

THE ROLE OF VOCABULARY IN CHINESE ENGLISH-LANGUAGE BEGINNING  
LEARNERS' WRITING DEVELOPMENT

A Dissertation

by

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## ABSTRACT

This dissertation, consisting of one systematic review and two empirical studies, aims to examine the relationship between English vocabulary knowledge and English writing quality with a sample of Chinese-speaking 8th and 9th graders. As the findings reveal, the vocabulary-writing relationship varies with dimensions of vocabulary knowledge. Specifically, vocabulary breadth consistently contributes to writing quality across grades whereas vocabulary depth displays a stronger predictive power for writing quality in the 9th grade. Additionally, after-class English literacy experiences exert indirect effects on the 9th graders' writing quality through overall vocabulary knowledge.

The systematic review of the current literature synthesizes the role of English vocabulary in English language learners' (ELLs) writing development. Though, overall, vocabulary breadth has a more prominent role than vocabulary depth in ELLs' writing quality, productive vocabulary depth may still significantly predict their writing performance. Learning contexts, students' English proficiency, scoring rubrics, and vocabulary measures are possible factors mediating the vocabulary-writing relationