this strategy matches metacognitive strategy in Peñuelas' (2012) study. Additionally, this strategy connects to the tenet of mediation in Vygotsky's (1981) theory as participants deliberately adopted this strategy to gain specific benefits. The specific benefit here refers to composing a better structured writing. Therefore, outlining is considered as one technique of mediation (Kozilun, 2003). Outlining also helped students to focus on adding additional requirements for the assignment such as incorporating vocabulary words.

Incorporating Vocabulary Words. The DB assignments required students to use at least 10 vocabulary words in the post from recently learned chapter vocabulary. Because of this, many of the participants created a careful vocabulary list, mapped out words to use in their outlines and found different ways to incorporate all the words.

Usually I'd kind of map out the words I wanted to use. So I'd read that and be like, all right, which of the vocab words would be easy words to fit in here (Participant D, interview, April 2020).

So I'd write it out and then try to use as many vocab words as possible. And then when I felt like I was done writing or I had completed my thought I would stop and then I'd go

and count up how many vocab words I actually used. And there usually be two or three short, so then I'll rework a sentence or two (Participant E, interview, April 2020).

Most of the part, I just look at the vocab words and keep counting how many words I am using. So sometimes in my response it is hard, and my response is really long. I cannot find vocab words to fit in my response, but I still want to share my ideas. So I will find a way to put extra words in there (Participant A, interview, March 2020).

I think I just tried to incorporate more of the vocabulary words from the textbook because those we practice at length, so we were all pretty comfortable with those. And then if I did not meet, I go back and put it back in, or just like write up something at the end, like an extra sentence or two that would fit it (Participant B, interview, March 2020).

Using the strategy of creating lists, mapping words, and finding ways to incorporate vocabulary forced students to expand their writing. Additionally, the vocabulary requirement forced participants to edit in order to incorporate the vocabulary words into their writing.

I'd like to try to switch a sentence around, just so I could use those words which are helpful at times and think of different ways to write sentences (Participant C, interview, April 2020).

Incorporating vocabulary words matches the cognitive strategy (Peñuelas, 2012). The cognitive strategy is a behavior of understanding and producing written discourses and there are three types of cognitive strategy: rehearsal, elaboration and organization (Peñuelas, 2012).

Participants reported adding extra sentences or revising their writing to incorporate more advanced vocabulary. These behaviors matched the description in Peñuelas' (2012) survey: "I reformulate the linguistic expression " and "I move sentences around in an attempt to organize my writing". This strategy is also considered a technique of symbolic mediation (Kozulin, 2003). Participants deliberately found ways to incorporate vocabulary words so that their writing not only fulfilled the requirements but also became more elaborated and organized.

Conducting Online Research. Some of the DB assignments included topics that required background knowledge of a given issue; such as the impact of beauty standards, and the benefits and disadvantages of marijuana legalization. Participants with no prior knowledge of these topics shared that they conducted online research in English to acquire the necessary information.

I did a little bit outside research about the benefits and disadvantages of marijuana. What the textbook discusses was interesting but limited to the conversation happened in the text. I want to make sure I have other background knowledge so I could form my opinion on it. Try to see the general idea of the article, if I agree with them, I will include in my response. Even if I disagree with it, I might include by some people say this but I believe this. I want to make sure that [my opinion] was backed up by some source (Participant A, interview, March 2020).

For this one I actually did some research into the topic in English first. I was not that familiar with the topic personally. So I found a lot of evidence assume that alcohol is more dangerous. (So, did this research change your original idea or expand your understanding of the topic?) Yeah cuz before I always thought marijuana was worse

than alcohol and then I talked about like that. I said that like a lot of people think alcohol is safer and more acceptable because it's legal and a lot of more people drink. So I talked about the misconception that I had before. I also incorporated the new ideas I learned from the research (Participant B, interview, March 2020).

Oh yeah, that one required research...I kind of know both sides of the argument ...but is there any other benefits that I'm not thinking of right now I just googled online (Participant C, interview, April 2020).

Participants utilized online articles to compose their posts when they found the topic interesting. They chose to either incorporate vocabulary words into the content of the articles, or to cite the article as supplementary perspective.

Because the questions are also very open ended. I found a lot of times if it's a topic that I like reading it or if it's a topic I'm interested in, then I can use the internet search for articles to reference and then I'll need to apply the grammar points into the article like what the article say. I remember reading some articles for that one and the music one also (Participant E, interview, April 2020).

I went to a website. And so I tried to summarize the information that was on the website. (Seems that you like citing some argument or research first and then you express your own opinion.) So I wanted to know where the idea came from, and I searched on the science article about the history of body image. And then I guess that I must have used what I read (Participant E, interview, April 2020).

Conducting background research allowed participants to gather more information in order to write their post. This matches memory strategy (Peñuelas, 2012) since students had to purposefully retrieve information in order to complete their writing. Additionally, conducting background research is one of the techniques of mediation. As a mediation tool, the participants purposefully completed research in order to obtain a comprehensive understanding of the topic and then be able to compose their DB post. In addition to conducting background research, students also drew on personal experience to compose posts.

Drawing upon Personal Experience. Participants reported that composition was easier when topics related to their personal experience. Participants found that their life stories provided more authentic and detailed narratives. For some topics, participants considered their responses outside of class. Participants felt more confident when they shared their personal experiences because they did not need to rely on external resources.

For me, it is easier when this lesson is similar to my life. That's why I wrote about a student at my age and unfortunately experienced something that cost her in such situation (Participant A, interview, March 2020).

I tried to make a statement that I think this has a lot of like different words than like what the chapter was centered around. The chapter helps me but I think I also had to draw from personal experience (Participant B, interview, March 2020).

It was like when I was younger I always listen to rock music because my dad listen to rock music, but then like as I started growing up I found other kinds of stuff. And then we developed it, and then today. I think I definitely focused on trying to make like a

more cohesive narrative, just because it was the story aspect of it (Participant C, interview, April 2020).

I think that was an actual topic I thought about a lot outside of class anyways. So I think I had more of an understanding of what I wanted to write there. So maybe that's why I was able to use. So it did not take me as long to like compose what I wanted to write. So I could maybe spend more time on the grammar, some of the other vocab to make it more complete, I guess. And then add more ideas and some of the other ones (Participant A, interview, March 2020).

Yeah, I guess that one reflect. I had more of a sense of personal reflection than the previous one, because I was talking about my own family (Participant D, interview, April 2020).

Because I felt more confident about writing about this topic. (why did you feel more confident?) But it's like just because it's one of my personal interests. So felt like I did not have to rely on dictionary (Participant E, interview, April 2020).

This strategy is also a memory strategy as learners retrieved information from their own experience (Peñuelas, 2012). This personal connection gave participants an opportunity to develop their writing. The life stories enriched their writing by providing vivid examples to support their opinion. Bringing personal experience “increased student initiative and responsiveness, generated multiple perspectives on an issue, voicing of differences and status equalization” (Kern, 1995, p.470). This helps to construct a multitude of opinions on DB and hence create a learning community.

In addition, learners deliberately adopted this strategy to make their writing more detailed which was beneficial for their grade. As such, we can categorize this strategy a technique of symbolic mediation (Kozulin, 2003). Besides utilizing the four strategies (outlining, incorporating vocabulary words, conducting online research, drawing upon personal experience) participants also incorporated the technique of asking insightful questions as a source of assistance.

Strategies to Asking Insightful Question. One requirement of the DB assignments is to read at least three other classmates' posts and to ask insightful questions to their classmates. Insightful questions are not easy to compose as they need to be thought-provoking, or asking for clarification, or bringing in a counter argument. In the DB assignment, students not only had to form an idea and elaborate, but they also needed to ask insightful questions to elicit further response while incorporating advanced vocabulary. Participants shared different strategies used to help them develop insightful questions. One such strategy was focusing on certain content from a classmates' posts and asked questions specific to those points.

When I post questions for other students, I usually think about how I can process their idea and then include that in my response and then ask questions that are specific to what they say in the responses. Make sure it is a relevant question but not throwing a question out there (Participant A, interview, March 2020).

I think that question was long because I was referencing something he wrote, so I was summarizing then asking a question. but I think that was probably the more interesting

question of ..that unit because I'm sort of writing something specifically related to what he wrote (Participant D, interview, April 2020).

For others, this was an opportunity to ask for clarification. Some participants had difficulties understanding specific parts/ideas in the classmates' posts. As such, they responded with a summary and asked for clarification. This required for participants to expand on their ideas and to think from a different perspective.

Sometimes in my comment, if I did not understand particular idea. That will be the part that I summarize in my question and I will ask a question about that if I am not clear about that. Or if I want them to expand on their opinion, I will write them a question (Participant A, interview, March 2020).

If I could not like bring up a counter idea, I would point out something unique that they mentioned and say something like a follow up question and challenge them to think in some way. i.e. student A's post mentioned relatives' pressure on being skinny, I was not sure that was what she meant. So I asked for clarification. i.e. student C's post talked about people would be afraid of eating dessert. I asked is not it like a good thing (Participant B, interview, March 2020).

I'm trying to make them as explained what I thought they would be so like I try to find somethings in the post that maybe I could pick, Well, can you explain this slightly better or justify it, or just like looking at it from a different perspective. What would you think of this? (Participant D, interview, April 2020)

So in this case, I think the assumption was that if that happiness is related to ambition and then the more ambitious people are the more society will develop. Yeah, so I tried to challenge that by asking for clarification (Participant E, interview, April 2020).

Other participants brought up counter arguments in their questions and asked classmates how they would respond. This strategy was used to challenge classmates to think further.

Interestingly, participants found it easier and more interesting to compose comments opposed to classmates' posts. These all contributed to the development of propositional complexity for both parties.

I think like all of the classmates provided pretty good opinions but sometimes people are debating on the other side has a counterargument. i.e. marijuana has been like debated for so long so even though I might have agreed with my classmate there's always opposing side and something else to consider. it's now another challenge them to think (Participant A, interview, March 2020).

Generally just be something I'd read while they were writing and then in my head I'd pop up and be like, oh, I need to think of a counterexample or I'd have a question about what they wrote (So usually it's a little bit opposed to what they wrote?) Yeah, yeah. Most of the stuff I write was usually pretty opposed to it, just because it's I think it's easier to write questions that way (Participant B, interview, March 2020).

Um, well, that was not my own personal belief. It just provides a question to ask is just like this is different from what you say because I'm assuming they probably said it would have a good impact on society. Well, if you consider the other side. What would

you think? This goes against what you were saying. So what do you think? (Participant C, interview, April 2020)

Well, it's, it's just where it makes it more interesting if you are nitpicking. I mean, it does not mean I necessarily disagree with him or whatever but It also just makes it easier for them to respond to. Because then they would be like, oh, they just justify their own thoughts already that they have (Participant D, interview, April 2020).

The strategies learners adopted to ask insightful questions were considered social strategies (Peñuelas, 2012) as they seek to improve writing by involving interaction with other people. In this step, learners played the role of human mediators for each other during the interaction. Through interacting with each other, learners' understanding of the topic in the DB post was deepened and expanded.

The data presented above answers question one in this study: What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities? There are three aspects under the term written complexities in this study: propositional complexity, lexical sophistication and accuracy. From the analysis, we can see that the above description of tools, resources and strategies contributed to the development of the three aspects.

First, in terms of propositional complexity, participants utilized several tools, resources and strategies to elaborate their opinion. These included tools like Google Translate and Pleco, resources like class textbook and readings, strategy like outlining ideas. In addition, participants also utilized several resources and strategies to further develop the elaboration of opinion, such as conducting online research to expand their understanding of the discussion topics, drawing

upon personal experience to make the elaboration more detailed, and asking insightful questions which lead to development of propositional complexity.

Second, in terms of lexical sophistication, participants utilized several resources and strategies to incorporate advanced level vocabulary in their writing. The course textbook was the primary resource for participants to construct the list of advanced vocabulary words to use. Native speakers and advanced level learners also offered help in structuring advanced sentences. Furthermore, between expressing ideas and incorporating the required number of vocabulary words, participants tended to prioritize expressing ideas and then checked the number of advanced words. They used the vocabulary words to enrich their writing. The strategy of incorporating more vocabulary words in their writing helped them to develop lexical sophistication.

Third, in terms of accuracy, participants utilized a few tools and resources to minimize the rate of errors. They utilized tools like Google translate and Pleco to check the usage of unfamiliar words, and to determine whether or not the Chinese expression matched their ideas in English. They also utilized the help from native speakers or advanced level learners to check the accuracy of their writing. In conclusion, the data presented above demonstrated ways that participants utilized these tools, resources, and strategies to develop the three aspects of the written complexities.

Research Question Two

Question 2: In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?

As discussed at length in the previous chapters, writing is the most difficult communication skill to acquire. Writing in Chinese presents an added difficulty because of the limited class time and resources. The challenges exist not only in higher education but also K-12 Chinese and other world language classrooms. Out-of-class learning opportunities are necessary to supplement the limited in-class instruction time. There are various approaches to assisting world language learning outside of classroom.

These supplemental activities contribute to learners' language learning in certain ways, such as learners displaying control of self-determined learning which means learners can decide when and where to learn and what resources to utilize (Chan, 2016), and online discussion boards, which provide supportive learning spaces to world language learners in which learners feel more comfortable sharing opinions (Gao, 2007, 2009). Additionally, many studies suggest that the out-of-class language learning encourages students to strengthen their receptive skills (listening and reading skills) (Hyland, 2004; Manfred, 2012; Maros and Saad, 2016). The DB assignments in this study all served as supplemental spaces for students to further develop their language skills. Via the DB assignments, students were able to further develop their reading skills by reading classmates' posts and questions, as well as honing writing skills by writing the original posts and responding to classmates' questions.

The language objective of this third-year Chinese course is to reach the ACTFL Advanced-low level in both informal and formal settings. However, as described in the context of problem in Chapter One, learners often lack time to fully develop all four language domains (speaking, listening, reading and writing) because of limited class meeting time, especially opportunities to practice in a formal setting. The DB assignments provided students with an additional space to

develop their language. Participants shared that DB assignments provided opportunities to engage in reading and writing practices. These practices were in a formal setting as the DB assignments were centered around social topics.

DB posts are pretty good mix of in terms of formal and informal settings. For many prompts, you have to write kind of formal responses (Participant A, interview, March 2020).

In class learning it's a lot more dynamic and it's all oral but then here you have to like read and write so I think it is a kind of less preferable experience sometimes. but then now that I think about it, it's also very useful for me at least I want to be able to text my relatives from China in Chinese. I would need to be able to read and respond to them in Chinese so I guess practicing like that helps (Participant B, interview, March 2020).

According to many studies (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013), writing is the most difficult skill to acquire among the four domains and the class meeting time is limited to devote to writing. This finding confirmed that DB is able to supplement in-class limited time by providing formal writing opportunities with careful design of the DB assignments. Besides providing a space to further their language, DB assignments allowed participants to apply language learned in class and to benefit from their development, which is explored further below.

Provide Opportunities to Apply Learned Language from Class

Participants described in-class practice as an introduction to new grammar structures and vocabulary words. This introduction was followed by limited oral practices which were usually not enough for students to develop language proficiency. Therefore, participants considered DB assignments an opportunity to practice “real language use” on their own.

When we read the vocabulary list and textbook during class, that’s when we were introduced to the new ideas but we do not really know how to use them until you actually try and practice. On discussion board, we get to practice real language use (Participant A, interview, March 2020).

Because in class, we mostly reading textbook and talking. But it is different to actually try to use grammar structure and vocabulary on your own at home (Participant B, interview, March 2020).

This finding echoes previous studies (Ohashi, 2016; Orhon, 2018; Kocatepe, 2017) that there are various approaches and resources to support world language learning outside of classroom. As one approach, DB is able to provide opportunities for learners to apply learned language in a meaningful context. Because the DB assignments were arranged at the end of a lesson, participants felt prepared to apply the language learned after an entire week of in-class practice.

Although the prompts of the DB assignments were related to the textbook topics, they pushed students to use the language. In this way, students had opportunities to review and incorporate learned grammar structures and vocabulary words instead of less engaging activities that rely on

repetition. The opportunity of applying the content allowed students to internalize the material for the purpose of learning the language.

The discussion board question was usually posted at the end of a lesson so that's after we read the text in class and talked about the topic for an entire week so I think that after a whole week of like talking about it in class it was just a lot easier to answer the question on the discussion board because by then we were already familiar with the vocab words and the grammar structures (Participant C, interview, April 2020).

It just makes the learning experience more comprehensive because you can incorporate so many things you have learned (Participant A, interview, March 2020).

You get to use the language like the grammar, especially the topics you get to use in more applied situations...It also just helps me practice more because those structures are more important than the vocab words because they can be applied to so many different contexts so I think it is important to practice those (Participant D, interview, April 2020).

I guess it forces me to go back and look at the grammar points because it's like give you certain number vocab and grammar and I sort of just might tend to forget some of the ones I do not use as much. And if I have to incorporate more, I have to go and look for different ones. just reinforcing things that we have learned (Participant B, interview, March 2020).

Discussion board usually had questions that were like kind of related to the chapter but put a different spin on it. They were kind of related to each other but a very different theme. That helped us experiment with a new topic. We could apply that the way we could apply the words and grammar structures that we learned in the chapter to something different we can not just say the same things the textbooks (Participant E, interview, April 2020).

Participants also shared that the opportunities that DB assignments provided could not be found elsewhere. For example, the after-class workbook exercises focused more on memorization of grammar and vocabulary while DB assignments required students to form their own ideas and engage with the learning materials in a different way. This finding confirms that utilizing DB as a supplementary learning space doesn't guarantee learning to happen. Instead, it highlights that the design of the DB assignments is what leads to language learning. In other words, we must consider the design of DB assignments to encourage students to form opinion and interact with the learning environment. Below, I will share my design.

The posts in this study required students to complete four steps for each DB assignment: 1) compose your own post in response to the prompt; 2) read at least three classmates' posts; 3) ask insightful questions; 4) respond to peers' questions. The activity was designed in a scaffolded way so that the additional steps moved learners further in terms of developing written complexities. In Vygotsky's sociocultural theory, scaffolding is described as "the mediator's adjusting the complexity and maturity of the teaching interaction to facilitate the child's mastery of the task; providing support when necessary; and providing encouragement and prompts to the child to move ahead when ready" (Lidz, 1991, p. 80). Even though the instructor and students

were not present at a face-to-face setting, the scaffolding was constructed through the instructor's design of activities at a virtual learning setting. In addition, the scaffolded activities supported learners to utilize tools, resources and strategies to express their opinion on DB. Participants shared their feelings comparing DB assignments with other activities below:

I actually enjoyed doing the discussion board questions, more so than I enjoy doing the workbook or stuff. The workbook does well of reinforcing certain grammar patterns and vocab usage, but it's not like you're really thinking of answers. It is more that this is sentence structure and plug in something here. Whereas with the discussion board posts, there is a questions, then you kind of actually have to relate it to your own life a little bit and think how other people would think, and then formulate the whole thing on your own, which is just more exciting to me than just rolling down and rote memorization of certain grammar patterns (Participant C, interview, April 2020).

DB assignment makes you think what you want to say and how to incorporate what words we have learned in our responses. The workbook exercise...it's more like rote memorization, it's not exciting. It's like you're not actively thinking about how you think about a problem. So with the discussion posts, you have your choice of all the words and all the grammar patents. But ultimately, like how you answer the question is completely open to you. so I think that's something you do not really get too much in the rest of the class (Participant D, interview, April 2020).

I would say deep and I think, like I said before, it makes you engage in the material in a different way, than you're able to just from reading the textbook or just doing it in class.

There is one of the assignments was L10 where we wrote a story. That was really fun to do. And so in class there's no way that I could come up with a story. It is related to the topic in the text, poverty, but a different perspective (Participant E, interview, April 2020).

From the data above, we can see that carefully designed DB assignments provided opportunities for students to practice and develop written complexities. Participants compared the DB assignment to in-class discussion instead of take-home writing during the interviews. Even though the take-home writing has similar time allowance feature as DB, the interaction is the focus of DB assignment and drew participants' attention to compare with in-class discussion. In addition, from the data presented, several findings emerge: first, participants were able to revisit the social topics learned in class and to articulate their opinions on related discussion topics. The practice of forming opinions benefited the development of propositional complexity as learners' understanding of DB topics were expanded and deepened. Second, participants were able to incorporate vocabulary words and grammar points practiced in class in their DB writing. This practice contributed to the development of lexical sophistication as learners had chances to apply learned language in practice. Third, since students had practiced the vocabulary words and grammar points in class verbally, their errors had been corrected by the instructor before they wrote DB posts. Therefore, applying the learned language again on DB helped improve accuracy in written complexity. These three points provide connections to previous studies (Kern,1995; Hudson and Bruckman, 2002; St. John and Cash, 1995) that demonstrates how DB assignments contribute to positive learning outcomes. In the data presented, learners adopted various writing strategies to form opinion, to incorporate advanced vocabulary and to improve accuracy.

Removing Affective Filter

Krashen's (1982) affective filter hypothesis states that several affective variables play a facilitative, but non-causal, role in second language acquisition. Regarding the impact of discussion boards on anxiety, DB assignments help to remove the “affective filter” in Chinese language acquisition in a number of ways. First, DB provides extra processing time. This allows students to work on the writing assignment, or to read classmates’ posts, or to use outside tools, resources, and techniques without time constraint (Meskill & Anthony, 2005).

I think you get more time to write on the discussion board. I will work on it for at least 15 to 20 minutes. it is like more formalized and there's a lot of writing so I would think about it for a longer period of time and just going sentence by sentence really helped (Participant C, interview, April 2020).

So you only have like a like 30 seconds to think about it. But on discussion board you can take an hour however long it takes and like I said, I engage with the other students a lot more depth than I would in person (Participant E, interview, April 2020).

The finding above echoes the idea that anxiety plays an important role in language acquisition (Krashen, 1982). More processing time leads to lower anxiety which contributes to improving the quality of writing on DB. Additionally, participants reported that the extra time to construct their post helped make them feel more confident with their responses because they were less concerned about understanding the questions immediately, had more time to put together their thoughts, and had more time to check accuracy.

And I guess because I have more time to process it. I feel more comfortable writing things out because I do not have the worry of, like, oh, what if I did not understand the question fully or what if I do not know just I'm not phrasing this well. And if I'm reading on my own. I have time to go over check it. I can even like look up words I do not know (Participant A, interview, March 2020).

It seems like students express their ideas more freely...personally I mean probably just because of limitations in terms of actual ability but also there you have more time to put together your thoughts and then respond (Participant B, interview, March 2020).

These data presented helps us understand how extra processing time leads to lower anxiety which contributes to better language acquisition. As Kelm (1992) and Warschauer (1996) claimed, the “stop-the-clock” feature of DB allows learners to have sufficient time to process input, monitor and edit output. Second, participants expressed anxiety about speaking in front of the class because they had to provide the responses very quickly. Many of the participants described the experience in class as “being put on the spot”, which led to choppy oral responses. In contrast, DB allowed them time to think about the answer, to structure their opinion, and to polish their language, thereby lowering their anxiety.

DB assignments give you more time to get more comfortable with doing that than to if you just do it in class, like you're in front of the whole class and then maybe if you can not think of a word right on the spot. You just kind of rush through it and then try to get it done as soon as possible, whereas here. On the discussion board, it gives you time to actually think about if we were speaking in English, how would you answer those

questions and see related to Chinese so let you just think about more how it would be in real life if you're having the same conversation (Participant A, interview, March 2020).

I like the fact that DB activities are not face to face because in class we already have face to face interactions. I get very nervous speaking or doing things in Chinese in person so I would have more time to plan out my thoughts and write them and reply to my classmates (Participant B, interview, March 2020).

Because I have more time about it and I do not feel like rushed. When you're in on the discussion board you have time to like think through an answer and maybe like, do some use some more grammar, you would not normally try to use maybe you're not comfortable using it so on the discussion board you can do use that and then maybe go in more depth to an answer that you normally would not go more in depth into. Yes, to polish it and then add some stuff you normally would not. It is a way I would want to actually talk with all the explaining you get more chance to like explain your thoughts (Participant C, interview, April 2020).

It's different than when you're speaking in class because it is not as on the spot you have time to sort of like sit looked for everything. Try to think of like a more eloquent way of putting things rather than if like she asked me a question in class, I do not have as much time to sort of process and try to think of like the best response I could do. It sometimes ends up being a lot more choppy (Participant D, interview, April 2020).

The data presented helps us see how the limited processing time in class rushed participants to provide immediate responses, which increased anxiety and stifled the articulation of their

opinions. The extra processing time on DB greatly helped participants in the development of complex ideas, as well as improving the sophistication of their language, and lowering their error rate. The finding confirms Krashen's (1982) affective filter hypothesis even though learning happens at a virtual setting. According to Krashen (1982), there are a number of affective variables that play a role in language acquisition and anxiety is one of them. And lower anxiety contributes to language acquisition.

In addition, DB assignments were available to students for three days to complete three steps: compose posts, read at least three classmates' posts and leave questions, and respond to the questions under their own posts. Students could access to the assignment based on their own schedule. Participants shared their experience confirming the DB assignment flexibility.

I just do it when I had free time throughout the day and I knew I could like devote enough time to it to do it at least decently well (Participant C, interview, April 2020).

Generally, I just tried to work ahead of time because it's a content you can work ahead on and I just like getting things done earlier (Participant D, interview, April 2020).

I usually did not wait for three days to complete all the steps. I would comment when other people posted and respond when there were comments under mine. So sometimes it would only take two days (Participant E, interview, April 2020).

The finding above amplifies the claim that extra processing time lowers anxiety which contributes to language acquisition. Moreover, extra processing time offers flexibility for learners to complete the multiple-step scaffolded assignments. The flexibility of DB assignments allows learners to access the assignments according to their own time schedule and readiness so

they could devote to better ideas, sophisticated language, and higher accuracy. In addition to the above themes, DB assignments also help to further develop writing and reading.

Development of Writing and Reading Domains

Pertaining to writing development, participants compared the DB assignments to in-class practice and concluded that they integrated very limited grammar patterns in oral practice in class. However, they were able to incorporate a lot more grammar patterns to support well-structured writing during DB assignment.

DB assignment helps me tie everything together because I think maybe in class if I were asked a question and I had to use something I would maybe just use one grammar structure to answer. but then in the discussion board I had to use pretty much a lot different structures and words from the entire chapter (Participant A, interview, March 2020).

In class you could just answer something in one or two sentences. It was a lot more like casual. but then on the discussion board you had to elaborate well-structured argument (Participant B, interview, March 2020).

I think writing became a lot more better because in class like we focus a lot on oral and reading (Participant D, interview, April 2020).

The finding echoes the claims from Lee (2004b) and Meskill & Anthony (2005) that learners are pushed to focus on language forms because of the visual salience of written discourse on DB. In addition, because of the sufficient time to monitor and edit output (Kelm,1992; Warschauer,

1996) learners are able to incorporate more advanced structures in their writing. Additionally, the participants also reported that the writing practice in DB assignments focused more on complex topics which required them to go in depth to express opinion. Participants felt these writing practices offered chances to write more freely and elaborated comparing to other activities.

I thought it was different because I thought it was the only place where you could really creatively answer a question or actually think through when answer a question like more in depth. And I would not have that in class because I always fumble over my words when I'm speaking in class when my teacher would ask me questions. There was just like a chance to actually try to answer it more complex question and go through like a more of a real answer. Then I felt like I could not get from any of the other class activities (Participant B, interview, April 2020).

As opposed to the textbook, in class we use the textbook to write. And so every day we'll do like a summary. But no opportunity to really express opinion, I guess so. But then in the posts. Right, you can express opinions in your own post and then also in response to your classmates. I mean, just in terms of writing and if it's only summary. And on the lesson tests we also have the writing part but those assignments, I mean, the tests, go by so quickly that It's hard to remember what I wrote. So you have to do it every week. And so there's like a routine. It becomes your team, but it's not the same as preparing for the written exam. Because when I'm preparing for the written exam I'll just make notes about sentences that I can use or companies of vocab and grammar but with the canvas post there is a lot more freedom and more elaboration (Participant C, interview, April 2020).

I think being able to think of more complex answers. On Discussion Board posts, because that's not something you like doing class a lot where it's like, you got to think of like a full paragraph, description to a question. I think the discussion board posts are definitely probably maybe the only place where I'd like think through relate something and then write like a full description like topic sentence like beginning, middle and then having to use those connector words to make it all flow together, at least try to use them to make it flow all together. I think that's definitely something you do not get too often in the rest of the class (Participant E, interview, April 2020).

When provided opportunities to write freely about their opinion and extra processing time to polish language, learners “unconsciously initiate the role that is usually played by a teacher in a regular classroom” (Wang, 2014, p. 256). As described in the data, they tried to “relate something and write a full description”. This echoes Wang’s (2014) claim that learners “incorporated their personal experiences and made connections with contemporary society”.

In addition to the extra processing time, the finding explains another reason that DB assignments facilitate positive learning outcomes. According to the data, it was because the design of DB assignments provided opportunities to “really express opinion” and the weekly assignment formed a “routine” that enhanced the positive learning outcomes. In addition to writing domain, DB learning space also facilitate reading development.

Pertaining to reading development, students had more opportunities to read during DB assignments, as they were required to read at least three classmates’ posts. Students were expected to ask questions to their classmates’ posts, which forced them to read carefully and with a clear understanding. This helped participants to develop their reading comprehension skills in

Chinese. Finally, participants enjoyed reading each other's work because it exposed them to different writing styles, opinions, and new uses of grammar and vocabulary.

I think I practice reading on discussion board a lot more because I did read through my classmates' responses. In class we would just like listen to them and then just like ask some questions based on that. I think I'm a lot like weaker in reading and writing in terms of speaking so I think that aspect just like really provided balance to the experience (Participant A, interview, March 2020).

I think we're more opportunities to just practice like reading comprehension, because I'm reading other people's posts or they're writing their own like writing style. And they might structure their sentences or use grammar points different from what I learned from classes (Participant B, interview, March 2020).

I like reading my classmates' posts because I am curious how they would elaborate their opinion especially when the prompt asks you to narrate a story. It makes the reading comprehension informal and more fun (Participant D, interview, April 2020).

In sum, as a supplementary learning environment, DB can mitigate the time limitation of in-class instruction by providing both formal and informal settings for practice. The time allowance feature is able to lower the anxiety level of learners and contribute to language learning.

However, utilizing DB as a supplementary learning space doesn't guarantee learning happen.

Learners interact with DB learning environment through the mediation of DB assignments which includes specific steps and criteria. As such, we must consider the design to optimize learning.

The steps required each DB post push participants to use more language. For example, step 1

required learners to compose posts on social topics. Some of these topics the learners were already familiar with but some they were not. Learners needed to go beyond their familiar topics and utilize tools, resources and strategies to compose writing on unfamiliar topic. Step 2 required learners to read classmates' posts. Learners were provided a different receptive skill (reading) other than listening as in face-to-face discussion. Step 3 required learners to ask insightful questions. This step pushed learner to elevate to potential developmental level. It was at this step imitation which is the emerging internalization of language development was observed in this study. Step 4 required learners to clarify or counter arguments and deepened or comprehensive understanding was obtained through this step. Even though the general learning objective for this Advanced level class was the same, each student had different ZPD as their levels varied from each other. Through the scaffolded activities as mediation in the development, learners with different ZPD were provided supportive learning environment and opportunities.

The DB learning environment also benefited the development of written complexities from three aspects. In terms of propositional complexity, DB provided extra processing time for learners to utilize different writing strategies, like conducting online research to form opinion and make elaborations. The topics of DB assignments were also more complex which provided opportunities for learners to go in depth in their elaboration and expand their ideas. In terms of lexical sophistication, DB assignments offered opportunities to apply language learned in class to related but different social topics. During the writing, learners could incorporate more advanced words. Moreover, DB relieved anxiety and provides extra processing time. These benefits allowed learners to choose appropriate vocabulary words and polish their writing. Learners also had the opportunity to read classmates' posts, and could learn different ways to incorporate advanced vocabulary. The above practices reinforced the acquisition of advanced vocabulary

which lead to the development of lexical sophistication. Finally, in terms of accuracy, learners orally practiced the vocabulary and grammar points in class before the DB assignments, and common mistakes were corrected by the instructor in class. Furthermore, less anxiety and extra processing time allowed learners to check the accuracy of their writing.

Research Question Three

Question 3: In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

I will use the three aspects that evaluated learners' written complexities as themes to present my findings in this section. As described in Chapter Three, my study used three theories to evaluate learners' written complexities: propositional complexity, lexical sophistication, and accuracy. As lexical sophistication and accuracy both belong to language development, I will use sections, propositional complexity development and language development, to describe how they are impacted by the interactions with peers and teacher. Under each section, I will describe the interaction with teacher and interaction with peers separately.

Propositional Complexity Development

Propositional complexity is one of the components in the broader notion of L2 complexity. It refers to the number of information or idea units which a speaker/writer encodes in any given language task to convey a given message content (Zaki & R. Ellis, 1999; R. Ellis & Barkhuizen, 2005). In Ellis and Barkhuizen's (2005) definition, an idea unit is defined as "a message segment consisting of a topic and a comment that is separated from contiguous units" (p.152). The idea units in each participant's DB post were counted and documented in my descriptive data section.

The development of propositional complexity is analyzed below by using two aspects of the data: the interaction with instructor and interaction with peers.

Interaction with Instructor. Interactions with instructors via DB did not contribute to propositional development, this is because the feedback from the instructor primarily focused on language usage. The design of the DB assignments aimed to leave enough space for learners to challenge each other. As such, the instructors role was only to provide feedback on language usage.

Interaction with Peers. Participants shared that through the interaction with peers, they learned new information from each other and their understanding of discussion topics deepened, as they brought in personal experience into discussion. In other words, participants felt they were carrying on real conversations by asking and responding to the questions.

Reading classmates' posts and comment and respond to them makes it feel like we are having a conversation with each other and practicing with each other. So not very judgmental because everyone makes mistakes. So we all learn from them (Participant A, interview, March 2020).

Since the comments/replies are the more interactive parts of the discussion, I learned how to be more nuanced in phrasing my responses, e.g. using transition words to go over what I understood from my classmate's post as well as an idea related to their post that I wanted to bring up for them to respond to. Even if indirectly, I think my language development improved because of interacting with my peers in the discussions and practicing written "conversations" with other people that felt more engaging and natural,

like a conversation that I might have in an everyday situation. (Participant B, email exchange, March 2020)

Not just for like a Chinese discussion post, it seems like a normal conversation (Participant D, interview, April 2020).

Under the post of my narration applying for money, people commented: money will not necessarily solve your problem, so why should we give you money. So there was sort of like more interesting conversation. I would be like okay or money will not solve the problem, but it will like make the situation more stable and then I can solve the problem. And they feel like an authentic conversation (Participant E, interview, April 2020).

The finding confirms that the first stage in Vygotsky' (1981) sociocultural theory can be found in DB assignment. This stage, the interpsychological stage, is defined as the interaction between learner and the people and environment at a social learning setting. DB learning space served as this social learning setting and the interaction between learners was described as “conversations” or interactions. In addition, participants found that being able to choose whose posts to comment on was helpful because they were able to choose interesting posts to comment on and therefore create interactions and conversations. During these interactions, participants agreed with or refuted each other’s opinion, mimicked everyday conversation.

Sometimes, I would comment if a classmate brought up a particular idea in their post that I found interesting, i.e. I had not thought about it before but after reading my classmate's post, I strongly agreed or disagreed with their idea. I felt that this was the most natural way to choose which classmate's post to respond to, because the reaction

that I had after reading such a post could be used as a jumping off point for my comment to ask for clarification of the idea, issues related to it, or my personal counterpoints to the idea that my classmate could then respond to. (Participant A, email exchange, March 2020)

Making you ask a question makes you just engage with the material more and then think about more like it. It's more just like everyday conversation where it's you bring up a point that somebody would refute that point or ask you a question about your point. So I think it's a way to mimic everyday conversation (Participant C, interview, April 2020).

This finding reinforced the existence of interpsychological stage that focuses on the interaction (Vygotsky, 1981). Not only did learners carry “conversations”, but they also performed different reactions that mimicked everyday conversation. During these interactions, learners utilized tools, resources and strategies to agree, refute, ask for clarification, etc. These tools, resources and strategies served as symbolic and human mediators for the interactions to take place.

In addition, participants shared that they learned new vocabulary words and new knowledge they did not know previously from other students' posts. They considered the part of posting questions and responding as the most interesting and interactive part because they learned new and interesting perspectives and ideas from each other. Some of them shared their positive feelings when they learned something new like a source with data support or a new vocabulary word with English explanation included.

I feel like it is a more interactive opportunity to learn from my classmates and also learn from new vocabulary if they talked about new things that I did not include in my post. It is very nice too (Participant A, interview, March 2020).

I really like the part where my classmates post questions and we respond. Because they always have interesting perspectives and ideas that I did not think about when I was writing my own post. It is an opportunity to add on to my original idea to consider other perspectives of the topic (Participant B, interview, March 2020).

Occasionally people include English explanation next to a more complex vocabulary, but usually I feel it is part of the question and I will translate the question and understand what they are asking (Participant B, interview, March 2020).

I think reading one about marijuana drugs and I mean cigarettes, alcohol, I forgot. I can not remember exactly, but I read something and I was like, oh, I did not know that. And they because they provided a website that they got it from. And I was like, oh, it's a new fact I did not know (Participant C, interview, April 2020).

The finding above demonstrates the appearance of psychological function (Vygotsky, 1978), for the first time. The psychological function here refers to the formation of comprehensive opinion toward the discussion topic. In addition, psychological function appears twice in development, once in the form of actual interaction between people, and the second time as an inner internalized form of this function (Vygotsky,1978). It was the psychological function appearing first time when learners interacted with the posts by means of reading new vocabulary words and new information from others' posts. Further, participants also gave some specific

examples of interesting posts or questions other students composed. They described how they were impressed by the ideas or new perspectives from classmates because they were interesting ideas and were never thought about before.

I think this unit had more interesting questions like, student A was introducing like a sort of tangential related idea like, that's where branched out from last time I like or people have been talking about like a gateway drug which was not what we talked about in class and (student C asked you if alcohol and the cigarette are more dangerous and why) That was not as standardized question because it was like an interesting question to consider in general (Participant D, interview, April 2020).

But the students also responded and make good points about gender also being an important factor. Something I have not thought about so Yeah, yeah, the other students made contributions. it was also one student made a point about electronic cigarettes. Just her own discussion. She talked about the influence of E cigarettes. I have not thought about that (Participant E, interview, April 2020).

The same as new vocabulary words and new information, the new perspectives were considered as psychological function (Vygotsky, 1981) during the peer interaction. Additionally, participants described the broad range of opinions on DB and how reading other perspectives and new ideas shaped their original opinions.

Sometimes it is very interesting to kind of reading their perspectives because they are very different from mine. Because we are all sharing this together on one forum, so we can learn together (Participant A, interview, March 2020).

They usually deepen my understanding of the topic or my own opinion and stands of the issue. Because I have to think about this new idea they brought up and formulate my own response to it. So it is really an effective way to make me think deeper about the topic (Participant A, interview, March 2020).

I like all of the questions [on discussion board] it is a whole spectrum of opinion...It also brings up different aspects of the topic...All of the questions made me think and made my original idea more comprehensive (Participant B, interview, March 2020).

The process of “learning together” by forming “whole spectrum of opinion” matches the two elements of constructing a learning community (Tinto, 2005): shared repertoire and joint enterprise. Shared repertoire refers to how learners brought in different aspects of the DB topics in my study. The joint enterprise in this study refers to obtaining comprehensive understanding of the DB topics and advanced language level.

Participants also felt that having classmates asking insightful questions brought in new perspectives and themes. The engagement of asking and answering questions helped them to enrich their ideas. These opportunities greatly developed their propositional complexity.

I really like her brought up the differences of beauty standards between different countries that are in different parts of the world. That really gave us a good opportunity to interact about our opinion on difference of beauty standards and why that might be. I think it is very nice aspect to talk about (Participant C, interview, April 2020).

I like this question because she is asking me to expand on my idea. And she brought into this topic a new part of music industry that I had not thought about as much (Participant D, interview, April 2020).

This was the question that I had to think about the most. I definitely did not think about marijuana in marketing when I was writing my response. I actually had to stop and think about how they could actually change the way to market marijuana and how they could affect younger people (Participant E, interview, April 2020).

I like one student's question asking the most important factor for long-term love. I feel my discussion post focuses too much on what could go wrong in a relationship. And her question was like put some balance on that. How do you maintain it when there are so many things that could go wrong? That kind of made my stance on it less cynical (Participant A, interview, March 2020).

After completing comments and responses, my understanding of the topics became more nuanced because I was able to read about my classmates' different perspectives and also reflect more deeply about my own initial ideas about the topics, especially when I had to respond to a classmate's comment that challenged or expanded on an idea I raised in my post. For example, in the marijuana discussion, I believed that marijuana is not as harmful as alcohol and other drugs and that recreational use of marijuana is acceptable. When one of my classmates commented and asked about how the marketing for marijuana should be changed, I realized that I had to think more about the real life consequences or implications of supporting recreational use for marijuana. I realized

that I did not necessarily want to actively promote the use of marijuana for everyone – I just believed that we should de-stigmatize and de-criminalize the use of marijuana for people who need it or choose to use it in a responsible way (Participant A, email exchange, March 2020).

Some of them asked me to think about something from a different perspective or they would just ask you to elaborate on something I just briefly mentioned. It helped me to say more on the topic. i.e. L6 I was asked why have our beauty standard changed. I talked about the Romans used to like non skinny women but I did not say why it has shifted. After she asked about it, I now know that like it's pretty important to understanding the topic (Participant B, interview, March 2020).

As discussed before, the psychological function appears twice in the development, once in the form of actual interaction, and the second time as an inner internalized form of this function (Vygotsky,1978). The findings provided in this study shows that the psychological function appeared the first time during when participants read new ideas or perspectives in each other's posts. Psychological function also appears a second time during the interview when participants shared that their original ideas were changed or expanded as the inner internalization.

Participants sometimes felt some questions posted by their classmates were difficult to answer even in English. They felt challenged and sometimes had to complete some online research to answer these questions. Participants found this learning experience was beneficial to not just language development but also cultural understanding.

For lesson 9, one student's comment she asked base off what I talked about there's this generalization about young people's love is superficial, old middle-aged people are under pressure to marry and then she asked which one is more valid term of love. that one really challenges you to think about it. It is not an easy thing to answer even in English. sometimes my classmates ask deep questions that are very hard to answer (Participant D, interview, April 2020).

I think they definitely been deepened especially there's stuff like marijuana and love discussion I had to do outside research in order to answer and I like learns a lot about the topic. For love and beauty standards, I was just like challenged they think deeper about these issues in society and I think it's one of my favorite experiences from Chinese because I was able to not just learn a language I was able to learn about life experiences and culture. I think that is a really good benefit (Participant E, interview, April 2020).

These conversations created opportunities to ask challenging questions that often lead participants to “think deeper about issues in society”. This echoes the claim from Wang’s (2014) study that the cultural and social context of the DB posts encouraged learners to “make connections with contemporary society” (p.257). In this way, the propositional complexity was developed through interaction.

Moreover, many challenging questions brought up counterexamples or counterpoints that needed further clarification from the author. As such, the participants shared that they sometimes changed their initial opinions or provided more explanation. These learning experiences all transformed their understanding of the topic.

Her questions are pretty good because it's like, oh, you said this, but like, here's a counterexample or something where, like why is this good. Provide a counterexample to their point...then it requires you to clarify more or think deeper into your own thoughts than you had previously done (Participant C, interview, April 2020).

I think those good questions make you change your answer or further explain your answer. So I think that one was insightful (Participant B, interview, March 2020).

I mean obviously the ones where I give a longer reply are probably ones I think they're better questions. Because I think I have to go more in depth answering the question and put in more time to resolve whatever counter argument they have. So if I'm writing more it usually means it's making me think more about what I'm answering (Participant D, interview, April 2020).

But for the most part, I think the questions from my classmates did make me think more deeply are going to more explanation about what I had said. (how did they do that?) I'm just like in instances where somebody would like disagree or provide a counterpoint for something. It makes you just think more in depth about what you had written. And if it made sense. And if what you have written initially did not make sense. You have to provide more explanation (Participant E, interview, April 2020).

As discussed before, the psychological function appears twice in the findings of this study: during interaction and an inner internalized form (Vygotsky,1978). In this study, inner internalization was also apparent during the interview when participants shared that their original ideas on the DB posts were changed or expanded. Participants also shared that their

understanding of DB topics was expanded or changed through the interaction with peers. Additionally, the responses to the counterpoints were another type of evidence of inner internalization because participant's original opinion was transformed when they added more clarification or changes in their responses.

Another aspect of the interaction between peers that helped strengthen written complexity was the relationship students had with one another. The participants had built connections with their classmates during their face-to-face class meeting times. They brought personal relationships into DB interactions since they were already familiar with each other. Participants were curious to hear about certain classmates' opinions since they were professional in those fields or they had shared personal stories related to the topics.

Student C said you should eat what you want. That makes me think about how our personal experience inform our decisions and opinion. Because Student C is an athlete and he might have a different perspective. So that's why I asked him that specific question (Participant A, interview, March 2020).

And then maybe the music one just because, like Student D in the class was actually in a band. So I think, I do not remember if I commented, but I think I remember reading his and just like knowing it was going to be about something. That was important (Participant C, interview, April 2020).

For the music topic, Student C's post about exchange and recommendation between him and his father... I thought it was pretty unique perspective because he has this relationship with his father where he influenced him with rock and roll, but he also

talked about how he diverged from that as he grew up and gained his own music taste (Participant B, interview, March 2020).

In all, the interaction between peers was the main factor in impacting the development of propositional complexity through DB assignments. First, even though there are requirements of the posts length and number of vocabulary words to use, the format of the peer interaction mimics in-person communication that made the participants feel interactive and meaningful. Moreover, students had built bonding in advance during face-to-face class time. In this way, the personal connections made the interaction more related and closer. Second, the interaction allows learners to learn about new information from others' posts. Reading others' posts and responding to insightful questions also developed the propositional complexities as these actions expanded and deepened the original understandings. During the interaction with peers, learners played the role as human mediators for each other to develop propositional complexity. Propositional complexity is the psychological function in the analysis of this section. As such, it appears twice: the first time it appears was during the interaction between learners when they read each other's posts and post questions. Then the second time as the internalization of the content is supported by the interview data in which the participants shared that their thinking is "more in depth" or "more comprehensive" and the responses to insightful questions where original opinions were transformed. The two types of evidence confirmed that participants' original ideas were shaped/changed/expanded through the interaction. Therefore, we can conclude that the psychological function which was propositional development was developed and internalized through interaction.

Language Development including Lexical Sophistication and Accuracy

To evaluate written complexity in this study, three categories were used: propositional complexity, accuracy, and lexical sophistication. The latter two are combined in this section and considered as language development. The relationship between language development and interaction will be demonstrated from two aspects: interaction with teacher and interaction with peers.

Interaction with Instructors. The instructor commented under each student's post for every DB assignment. The comments were mainly about the language usage in the post, like corrections of errors, and level of vocabulary. Students generally found teacher's comments very useful because they could learn the correct ways of using vocabulary from the comments. The participants felt that the corrections from the teacher's comments would help them improve language use in the future.

It is really nice to be able to interact with other students and learn from teacher's comments. So for example, there is a vocab words that can only be used as noun but I accidentally use it a verb and teacher corrected me. So I know from that point on that it should be used in certain way (Participant A, interview, March 2020).

The feedback from the professor told me what I did was wrong and then once I took note of that I would just remember for next time in case I had to say something similar to that again (Participant B, interview, March 2020).

I mean, I always look at the comments underneath mine. So I might have like picked up from that just like what mistakes I was making, and then change them as a result. Well, like if I was using like a grammar structure wrong, she would pointed out, and at some point, [I would correct] (Participant C, interview, April 2020).

During the interaction with the instructor, imitation took place. Imitation refers to “all kinds of activity of a certain type carried out by the child ... in cooperation with adults or with another child” (Vygotsky, 1934/1998b, p. 202), and includes “everything that the child cannot do independently, but which he can be taught or which he can do with direction or cooperation or with the help of leading questions” (Vygotsky, 1934/1998b, p. 202). In this study, imitation takes place when a lower-level learner receives help from a higher-level learner or teacher, including demonstrating how to complete a given task. In this case, the instructor demonstrated how to use vocabulary words correctly and learners received help from the demonstration. Some of the participants were unsure about certain language usage when they were composing the posts. Therefore, they felt the comments were very helpful because they got to check if the unsure words were used correctly.

The teacher’s comments are super helpful. I can see the parts that do not sound like what I would say. That’s where I corrected it. I was a little bit unsure about it and then I like got confirmed from her comment (Participant E, interview, April 2020).

One interesting comment on the teacher’s comments is that this participant liked to read the comments under other people’s because she was curious to see what mistakes other students

made. She liked to see if other students made similar or different mistakes in comparison to hers. And she learned from the corrections of others' errors too.

I just sometimes was curious, just to see what other mistakes they're making. If same ones or different ones. Someone making very few or just maybe sometimes I'm glad to see like how many mistakes people are making in comparison to me. Looking at my own ones is helpful. I guess sometimes I look at other people's and see they're making a certain mistake. And I go, yeah, I should watch that too because I also do that
(Participant D, interview, April 2020).

From this finding, we can see that the comments from the instructor helped with imitation and internalizing the content. Since everything including instructor's comments was open to the whole class, learners could read instructor's comments under others if they want to. Having the opportunity to view these comments, helped participants to better their written complexity.

This finding also reveals yet another way that DB assignments lower anxiety. This is done by witnessing others' mistakes. Having an opportunity to see this made learners feel less embarrassed about theirs. The lowered anxiety encouraged participants to not be afraid of making mistakes and instead pushed them to integrate new vocabulary words and grammar points in their future writings.

Interaction with Peers. Participants reported three types of gains from their peer interactions that were specifically related to Lexical Sophistication and Accuracy. First, students learned new words or reviewed words from reading others' posts and questions; second, they were exposed to a different writing system since there were both simplified and traditional characters learners; and finally, they were also exposed to more in-depth and elaborated writing.

New Words or Words Review from Reading Others' Posts and Questions. Participants shared that they read and memorized new words or structures from classmates' posts. Via classmates' posts, they learned new vocabulary or grammar structures that they did not recognize before and kept them for future reference.

I feel like it is a more interactive opportunity to learn from my classmates and also learn from new vocabulary if they talked about new things that I did not include in my post (Participant A, interview, March 2020).

Sometimes if they use a vocabulary word which is very interesting. I will try to keep that in mind for future reference (Participant A, interview, March 2020).

I think interacting with my peers has made me more comfortable with writing (or thinking) with more advanced language. When I read my classmates' posts or comments and notice that they use a new sentence structure or term that I do not recognize, I might read over that part a few times to make sure I understand how that structure or term is used (Participant B, interview, March 2020).

I think there was one of my classmates who is a heritage learner. She used advanced words and grammar that you did not learn in class. I think reading her post and learning those new words helped me a bit...I got reminded. It is like a reminder that in the future I can use it (Participant C, interview, April 2020).

Sometimes participants used the new words in their comments to ask classmates to explain things from their posts. Additionally, participants also experienced classmates asking them questions with new words and they responded with further explanation.

I would in my comments like if somebody used like a specific sentence or something or word I'd use that word in the sentence to ask them what they meant. Like to explain a little more about a point. Sometimes if somebody use the word and then I felt like I needed to do that to respond (Participant B, interview, March 2020).

For example, Participant A used a new vocabulary word “不切实际”(unpractical) in her post.

The original sentence was “我不同意瘦才是美的看法，因为这种看法太不切实际了，只是社会编造的理想。”(translation: I do not agree with the idea that being skinny is beautiful because this idea is too unpractical which is only a dream made up by the society.) In the comment composed by participant B, she borrowed the word “不切实际”(unpractical) from A's post and commented: “我完全同意你的看法，特别是在媒体的因素。这看法是太不切实际

了，而且营养更重要。” (translation: I completely agree with your opinion especially the factor of media. This idea is too unpractical and nutrition is more important.)

Another example is that participant A used “医疗用途” (medical usage) as a new vocabulary in her post. The original sentence was “再说，大麻也有医疗用途，比如说减轻头痛。”

(translation: additionally, marijuana has medical usage, for example alleviating headache.) One classmate borrowed the word “医疗用途” (medical usage) and used it to express her agreement

and challenged participant A with a specific question. She wrote: “我同意你的看法，我也觉得

大麻有重要的医疗用途。但是我知道英国觉得大麻没有医疗用途所以如果你抽大麻，警察

会抓你。为什么英国觉得没有医疗用途？你觉得英国是错的？” (translation: I agree with

your opinion, I also think the marijuana has important medical usage. But I know that Britain does not think marijuana has medical usage so you will be arrested if you smoke marijuana. Why does Britain think that marijuana has no medical usage? Do you think they are wrong?) In the

same post, participant A also used “诋毁” (denigration) to elaborate “由于香烟和酒在我们社会的营销，还有社会对大麻的诋毁，很多人还是觉得大麻比香烟和酒更有害。”(translation:

because of the marketing of cigarettes and alcohol in our society and the denigration of marijuana, many people still think that marijuana is more harmful than cigarettes and alcohol.)

And one classmate borrowed “诋毁” (denigration) and asked her to propose a suggestion. The

classmate wrote: “社会应该改变推销大麻的办法? 这能不能改变人们对大麻的诋毁? 请你给一个建议。” (translation: Should the society change the way of marketing marijuana? Could this change the denigration of marijuana? Please give a suggestion.). These examples demonstrated how learners imitated other classmates and borrowed new words from the post they read to compose comments and insightful questions. This lines up with the construct of psychological function (Vygotsky, 1978) as this demonstrates internalization of vocabulary and the emergence of internalization of lexical sophistication which both lead to more complex written complexity.

In addition to learning new vocabulary words and grammar structures, participants also had opportunities to review learned words. The review took place when they read certain words repetitively. They also found it helpful when they could read classmates using different ways of structuring words.

New words, Sometimes I think for like the drugs one, I think I just had not been paying too much attention for the word legalized so once I kept seeing it. It was like, Ah, right. That's it (Participant D, interview, April 2020).

People will use new vocab or something. I had to look it up or just reminded me of some error that I was making I saw the corrections. Reading other people's also helps like just like reading people's writing. So it was like they might use different ways of structuring stuff that makes it slightly different (Participant C, interview, April 2020).

Participants shared that it was especially beneficial for them to read the posts of more advanced level students, because upper level students used alternative words and reinforced their usage of sophisticated words.

I remember like I recall words being used. Oh yeah, there are some times. Yeah. So, student A. She used to use a lot of good like alternative words to what we use in class. I think she was the first person in a post twice the word like 理由. And so I did not know that we could use it that way. So then after she uses that word for “reason” I started using it as well. And then there was one more, like for future instead of 将来 she used 未来. So that was also really helpful (Participant E, interview, April 2020).

Student A was very good at writing. So I'd usually just try to like look over hers, and then I think one time. I was asking a question on hers, and then she used grammar pattern from the drugs and alcohol. And again, it was like the difference between “shaoliang” and the other one that means small amount. I forget the word I forgot all the time, but basically it was two words that like I did not fully understand how to use differently. I can not remember if it was the teacher commenting on hers on a more specific way or her actually using it correctly. And I was like, Oh, so that's how to use them ((Participant E, interview, April 2020)

The finding above shows how imitation positively impacts written complexity. Here, a lower-level learner received help from a higher-level learner or teacher through the demonstration of how to complete a given task. In this case, the higher-level learner

demonstrated the usage of alternative words and lower-level learners received benefits from the demonstration which then the lower learner internalized and used in later writings.

Exposure to Another Writing System. There are two writing systems in Chinese language: simplified and traditional versions. There were two students in the class and one participant learning traditional characters. The majority of students learning simplified characters expressed that they would prefer to read the same writing system first. However, they were told by the instructor that they needed to read those who had not had any comments underneath so they would read traditional characters when they needed to. They would use Google Translate to help switch the writing system. And the exposure to a different writing system helped them see the similarities and differences between two writing systems.

(Do you read traditional characters posts?) I would try to do it at first, but then at the end of the day if it was the one I wanted, I would have to plug it into Google Translate, just to otherwise I would not be able to read it (Participant B, interview, March 2020).

I have to respond to whom wrote in traditional Chinese because maybe there was like a lack of people who have not had enough questions I guess that's where forces me to try to see similarities between the simplified and traditional characters, even if sometimes end up having to resort to using some Google Translate or whatever (Participant C, interview, April 2020).

There was even one participant who was learning simplified characters switched her comments to traditional for traditional learners to read. She felt it was a nice gesture to save some time for her classmate.

(One student uses traditional character and you posted questions in traditional character.) It is actually very convenient for him because he reads traditional. I will write my response in simplified and it takes 5 seconds to translate to traditional in Google translate. I feel it would be better to just do that and post, so he does not have to go through extra effort translating my post and responding (Participant A, interview, March 2020).

Even though students were forced to read the different writing system and had to use online tools to switch the writing, they gained benefits. The benefits here refer to being able to differentiate two writing systems and maybe catching few words in the system learners are not familiar with. Furthermore, the gesture of switching comments to traditional for traditional learners to read helped build the relationship in the virtual learning community. In other words, being thoughtful to others and spending extra effort to switch writing system supported the construction of learning community on DB.

Exposure to More in-depth and Elaborated Writing. Students' language levels are varied in the third-year Chinese class. By reading higher level learner's writing, participants shared that they felt embarrassed by comparison. Ultimately, however, it clarified the expectations of advanced level courses and made an effort improve their writing afterwards.

(You said you read two classmates posts. They're really in depth and you're like, oh, this is what we're doing now.) Yeah, so basically I read their posts and was like, wow, this was much better than mine. Um, I should make my next one better. And then so yeah and then I feel like the next one was one about music, and I think I feel like I wrote that

one pretty, I felt like that one is much better than the previous one. Just because like I tried to up the level of my own writing. when, after I saw somebody else in the first week which was like super well (Participant C, interview, April 2020).

Participant C' experience and improvement was reflected through the written complexities assessment of the first and second posts. The lexical sophistication of the first post was $7/193=0.036$ and it increased to $11/240=0.047$ in the second post. The error rate of the first post was $5/193=0.026$ and it decreased to 0.02 in the second post. The changes echoed the narrated experience that he tried to level up his own writing after reading a very good post from classmates in the first week. Based on this experience, we can see that the more advanced classmate performed as human scaffolding who was a little bit more advanced, but not as advanced as the instructor. The writing of the classmate contained more advanced vocabulary and fewer errors. As participant C observed the classmate's writing, he sensed that the higher level of writing was within his ZPD. He perceived it as within his capability so that he was able to reach it with purposeful effort.

I remember doing this one and then reading my classmates posts. .. she has like a really a forceful rhetoric...Realizing like my posters pretty bad. [for my post]...And so it's like my one idea and then I just kind of just work with that. I think there were more critical or pessimistic posts [having more ideas than mine] (Participant D, interview, April 2020)

Student A was the top student in class and her writing was mentioned many times in participants' sharing. They described her posts containing more details and depth so that it was easier for readers to come up with insightful questions.

I think she explained stuff more go into more detail and maybe write a little more than other people. So hers were usually easier to ask good questions on because sometimes you read other people's and you'd be like, Oh, these are all like very straightforward and It's kind of hard to ask insightful question, whereas hers feel like she'd go into enough depth and say enough things where it was easier to write an actual good question.

(Participant B, interview, March 2020).

Student A's posts were considered impressive because they were very informative, thought provoking and well structured. Participants shared that they got very inspired by reading her posts and tried harder for their own writings. They also shared that student A's writing was very refined and they got exposure to a more sophisticated way of structuring sentences.

(Why did you find her posts impressive?) Because it was an old very complete history. It was also informative, like a very rich information. And also in a very structured way introducing it. (What were your feelings when you were reading her post in addition to "wow this is a good one"?) This is really impressive. Wow, this must have taken... I wonder how long this takes to write. I'm not the best student in the class usually. I'm usually towards the lower end of the class. And so when the students who are very thought provoking, it's inspiring to make me try harder (Participant E, interview, April 2020).

It definitely helps in terms of like seeing what you can say, what is an acceptable way of phrasing the vocabulary. (Because you can see their demonstration of using certain words?) Yeah. I struggle a lot with variety like changing my sentence. I'm curious and I remember Student A was very good at that. So that helped a lot. (What do you mean variety of your sentences?) Like word orders especially. I need to really figure out easier ways to say things. Student A is very good about using like less characters. To say things like that I would have to use way more characters (Participant B, interview, April 2020).

As a higher-level learner, participant A represented the potential developmental level for other learners. From other learners' perspective, it was beneficial to observe participant A's writing as they would perceive reaching this potential developmental level was within their capabilities.

In conclusion, the responses to question three highlighted many important findings. First, the interaction with peers, in terms of language development, served as human mediation. This mediation brought in new words, review of learned words, and demonstration of advanced level writing. Second, psychological function (Vygotsky, 1978), appears twice, once in the form of actual interaction between people, and the second time as an inner internalized form of this function. The first time this psychological function appears was when learners read new vocabulary from peers' posts and looked up the new vocabulary. And the second time, the emerging internalization of lexical sophistication was observed through imitation when learners utilized the new vocabulary in the questions. As observed during the interaction, lower-level learners were able to compose questions with the new vocabulary after reading how the new

vocabulary being used in high-level learners' posts. It is a sign that the lower-level learners were elevating from actual developmental level to potential developmental level.

In all, the interaction with instructor and peers impacted the language development including accuracy and lexical sophistication. First, the teachers' feedback on DB posts directly provided corrections of errors in the posts. Learners read teachers' feedback under their own posts and sometimes even read those under others to reflect on the errors and improve accuracy. Second, learners reinforced the advanced vocabulary acquisition by reading peers' posts and sometimes even acquired new advanced words and applied them in the questions and responses. Learners were also exposed to more in-depth and elaborated writing where they could learn different ways of incorporating advanced words. These learning opportunities all contributed to lower error rate and improve lexical sophistication.

Other Findings: Challenges in Composing DB Posts

From my interview data, there was one additional theme emerged which described challenges participants encountered during DB assignment. Even though it is not the focus of my study, it is very important to document students' concerns and difficulties during DB assignments. According to the participants, the most common challenge in composing DB posts was that students found it difficult to balance their ideas and language structures to use. Students did not necessarily consider how to incorporate vocabulary words into posts when constructing ideas. It was not an easy task for students to integrate enough language structures into the post and accurately express their opinion at the same time.

It is a little hard when DB post limits how many words you can write. I mean there are only so many words you can write before it becomes an essay. Sometimes I had trouble

thinking about what idea I want to put in, and balance that out with how vocab words I want to use (Participant A, interview, March 2020).

The two lessons sometimes it is hard to balance my ideas and actual incorporating vocabulary words into my response. Because when I am thinking my ideas, I am not necessarily and consciously thinking how I am going to fit advanced words into response. So sometimes I have a lot of trouble making it part of my post without taking away my ideas (Participant B, interview, March 2020).

Sometimes I think I had to use most of the grammar structures so I had to write sentences based on the grammar structure. but I think that the discussion it's like not meant to do that I think the discussion you are supposed to like answer the topic and just like use the structures and vocab as supplements but sometimes I feel like I had to answer base off a structure (Participant C, interview, April 2020).

Among the four domains of language learning/communication (listening, speaking, reading, and writing), writing is considered the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). This finding confirms that writing skill are difficult to develop at advanced level. The reason for that is that writing involves both language structures and sophisticated ideas in advanced world language class, however, the balance of the two is challenging to master. The second challenge participants encountered was that they sometimes felt challenged to go deeper or lacked the necessary knowledge to discuss a complex topic, especially when it involved multiple subjects.

I think it's hard to talk about why but I think adding that could've just like made the response more complete. (Why was it hard to talk about?) I think it's a very complex question to answer in English too if someone asked me why do you think the media did that, I did not really know how to answer (Participant D, interview, April 2020).

There was like knowledge gap as far as the specific way to talk about the subject matter and maybe like uncomfortable with this specific vocab us to talk about the subject matter (Participant B, interview, March 2020).

The writing of L8 topic was a little different because it was like you're trying to... It's like you're handling three topics at once. So it felt like you were trying to combine things and fit things into the same buckets, more than you normally would. So you're dealing with more than three you're dealing with three things which I think it's just a different way to write. Alcohol, cigarettes marijuana collectively, but also do it individually, because you have to realize they're not all in the same bucket. So it's just a different way. It's a different mindset of writing. It's more complicated because you're like, oh, like there are some pros to some things. And there are some cons, but you can not put them all in the same bucket, because some of the pros and cons are different (Participant C, interview, April 2020).

This finding confirms again that writing is considered the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). In addition to the mastery of balance between advanced language structures and sophisticated opinions, lack of background

knowledge kept students from creating quality writing. The third challenge was that the time schedule of participants impacted their completion of DB assignments as well.

This is the one where I think baseball season had just started. So this is, I think this one's actually my, with I went to say, I think this is probably my worst of the discussion post. I just felt like it could have been done better if I had spent more time with it (Participant C, interview, April 2020).

Lastly, it was more difficult to construct a learning community than expected. Participants felt that the interaction on DB was different from in-class as they needed to actively read everyone's responses compared to spontaneous conversation in class. In class, students tried to give answers different from others because having similar responses made them look bad. However, they were not able to read others' posts until they post their own. In this way, there were times when some students posted similar opinions which impaired diversity.

Even though you kind of have to interact with your classmates it's not the same as the classroom experience because you can not read everyone's responses if I did not see them. In class you get to know them. on the discussion board you are focusing on completing the tasks. In class like I feel like you just get to know them on a more personal level and it's like a lot more of a community is based off that (Participant A, interview, March 2020).

I feel peoples' responses in class were a lot more characteristic. But then on the discussion board, sometimes there were questions where everyone gives a similar answer, i.e. chapter marijuana and alcohol and beauty standards. In class if someone

said something, you try to not say the same thing, but you try to say something different because it looks bad if you're just repeating in class. but then when you write the discussion board you can not see the other responses until you post (Participant B, interview, March 2020).

This finding makes connections to the definition of learning community that was provided in Chapter Two. According to Tinto (2005), there are three elements necessary to form a learning community: mutual engagement, shared repertoire and joint enterprise. In this study, learners on DB worked collectively to construct their knowledge on one discussion topic. Their understanding on this topic was enhanced through interaction and conversation in a supportive atmosphere. Therefore, the DB learning space shows Tinto's (2005) three elements.

However, my participants didn't consider the DB learning space as a learning community because according to them, the communication is not "authentic." Instead, the assignments were sometimes treated in formulaic way which participants felt impaired the sense of learning community. The reason that my participants denied the existence of learning community on DB, "authentic communication" was shown in the definition of learning community by Sutherland et al. (2003) and García-Carbonell et al. (2004). According to them, learning community is constructed by the interactions produced therein facilitate student involvement in authentic communication through language use in real social contexts, as well as the development of relationships with other students. As such, the factor of authentic communication could have led to different expectations of learning community in this study.

Participants shared that they found some classmates treated DB assignments just as assignments to complete while some classmates were more engaged. The interaction felt very

formulaic when students were just writing for credits. Therefore the sense of community did not feel as strong as in-person interaction. Participant E described this difference between in-person and DB interaction as “disconnection” which the instructor tried bridge by highlighting high quality posts in class.

It's like very formulaic I guess. I do not think we're like truly interacting with each other while we're on the discussion board. It's like we're all given an assignment and everybody understands that we're all given an assignment. Where people are going on there with the sole purpose to ask a question, like I would go through and read like somebody replies to my questions every now and again But I would be shocked if everybody went through and saw what people read what somebody responded to their questions. So I do not think like the interaction was a strong like you really like felt like you were communicating with the person (Participant D, interview, April 2020).

There's still a weird disconnect from when we meet face to face and when we talk on the discussion board. But I do feel I know some of the students who are more engaged in the posts that I like, I get to know their view better. In class also I think the instructor is bringing up the highlight that posts, and then shown to us in class. And so I can see that she's trying to bridge the divide between the class time and the discussion (Participant E, interview, April 2020).

In sum, there are several challenges that participants experienced in completing DB assignments: balancing their ideas and language structures to successfully, discussing complex questions, and the challenge of building a learning community.

Chapter Five Discussion

The purpose of this study was to examine the learners' experience of written complexities development through DB activities in Chinese as a foreign language class. The study focused on these three specific questions:

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?
3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

For this study, I worked with 5 participants from a Chinese 302 class in the course of a semester. During this time, each participant constructed 5 discussion board assignments in total. As part of the data collection, I analyzed the written complexities of each post for every participant and measured their written complexity trajectory in descriptive data charts. These trajectories demonstrated different patterns and fluctuations and provided ideas for follow-up questions during the interviews with each participant. Following this analysis, I interviewed each participant about their experience in developing the written complexities.

The emerging themes came from the data collected from the DB posts and interviews. These themes helped me to understand the experience of the participants as they utilized tools and strategies, and interactions with peers and teachers to develop written complexities using DB assignments. Below I will provide further interpretation of the findings. Additionally, I will include implications and recommendations for praxis. You will notice that I have organized this

chapter differently. Instead of presenting the discussion under the traditional headings (Discussion, Implications, Recommendations), I am combining the headings and presenting the information for each individual question. I have chosen to present the information in this way because the flow from discussion to implication under each research question is natural.

Research Question One

Research question #1: What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?

The first question of this study focused on the tools and strategies used by CFL learners to develop written complexities during DB activities. As mentioned in Chapter Two, Peñuelas (2012) shows six writing strategies used by students when doing writing assignments. These strategies include Memory Strategy, Cognitive Strategy, Metacognitive Strategy, Compensation Strategy, Social Strategy, and Affective Strategy. In her study, Peñuelas (2012) mentions that students who got the best grades used more strategies.

I used her framework to help me identify the strategies participants utilized during DB assignments. Based on the interviews, participants reported using five strategies in order to compose compose their DB assignments. These strategies supported the different aspects of written complexity, in other words, some of the strategies supported the development or strengthening of propositional complexity and others strengthened or supported linguistic complexity. Below, I will describe which strategies supported the development of the different parts within written complexity.

Propositional Complexity

To develop propositional complexity (the number of information or idea units), participants used several strategies such as compensation strategy. According to Peñuelas (2012), compensation strategy bridges the gap between intended ideas and language deficits. For example, participants utilized things like Google Translate and Pleco to look up new words in order to elaborate their own opinion or conducted online research to bridge the gap between their understanding of the discussion topics and language deficits. This strategy helped students to further develop their writing.

A second strategy participants used was memory strategy. According to Peñuelas (2012), memory strategy is strategy that helps people to retrieve information in order to produce written discourses. The participants shared a number of resources where they retrieved information from such as class textbooks, in-class readings, online resources and personal experience. These resources helped the participants to write more detailed responses and to make connections to content covered in class and in the textbook. Although all strategies are important, this strategy allows participants to store information into their long-term memory because they can connect content with personal information. In world language education, this connection is key for developing language proficiency.

Participants also utilized metacognitive strategy to facilitate writing quality (Peñuelas, 2012). This was done by outlining ideas in advance. This strategy helped participants to organize their writing and their thoughts so that their writing is more structured. At last, interaction between learners when they asked and responded to insightful questions was a type of social strategies. According to Peñuelas (2012) social strategy seeks to improve writing by involving

interaction with other people. Participants gained deepened and comprehensive understanding by doing so. They shared that they had to clarify some arguments in the responses, and they were inspired to include more explanation in future writing.

Lexical Sophistication

In regards to developing lexical sophistication (number of advanced words), the participants in this study reported using a number of additional strategies. For example, they used cognitive strategy. According to Peñuelas (2012), cognitive strategy includes the behaviors of understanding and producing written discourses. This strategy was observed in this study when participants added extra sentences or revised writing to incorporate advanced vocabulary. This strategy helped participants to understand the structure of a written discourse and develop ability of incorporating vocabulary. Furthermore, participants received help from native speakers and advanced level learners which was considered as a social strategy. These external help not only elevated the sophistication level of the writing, but also offered chances to participants to keep these vocabulary words for future reference.

Accuracy

Regarding the development of accuracy, participants reported using compensation strategy. According to Peñuelas (2012), compensation strategy bridges the gap between intended ideas and language deficits. Participants utilized compensation strategy with tools like Google translate and Pleco. These tools were used for checking accuracy. Additionally, participants reported using metacognitive strategy. According to Peñuelas (2012), metacognitive strategy is to deliberately facilitate writing quality. The participants used Google translate and Pleco

for checking if English meanings matched Chinese. This strategy helped participants to notice the similarities and differences between Chinese and English and these comparisons are useful for future writing. The social strategy (as explained earlier in this chapter) was also a popular strategy for participants in regard to the development of accuracy. In this case, the participants utilized the social strategy when they asked native speakers or advanced level learners to check the accuracy of their writing. This strategy helped participants to notice the mistakes in the writing and learn ways to correct them.

The data collected for question one helps to understand the process of composing DB posts from the participant's perspective. This perspective yields one important contribution to the current field of world language teaching and learning. The finding extends Peñuelas' (2012) research around the six writing strategies to include DB as a formal writing space for students to utilize the six writing strategies. In other words, formal writing does not only happen in "traditional" assignments that require students to research and organize their writing. Formal writing, and thus the use of strategies, can happen in other spaces, like DB. Additionally, DB becoming a supplementary space for formal writing to occur is an important gain in the field of world language development, especially for writing. Creating a meaningful DB assignment that requires formal/informal writing to occur forces students to utilize a repertoire of tools, resources and strategies to construct quality writing. As the most difficult domain, writing skill is important to develop so that learners are able to meet all the standards ACTFL guidelines require.

The findings in research question one also connects to the tent of mediation in Vygotsky's (1981) sociocultural theory. Mediation refers to the intentional interjection of items between environment and self in order to modify and gain specific benefits. The mediation could be done through interaction between people (which is a human mediator) or in the form of an organized

learning activity (which is a symbolic mediator) (Kozulin, 2003). The tools and in-class resources served as symbolic mediators and out-of-class resources served as human mediators in the development process of learners' written complexities. Participants deliberately utilized the online tools, like Google translate and Pleco, and in-class resources, course textbook and in-class reading, during the writing of DB posts. The out-of-class resources included native speakers or higher-level learners and participants reached out to them for help when they encountered difficulties in composing DB posts. Moreover, in order to complete the DB tasks, the learners in this study adopted several techniques of mediation (Kozulin, 2003). These techniques included outlining, incorporating vocabulary words, conducting online research, drawing upon personal experience, and strategies to ask insightful questions.

These findings have important implications to world language education. As discussed in Chapter Two, writing is considered the most difficult domains in language learning (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). However, it is important for world language educators to include writing as part of their curriculum (ACTFL, 2013). From my research, I have concluded that DB can become a supplementary space for writing and language development. Although the task of writing is difficult for world language students, the writing is feasible if students are reconnected/reminded/taught different symbolic, human mediators and techniques of mediation. For example, instructors who would like to incorporate DB assignments in their curriculum, could introduce practical writing strategies to students in advance. The instructor can also invite students to brainstorm and share their own writing strategies with classmates during the semester. Furthermore, the strategies could be connected to ACTFL guidelines and expectations. For example, the steps of DB assignment can include ACTFL's three modes of communication: writing the post represents presentational mode, reading others'

post represents interpretive mode and asking and answering questions represents interpersonal mode.

Another example is incorporating the ACTFL writing guidelines. According to ACTFL writing guidelines, the following aspects should be incorporated with writing tasks (ACTFL, 2012): content, context, accuracy and discourse type. The strategies participants utilized in this study contribute to the four ACTFL writing tasks. Participants conducted online research to enrich the content of writing. They incorporate advanced vocabulary and reference class resources to write in a formal context. In order to improve accuracy, they utilized online tools and asked for help from native speakers. As to writing in paragraph-long structure, participants outlined their ideas in advance for better organization. Therefore, we can see that the writing strategies that were highlighted in this study helped the participants to complete the writing tasks, which were based on ACTFL guidelines. This means that DB as a supplementary learning space, functions as “traditional” learning space and it is able to provide formal and informal settings for learners to develop writing domain. As a teacher, it is important to help learners to reconnect to these writing strategies during the learning process on DB. In this way, these strategies then assist students to develop written complexities and elevate language proficiency level based on the ACTFL guidelines.

Another implication comes from the connection to Vygotsky’s (1978) sociocultural theory. As discussed in Chapter Four, participants felt more comfortable writing about the topics they were more familiar with. The familiarity was related to the tenet of ZPD which includes actual developmental level and potential developmental level. Therefore, the implication to world language instruction is that the out-of-class learning opportunities provided to learners should consist of different levels of familiarities. Tasks with higher level of familiarity allow learners to

perform at their actual developmental level; tasks with lower level of familiarity require learners to utilize tools, recourses and strategies which represent external help to perform at the potential developmental level. Learners' written complexities development stage is considered in "an embryonic state" (Vygotsky, 1978, p.86) even though the levels of propositional complexity, lexical sophistication and accuracy are still moving toward the expectations. Additionally, world language instructors need to help learners elevate from what they know (their actual developmental level) to what they would like to achieve (the potential developmental level). For example, the learning processing could start from what they know about the topic (actual developmental level) and then scaffold into steps. Some scaffolded steps could be reading articles to supplement background knowledge, compiling new vocabulary words, designing discussion questions for peers, etc. These scaffolded steps would lead learners to the ultimate goal, reach the potential developmental level. One example of reaching the potential developmental level could be writing an essay with sophisticated language to articulate opinion on the topic in a comprehensive way. In this way, learners have a chance to demonstrate what they are able to achieve within the ZPD with the scaffolding help in the learning process.

Research Question Two

Research question #2 : In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?

This research question focused on asking participants to explain the ways in which they utilized DB as a supplementary learning environment to develop written complexities. During my data collection and analysis, the need to develop supplementary spaces for language learning became more relevant. Because of teaching virtually due to Covid-19, both instructors and

students are seeking the most effective strategies and pedagogy for online teaching. Many world language instructors are experimenting with different applications and websites to facilitate interaction and to provide opportunities for students to develop their language. As such, DB assignments have become a norm. This supplementary space has the capacity to help students to develop their language.

As discussed in earlier chapters, learners often lack time to fully develop the four domains of language development: speaking, listening, reading and writing in world language classrooms because of the limited class time. In addition, in some languages, learners have limited access to the target language and culture, for example, Mandarin, at American universities; since Mandarin is not a “common” language in many of our communities, students cannot truly immerse themselves in language and cultural opportunities. This lack of opportunity becomes a problem. According to American Council of Teaching Foreign Languages (ACTFL), it is crucial to create opportunities for learners to develop language proficiency and cultural awareness. This is especially true for learners who do not have access to the target language community nor physical connection with native speakers. As such, instructors must create supplementary opportunities for students to use language outside of class in meaningful and authentic ways.

It has been found that online DB assignments are able to provide out-of-class supportive learning spaces to world language learners (Gao, 2007, 2009) and these spaces serve as supplementary spaces for language development. The key is that these DB assignments/spaces are created with a few things in mind. First, DB assignments/spaces must include a flexible and generous time allowance. In other words, participants cannot be expected to create responses immediately and on the spot. Instead, participants must have a number of days to prepare, make use of their repertoire of strategies and tools, and interact with peers. In this way, the extra

processing time removes the affective filter (Krashen, 1982) and lowers anxiety levels. In my study, participants shared that their anxiety level was lowered because they did not need to provide immediate responses to the DB assignments. Instead participants had opportunities to “pay special attention to the structures and forms of the target language during the online exchanges” (Meskill & Anthony, 2005, p. 92). Additionally, they were pushed to focus on form and to use their cognitive skills and metalinguistic awareness to solve language problems (Lee, 2004b; Meskill & Anthony, 2005). Further, the extra processing time gave them the opportunity to access different tools, resources and strategies to incorporate more advanced vocabulary and check accuracy. In sum, this extra processing time helped learners with developing elaborated ideas and sophisticated language level as well as improving accuracy.

In addition to the time allowance, another important component in the development of quality DB assignments is creating opportunities for writing based on proficiency expectations. In other words, the DB prompt must match the rigor of the expected proficiency level for the class. For example, in my study, because this is an advanced level course, students were expected to produce well-structured paragraphs in the context of community and society topics. Additionally, students were expected to use more sophisticated and advanced language.

In my study, the participants shared that because of the design of the DB assignments, they felt that these writing practices offered opportunities for them to write more freely and in more detail. They felt that this was not the case for in class assignments. Moreover, participants shared that the design of the DB assignment forced them to write paragraph-long, well-structured (with complete beginning, middle and ending) responses. These findings support the claims that language learners produce longer output on DB (Kern, 1995; Hudson and Bruckman, 2002); of course, this is only possible if the DB assignments are constructed well.

My findings also echoed the claim that through the interaction with the peers, learner is able to correct lexical mistakes by noticing differences between his/her usage and the usage of peers with higher language competence, and his or her pragmatic competence improves quickly as he/she successfully adopts his/her peer's useful expressions and phrases (St. John and Cash, 1995). Students were required to read at least three classmates' posts on DB and they were able to read instructor's feedback underneath their own posts in this study. In this way, they were exposed to different writing styles to elaborate opinions and learn correct and different ways to use grammar structures and vocabulary words. These interactions benefit the development of lexical sophistication and accuracy. One participant shared that she liked to read the comments under other people's because she was curious to see if other students made similar or different mistakes in comparison to hers. Her anxiety was lowered after seeing others made mistakes as well and she learned from the corrections of others' errors too. In all, DB assignments are able to bring out positive learning outcomes with careful design. DB assignments provide opportunities for learners to apply learned language in paragraph-long and elaborated writing and the interactions on DB also offered chances for learners to develop lexical sophistication and accuracy.

Additionally, the design of the DB assignments must include opportunities for participants to make connections. In my study, DB assignments required learners to compose their own opinion. The participants reported that this gave them opportunities to form their own ideas and engage with the learning materials in more authentic and natural ways. Because of this, learners were provided opportunities to go in depth in their elaboration and expand their ideas. Additionally, students were able to "incorporate their personal experiences and make connections with contemporary society" (Wang, 2014, p. 257) and "unconsciously initiate the role that is usually

played by a teacher in a regular classroom” (Wang, 2014, p. 256) when they utilized tools, resources and strategies to structure opinions, polish language and check accuracy. The participants drew upon their personal experience and enjoyed reading personal stories from others. Moreover, because of the freedom and less stressful environment, students were encouraged to express different opinions and contribute individual perspectives. As a result, I can conclude that the DB assignments “increased student initiative and responsiveness, generated multiple perspectives on an issue, voicing of differences and status equalization” (Kern, 1995, p.470).

In conclusion, the DB assignments in this study were able to provide opportunities for learners to develop more advanced linguistic and propositional complexities because of the nature of the learning environment and the careful design of the DB assignment. My findings are in agreement with the idea that additional and flexible time (Meyer, 2003) are key in lowering learner’s anxiety level. This then contributes to more authentic language acquisition (Krashen, 1982), longer lengths of the writing, higher accuracy, better writing structure and lexical sophistication. Additionally, my study brings propositional complexity to the forefront. My findings echoed Wang’s (2014) claim that students bring in personal experience into discussion by encouraging individual voices and multiple perspectives.

These findings have substantial implications for world language instruction. Including DB assignment does not automatically guarantee the positive learning outcomes in linguistic and propositional complexities mentioned above. In order for DB assignments to bring about the results mentioned in this study, the DB assignments as mediations must be carefully designed as scaffolded activities and properly aligned with the learning objectives so that they can help learners to elevate from the actual developmental level to the potential developmental level. In

Chapter Three, I discussed the five parameters of designing the DB assignments. These parameters were designed in close alignment with The American Council of Teaching Foreign Languages (ACTFL) guidelines for Advanced level standards. ACTFL guidelines expect advanced level learners to be able to discuss topics concerning community and society in organized and sophisticated paragraphs (ACTFL, 2012). Therefore, the design of DB prompts and requirements on length and vocabulary aimed to help learners to reach the expectations. Additionally, the DB assignments can be designed as scaffolded activities that involve multiple steps. There were four steps in total in each DB assignment: 1) compose your own post in response to the prompt; 2) read at least three classmates' posts; 3) ask insightful questions; 4) respond to peers' questions. The scaffolding was constructed through the instructor's design of activities at a virtual learning setting. The scaffolded activities supported learners to utilize tools, resources and strategies to develop written complexities on DB. As part of the design, the instructor must model one the expectations in the DB assignments and provide feedback on language usage under students' posts. These actions helped students to understand the expectation of the questions and reflect on the language accuracy and overall process. Additionally, the learning environment to implement these activities should be able to lower the anxiety level so that the language acquisition could be facilitated.

In all, the designing parameters require instructors in world language classes become familiar with the ACTFL guidelines in order to design the DB assignments with an understanding of the language proficiency and expectations of their particular class. The assignments can be designed in a scaffolding way to elevate learners from the actual developmental level to their potential developmental level. The instructors should also explore different out-of-class learning platforms to select those that can lower anxiety level and facilitate

learning. In this way, learners can be provided with appropriate opportunities to develop their written complexities in a positive learning environment.

A secondary finding that is not connected to my research question but that developed from my data is that students reported that DB as a supplementary space was also useful in developing their reading skills in Chinese. The design of the DB assignments required that students ask insightful questions to classmates' original posts. Because of this, students had to carefully read and develop a clear understanding. This helped participants to develop their reading comprehension skills in Chinese. This finding supports the claim that DB assignments support the development of receptive skills (listening and reading) (Hyland, 2004; Manfred, 2012; Maros and Saad, 2016). But I also would like to note that DB assignments in this study supports both receptive skills (listening and reading) and productive skills (speaking and writing). This proves that DB assignments are able to facilitate learning in any domains no matter receptive or productive skills with appropriate design.

Research Question Three

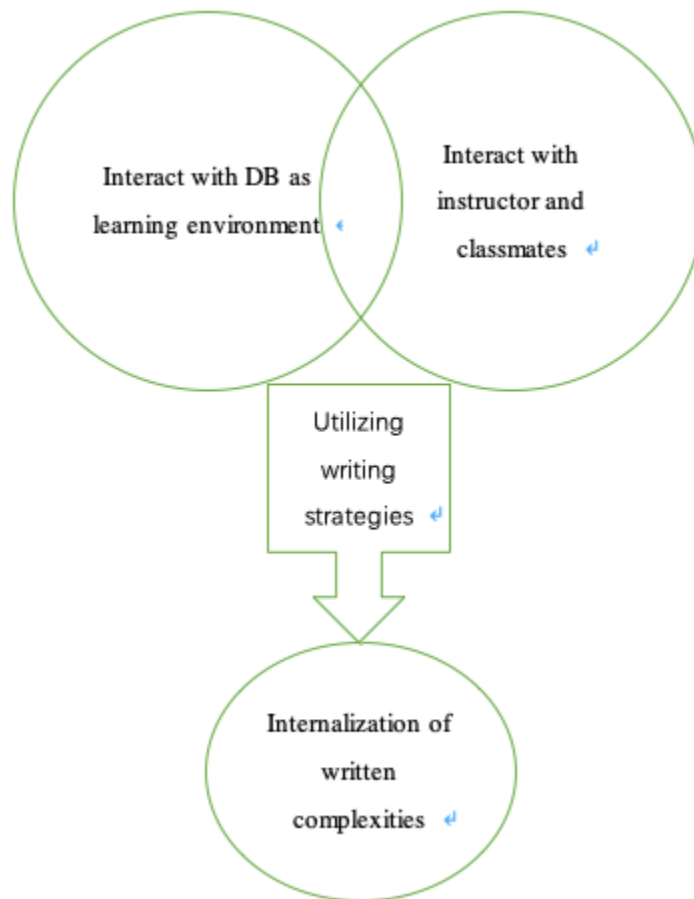
Research Question #3: In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

My third research question asked the participants to report how they utilized interactions with peers and teacher to develop written complexities during their DB activities. Although Vygotsky's sociocultural theory is the lens of my entire study, the data from question three brings the theory to life. According to Vygotsky's theory (1978), the development of abilities does not automatically take place when learners are exposed to the environment. Instead, the development of abilities is a result of interaction with the social world. In addition, according to

Vygotsky (1978), the development of abilities is made possible by means of two stages: interpsychological stage which focuses on interaction and intrapsychological stage which focuses on internalization.

The process of developing written complexities on DB echoed the two learning stages of sociocultural theory. With this lens, the data collected demonstrates the interplay between the two stages. There are three key themes in my analysis of the data: writing strategies, interaction with DB learning environment and interaction with people. These key themes highlight the interplay between stages. Below is a flowchart that helps understand the process and the relationship between the themes.

Figure 5. 1 Development flowchart on DB



During DB assignments, the participants first interacted with the DB learning environment as a supplementary space for the purpose of completing their assignment. This supplementary space provided participants time allowance which lowers participant anxiety to compose the writing. In order to go through the first stage, the participants needed a form of mediation, in this case, a well-designed and organized DB activity. A well-designed DB activity is an organized learning activity (Kozulin, 2003) that leads to interaction with the environment, interaction with social topics and allows participants to express opinion with the usage of sophisticated words.

In addition to the interaction with the DB environment, DB allows learners to interact with the instructor and classmates who serve as mediators of human beings (Kozulin, 2003). My findings confirmed that there were meaningful interactions established between learners during DB assignments. This was because participants felt that they were carrying on real conversations by asking and responding to the questions, and they had the choice on whose posts to read and comment, so they had options for who to agree and refute. This created interactive conversations. During the interaction, psychological function appears for the first time. The psychological function in this study refers to the aspects of written complexities: forming comprehensive opinion toward the discussion topic, utilizing advanced language and improving accuracy. The following paragraphs will demonstrate the second appearance of psychological function and discuss how interaction leads to internalization.

There were two types of evidence showing psychological function appeared in the stage of internalization. The first type was that during the interview participants shared that the interaction with classmates shaped their original understanding of social topics greatly. This was done through different ways. Participants learned about the ideas or new perspectives from classmates that were never thought about before by reading classmates' posts. Participants

described some questions posted by their classmates as difficult to answer even in English. They felt challenged and sometimes had to conduct online research to answer these questions. The second type evidence of psychological function appearing during internalization was the responses to peers' questions. Many of the peers' questions brought up counterexamples or counterpoints and asked the original author for further clarification. This forced participants to expand, clarify or change their original opinions and the deepened and comprehensive understanding demonstrated the appearance of psychological function. The two types of evidence above together showed the internalization of propositional complexity.

In addition to the internalization of propositional complexity, participants also reported the internalization of language development through lower-level learners imitating higher-level learners and instructor. Imitation, as you recall, is an important part of ZPD which refers to tasks that learners can complete with direction or with the help. The tenant of imitation is important to note because it facilitates learning in ZPD, in other words it moves students from actual development level to potential development level. It takes place when a lower-level learner receives help from a higher-level learner or teacher, including demonstrating how to complete a given task.

The participants in my study ranged in proficiency and ability. As such, the individual level of proficiency and ability is the actual development level of the student and the language proficiency goal for this advanced course (Advanced-low) is the potential development level. The distance between the actual developmental level and the level of potential development is Zone of Proximal Development (ZPD) (Vygotsky, 1978, p. 86). Learning is facilitated within ZPD through interactive activities and the presence of someone whose knowledge and skills are beyond the learners, in this case, the instructor and higher-level learners. The internalization of

language development within lower-level learners happened when they observed and imitated higher level learners' usage of language. Imitation was observed in the interaction between learners and instructor. Instructor demonstrated correct way of utilizing grammar patterns and vocabulary words in the comments and learners received help from the demonstration. Imitation was also observed between lower and higher-level learners in different ways. Participants shared that they would spend time to learn about the new vocabulary or grammar structures from classmates' posts and sometimes they would imitate and include the new words in their questions below. This is an obvious sign of emerging internalization of lexical sophistication. In addition to that, participants also found it helpful when they read classmates using different ways of structuring words and reading the learned words repetitively reinforced the vocabulary acquisition. Additionally, sometimes the higher-level learners used alternative words instead of textbook vocabulary, and the lower-level learner shared this to be very beneficial to observe because they were able to see both alternative and textbook vocabulary at play. In addition to the behaviors above, imitation also happened when lower-level learners observed high level learners' more in-depth and elaborated writing. By reading higher level learner's writing, lower-level participants shared that they felt embarrassed of their own work. However, they also reported using the higher learner response and a way to improve their own post. This idea of imitation became clear with the narrative of several participants. For example, during the interviews, participant A was considered as a higher-level learner by all other participants. They shared their description of Participant A's writing as informative, thought provoking and well-structured with refined and sophisticated language. Participant A became an important agent in ZPD as lower-level learners worked very hard to elevate their writings to near participant A's level. As such, the internalization of language development happened through imitation of

higher-level learners' usage of language, reading potential level of writings and learning about proficiency expectations.

In conclusion, the psychological function of written complexities appeared twice and the two stages of interaction and internalization were observed in my data. Thus my findings demonstrate Vygotsky's claim that learning happens during interaction and completes at internalization. This further supports that DB learning space with careful design is able to facilitate learning. The interactions can lead to the construction of a learning community. Although the construct of learning community is not the part of Vygotsky's theory. It has an important connection to DB as a supplementary learning space. My design of DB assignments were in agreement with previous studies on learning community but the data collected from the interview showed that students did not see this as a learning community. Below I will discuss this mismatch in details.

The Learning Community

A learning community is constructed through the interactions that facilitate student involvement, through language use in real social contexts, as well as the development of relationships with other students (Sutherland et al., 2003; García-Carbonell et al., 2004). Based on previous studies (Al-Jarf, 2004; Lam, 2000; Singhal, 1998), DB is able to provides a natural language learning environment by promoting learners' social interaction and creating an authentic discourse community. These important elements: interactions, language use in real context and development of relationships, all existed in this study's DB learning space. As such, I expected participants to acknowledge the perceived learning community in this study. However, the data showed that this was not the case. Participants did not see the DB space as community learning space. One reason for this lack of perceived learning community had to do

with the DB assignment setting. The assignment was set up so that the students were not able to read other students' posts until their post was posted. Some participants shared that their answers and opinions would have been different if they knew other classmates had similar opinion. In other words, participants wanted to be seen as "original" in their post instead of being seen as "copying" an opinion or answer. Because of the DB setting, there were times when some students posted similar opinions which impaired diversity.

Another reason why participants did not see the DB space as a community learning space was that some students treated the DB assignments less serious, while other students were more serious, motivated and engaged. For participants, the interaction felt forced and very formulaic because at the end of the day, students were just writing for credits.

It is important to note that there is a mismatch on the definition of learning community from students' perspective in this study and scholars'. According to Tinto (2005), there are three elements necessary to form a learning community: mutual engagement, shared repertoire and joint enterprise. In this study, the three elements all existed: learners on DB worked collectively to construct their knowledge on one discussion topic. Their understanding on this topic was enhanced through interaction. The relationship was also supportive that some learners even switched the writing system of their comments so that their peers can save time to read. Even though these three elements were part of DB assignments, the participants did not view the DB space as a learning community. They had different focus of defining a learning community as they compared the experience on DB to in-person learning community. According to Sutherland et al. (2003) and García-Carbonell et al. (2004), a learning community is the interactions facilitate student involvement in authentic communication through language use in real social contexts, as well as the development of relationships with others. The focus of my participants in

defining learning community is “authentic communication” which failed to be realized on DB. Participants shared that they felt that a true learning community was where people willingly engage in extra learning or take the extra effort to engage their peers. The discussion board failed to engage the students to go beyond what they were asked to. Students seldom commented beyond the amounts required, nor did they even read the replies to the questions they asked. Participants wished to see more free flowing conversations that extend beyond the requirements. These findings all provided implications to the construction of learning community in virtual space.

The findings from research question three have important implication to world language instruction. My study supports the idea that with careful design, DB as a supplementary learning space is able to facilitate learning through interaction and internalization. The careful design includes that instructors need to keep in mind two development levels: the actual level of students and the potential level and pay attention to the two appearance of psychological function. Additionally, the design of DB assignments should focus on elevating students’ actual level through interactive activities and providing opportunities for the psychological function to appear again. The interactive activities should encourage every learner to interact and observe each other. The importance of these two actions is shown from my data. My data demonstrates that it is beneficial for lower-level learners to be exposed to the performance of higher-level learners and demonstration of instructor. In this way, the lower-level learners are able to internalize language use through imitating high-level learners to develop written complexities. It is through the observation of imitation that we can confirm the second appearance of psychological function during the DB assignments.

Additional Findings

It is important to acknowledge that the designing, usage and completion of DB assignments comes with many challenges. My participants shared their concerns and difficulties during DB assignments. The most common challenge in composing DB posts was that students found it difficult to balance the DB expectations. Specifically, students found it difficult to balance expressing ideas and choosing language structures to use. In other words, they felt they had two options: one was that they could start with freely elaborating ideas without considering how many vocabulary words and grammar points to use. However, these posts have requirements on the number of vocabulary words and grammar patterns being used. In order to achieve a higher grade, some students spent more time planning out what vocabulary words and grammar points to use in order to fulfill the requirement, instead of constructing an opinion first while using vocabulary and grammar points. Most participants shared that they usually put expressing opinion as priority and then added extra vocabulary to meet the requirement.

This challenge confirms that among the four domains of language learning/communication (listening, speaking, reading, and writing), writing is considered the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). The finding explained why it is difficult to acquire writing skill in Advanced level learning. It was because that writer at advanced level are supposed to elaborate with general and specialized/professional vocabulary at both formal and informal settings. Therefore, mastery of advanced language structures and sophisticated ideas becomes a requirement for advanced level learners. However, my finding shows that to balance these two aspects is challenging for learners and this could be one of reasons that it is difficult to develop writing skill to Advanced level.

The challenge participants encountered has provided insight for instructors in world language education who are in the shift from structure-based to proficiency-based approach. Focusing on language in use refers to what individuals can do with language in terms of speaking, writing, listening, and reading in real-world situations in a spontaneous and non-rehearsed context (ACTFL guidelines 2012). Although the emphasis on utilizing advanced level grammar and vocabulary is still important as they are “bricks” for language learners to construct, instructors must include authentic opportunities for students to use language “in context”. In other words, students must go beyond “bricks”, they need to use the “bricks” to construct “buildings”. In order to do this, students need more guidance and advice before they start the DB assignments. It might be less challenging, for example, if students had the opportunity to practice how to rewrite intermediate level sentences into advanced level in class so that they can develop ability to write at advanced level naturally during DB assignments. In addition, the specific requirements of DB assignments may be reconsidered so that students can be graded based on whether they have completed the real-world tasks instead of being penalized for using less vocabulary from the chapter.

The second challenge participants encountered was that sometimes they did not feel equipped to go deeper or lacked the necessary knowledge to discuss a complex topic especially when it involved multiple subjects. This challenge is common in advanced level courses where more formal and in-depth topics are involved. This finding confirms again that writing is considered the most difficult skill to acquire (Brown, 1987; Timothy Kolade, 2012; Richard & Renandya, 2013). The implication of this challenge is that the design of advanced level courses needs to consider including the introduction of topic background before asking students to discuss. In other words, the instructor needs to provide an introduction and build background to topics

instead of assuming that every student has the background to complete the posts. The introduction to the topic, in class, can happen in English if necessary; this will ensure that students can develop knowledge about the topic and then focus on completing the DB assignments. Lastly, students could also be encouraged to adopt the strategy of conducting online research for background knowledge to overcome this challenge.

Final Thought

As indicated above, my findings demonstrate how carefully designed DB posts can carry out the development process of written complexities. The findings also supported that DB as a learning space is able to provide a formal setting for learners to utilize a repertoire of writing strategies to express opinion on discussion topics. Additionally, DB assignments provide opportunities for learners to interact with instructor and peers and facilitate the development of knowledge and language proficiency. All these opportunities contribute to the development of the written complexities.

I want to acknowledge that even though my study was about higher education and the University X is a private university where the students usually came from privileged families and were not typical urban students, my study is still applicable to urban setting because K-12 world language classes are facing similar challenges. According to the Foreign Language Enrollment Report (American Councils for International Education, 2017), there are only approximately 20% of the total school age population enrolled in the US. world language classes and a total of 11 states have world language graduation requirements. These numbers showed that K-12 world language classes are challenged with low enrollment and they are not supported by the state policies. These challenges require K-12 world language instructors to find effective approaches

to attract students and improve the retention rate. However, many effective approaches require funding support and resources of target language and community and K-12 world language classes are struggling with underfunded challenges limited access to resources (Welsh and Swain, 2020). This study has substantial implications for K-12 world language classrooms about how they can utilize DB assignment in the same manner as in this study. Like higher education, K-12 classrooms can utilize DB as a supplementary learning space to expand learning opportunities for students out-of-class. The carefully design assignments not only provide interactive and meaningful learning context to attract the students, but also facilitate development of written complexities that lead students to accomplishment.

Additionally, this study has implication for teacher training. The implication to teacher training programs is that future world language instructors should be prepared with the ACTFL standards and guidelines and learn how to utilize out-of-class learning tools and technological tools to better serve class learning purposes and elevate students' level from actual developmental level to potential developmental level. These inclusions for world language teacher preparation can be become a reality by ensuring that state Department of Public Instruction update their world language teacher preparation programs by demanding that teachers be training in standards, guidelines, how to utilize out-of-class learning tools and technological tools. This policy has the potential to update the teaching strategies for K-12 education to include technology-assisted teaching and advocate world language instructors to integrate out-of-class learning tools and technological tools in the curriculum design.

Additionally, DB learning spaces can support both teachers and students in our current virtual reality. As we are teaching in times of the current COVID-19 pandemic, instructors and students are seeking the most effective strategies and practice for online teaching. As such, DB

learning space and the design of DB assignments can be introduced to K-12 world language instructors as a supplemental space for students to strengthen their language abilities. This is a tremendous challenge for K-12 world language classes to carry on teaching and learning through remote learning model. However, it is also an opportunity for K-12 world language classes to explore supplementary learning environment and technological tools to facilitate language learning even though there are no face-to-face teaching opportunities. In K-12 spaces, DB assignments can be implemented to develop writing, but can also be used to develop the other domains as well. This is because DB assignments can develop both receptive (listening and reading) and productive (speaking and writing) skills. DB assignments are also feasible as they do not require complicated technology support, nor expensive subscriptions.

Study Limitations

One of the biggest limitations of this study is that the collected data came from one site only. By observing and interviewing participants from different universities, I could have had collected multiple stories and obtained a more reliable data source and a wider view of the experience of multiple students. Additionally, within the site, another limitation came from the student population in this university. The university site used in this study is a prestigious private university with students who are committed to their academics and who bring many experiences into their college career. Because of the high standards of this particular university, the students who participated in this study are very motivated in learning Chinese and highly self-disciplinary in completing all assignments. The characteristics of the university and students background are inseparable from the data and findings. In this case, students' learning motivation leads to high quality of DB assignments completion which may not be the same case at other schools. The

third limitation comes from the small pool of participants. For this study, I was able to recruit only five participants. Therefore, it has limitations in generalizability. A more diverse participants would have brought a much richer data and narratives.

Future Research

As introduced in chapter one, this study aimed to fill in two research gaps. First, previous studies on written complexity focused on linguistic complexity only. This study advocates for a more holistic measurement of a written product that includes propositional complexity, lexical sophistication and accuracy. There are other aspects that were not included as part of written complexity due to the scope of this study. However, future research could continue exploring other aspects that can also be included in the measurement of written complexities. For example, this study chose lexical complexity under linguistic complexity, and there are three aspects of linguistic complexity could be measured in future studies: morphological, syntactic, and phonological complexities. Under lexical complexity, lexical sophistication was chosen in this study because of the length limit of DB posts and leaving lexical density and diversity. However, another path to measure complexities is to measure lexical density and diversity in learners' writing. In this way, we can have a more diverse and comprehensive approaches to measure learners' written complexities depending on the length of the written texts and measuring purposes.

Second, the studies available on language learners' written products and DB focus on generalizing development patterns of written complexities (Mancilla et al.,2017; Raish, 2017; Vyatkina, 2012) and pedagogical value of DB (Chism, 2000). There appears to be a gap of research concerning students' voice and their experiences on the development of written

complexities during DB activities. This study made contribution by analyzing and discussing learner's experience in developing written complexities during DB assignment. However, as indicated in research limitation, the findings are limited to the specific university and students background setting. For future research, it will be very important to recreate this same study in multiple locations in order to create a stronger data source that demonstrates learners' experience.

Conclusion

The purpose of this study was to generate new knowledge about what tools and strategies Chinese as a Foreign Language (CFL) learners use to develop written complexities during the DB discussion activities. In addition, this study examined how CFL learners utilize DB activities and interactions on DB to develop written complexities. It is well known in the world language classroom that the writing domain is the most difficult one for world language learners. Another layer of complication is that traditional world language teaching limits the learning to class meeting time. This has proven to limit the development of the four domains. Additionally, many schools lack resources for learners and many communities lack access for learners to interact with the target language community and culture. As such, proficiency in the language becomes difficult. Fortunately, this study has demonstrated that DB as a supplementary learning space can be implemented to provide opportunities for students to develop their language, especially, their writing skills. My study analyzed the DB posts of every participants to highlight student experiences in the development of their written complexities using DB as a learning space.

Based on the data analysis the findings answered the three research questions.

1. What tools and strategies, if any, do the CFL learners utilize to develop written complexities during DB activities?
2. In what ways, if any, do CFL learners utilize DB activities as a supplementary learning environment to develop written complexities?
3. In what ways, if any, do CFL learners utilize interactions with peers and teacher to develop written complexities during DB activities?

The answers interplayed with each other and formed a bigger picture of development process happening in DB learning space. Within the DB learning environment the learners interacted with people and utilized writing strategies to develop written complexities. In addition, the DB learning space created a less stressful learning environment that lowered learners' anxiety level and facilitated language acquisition. As a result, DB learning space brought out positive learning outcomes and encouraged multiple perspectives and individual voices.

This study yields a number of implications to world language education. One contribution my study made is to propose a term of “written complexities” that holistically measures propositional complexity, lexical sophistication and accuracy. This measurement goes beyond the focus on language development and includes cognitive complexity as an Advanced-level language learner can demonstrate both sophistication and depth of language and thought in the four domains of communication (ACTFL, 2012). Another contribution this study made is that it explored the student experience and listened to their voices during DB activities. It is important to acknowledge that DB assignments do not automatically guarantee a supplementary space and an opportunity to develop written complexity. DB, as a supplementary space for language and writing practice, must be carefully designed. The design of DB assignments must be in align with ACTFL guidelines and involve interactions, with specific requirements.

All in all, this study moves the field of world language education into a hybrid space where virtual and face-to-face opportunities are equally important in developing written complexities. My hope is that world language teachers K-12 to higher education will learn from my findings and design supplementary spaces for students to enhance their language ability. Doing so will lead to a generation of students who are fluent multilingual/multicultural citizens of the world.

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Appendix A Recruiting Emails

Recruiting Email 1

Subject: Request to participate

Dear Student:

Good morning! My name is Xiaorong Wang, a Chinese lecturer working at University of Chicago. Currently, I am also a student myself working on my PhD at the University of Wisconsin-Milwaukee. I am conducting a study, Learners' Experiences of Written Complexities Development through Discussion Board Activities in Chinese as a Foreign Language Class.

The study will focus on understanding student' learning experiences with discussion board activities. I am interested in how students develop written complexities through the interaction on discussion board and the completion of discussion board activities.

In this study, your posts, questions, and comments on discussion board will be saved for analysis. Choosing not to participate will not negatively affect your grades, or the relationship with your instructor, and I will remind your instructor to verbally ask you in class.

Please let me know if you would be willing to participate by sending a brief email response to xiaorong@uchicago.edu or sign the consent form with X laoshi during your individual meeting.

Thank you in advance.

Sincerely,

Xiaorong Wang

Recruiting Email 2

Subject: Request to participate

Dear Student:

Good evening! I hope you are settled down and staying healthy!

My name is Xiaorong Wang, a Chinese lecturer working at University of Chicago.

Currently, I am also a student myself working on my PhD at the University of Wisconsin-Milwaukee. I am conducting a study, Learners' Experiences of Written Complexities Development through Discussion Board Activities in Chinese as a Foreign Language Class.

The study will focus on understanding students' learning experiences with discussion board activities. I am interested in how students develop written complexities through the interaction on discussion board and the completion of discussion board activities.

Thank you very much for agreeing on letting me save your posts, questions and answer on discussion board. In the second stage I would like to conduct one interview with you through Zoom. This interview will take about 60 minutes and the conversation will be audio-recorded. Choosing not to participate will not negatively affect your grades, or the relationship with your instructor in this current quarter.

Upon completion of the interview, I will send study participants a \$50 Amazon gift card. Please let me know if you would be willing to participate by signing the attached consent form and sending it back to me.

I can also follow-up with you by phone and answer additional questions if needed. My contact information is listed below.

Thank you in advance. Take care and stay healthy!

Sincerely,

Xiaorong Wang

Appendix B: Interview Protocol

Semi-structured Interview Guide for Interviews

Research Question: What are the experiences of advanced level CFL students in higher education in developing written complexities during discussion board activities?

Time of interview:

Date:

Place:

Name:

Ask permission to begin recording.

Introduction/Description of Project

Interviewer/Interviewee Introductions

Provide an approximation of how long the interview will take

Explain the purpose of the study

Explain of the sources of data being collected

Explain what will be done with the data to protect the confidentiality of the participant

Interview Questions

1. Please talk about your background of learning World languages. What World Languages have you studied? What are the reasons of enrolling in this course? What is your motivation for learning Chinese? Anything else you would like me to know about you learning Chinese?
2. Is completing the tasks on DB different from other class activities? Could you tell me about the differences or similarities in detail?
3. How do these differences or similarities affected you in terms of completing the assigned tasks? Can you give me some examples both positive and negative?
4. Do you think learning on DB provided you additional opportunities to learn and practice? If yes, What kind of learning opportunities did DB provide to you, i.e. what skills have improved by completing the activities? If no, what additional opportunities do you wish were included in the activities?
5. How do you feel about learning on DB as a learning community? How do you feel about the DB activities prompts? How do you feel about the requirements? Do you think you

made contribution to understanding the topic, if yes, in what ways? How do you feel about other students' contribution?

6. What helped or hindered your learning on DB? Can you give me examples?

Now we are going to look at the 5 DB activities you completed in the quarter.

7. What did you do to compose your first DB post? What tools, resources or strategies did you use? What did you do when you encountered difficulties? Did you meet all the requirements? What did you do to meet all the requirements? Did you understand the topic? How confident do you feel about it in terms of language use? How confident do you feel about your post? What could you have done better?

8. For your second, third and fourth posts, did you do anything differently from your first? Did you do anything different after receiving feedback from teacher's and classmates' comments?

9. Let's look at your recent post. Comparing to the previous posts, do you feel the writing gets better or not? In what ways did you compose the recent post differently from previous ones??

10. Let's look at the questions you posted. What is your understanding of insightful questions? What did you do to make sure that your questions were insightful?

11. Let's look at the responses you posted. How did you feel about the questions your classmates posted? Did the questions and comments impact your original understanding of the topic? Did you have difficulties understanding the questions or composing the responses? What did you do when you had difficulties?

12. Let's look at the chart that evaluates your writing in the last four DB activities. Three categories were assessed: accuracy, the number of idea units, the number of advanced words used in your posts. You can see the changes of the three categories in the last four DB activities. How do you feel about these changes? What do you think have caused these changes?

The following questions are based on the DB posts analysis:

13. Tell me about your experience interacting with other learners on DB. Did you ask for explanation or clarification? Did anyone ask for it from you?

14. Did you find any new words or information from others' posts useful? Did you borrow any new words or ideas from others? Can you give me examples?

15. Are there any posts from other students impress you very much? Could you tell me about the post and experience when you read the post or posted question below?

16. Are there any questions from others below your posts impress you very much? Could you tell me about the questions and your feelings when you read or responded to them?

Appendix C: HSK Level 5 Vocabulary List

Please see the separate attachment.

Appendix D: Discussion Board Assignments Prompts

L6 Prompt

在媒体上我们时常能见到“瘦”才是美的宣传 promotion。你同意这种看法吗？在你看来，这样的审美观(aesthetics)是怎么产生的？这对社会有什么影响？

We often see the promotion of “being thin is being pretty” on media. Do you agree with this opinion? In your viewpoints, how did this aesthetics originate from? How does this concept influence our society?

L7 Prompt

你认为一个人喜欢听哪种音乐，跟文化、年龄、性别、宗教、生活背景、教育水平这些因素有关系吗？比如：年轻人、中年人和老年人喜欢的音乐一样吗？男性和女性喜欢听的音乐不同吗？来自不同文化、生活背景的人喜欢的音乐相似吗？请说一个故事来表达你的看法。

Do you think a person’s favorite music has to do with culture, age, gender, religion life background, educational level? For example, do people at different ages listen to the same music? Do males and females listen to different music? Do People coming from different culture, and life background listen to similar music? Please tell a story to express your opinion.

L8 Prompt

有的人认为大麻是毒品，而香烟和酒不是毒品。相反地，有些人认为跟大麻相比，香烟和酒对人体的伤害程度更大，所以香烟和酒才是毒品。你同意哪一种看法？为什么？请举例说明。

Some people think that marihuana is a drug, but not cigarettes and alcohol. On the contrary, some people think cigarettes and alcohol are even more harmful compared to marihuana. Which side do you agree with and why? Please raise examples to illustrate your opinion.

L9 Prompt

你认为不同年龄段的人(年轻人、中年人、老年人)在寻找对象时，会考虑哪些相同或不同的条件？比如：外表、内在、年龄、学历、家庭背景、工作、名利、财富等等。请说说你的看法。

In your opinion, what are the same or different requirements of people at different ages when looking for their partners? For example, appearance, inner beauty, age, educational level, family background, job, fame, wealth, etc. Please express your opinion.

L10 Prompt

政府最近开设援助流浪汉的项目，流浪汉可以申请这笔经费。请你从流浪汉的角度，先叙述自己的故事和你的生活困难，再说明你申请这笔经费的目的。

The government recently initiated a program that can assist the homeless. The homeless can apply for this financial aid. Please write an application letter as a homeless person. First, narrate your life story and your life difficulties, and then explain your purpose of applying for this aid.

CURRICULUM VITAE

Xiaorong Wang

Place of birth: Dongtai, Jiangsu Province, China

Education

B.A., East China Normal University, June 2006

Major: Teaching Chinese as a Foreign Language

M.A., East China Normal University, June 2009

Major: Teaching Chinese as a Foreign Language

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Teaching Experience:

2018-present Assistant Professor of Instruction at University of Chicago

2017-2018 Lecturer at University of Chicago

2013-2017 Chinese Program Coordinator and senior lecturer at University of Wisconsin-Milwaukee

2010-2013 Lecturer at University of Wisconsin-Milwaukee

2009-2010 Visiting lecturer at University of Virginia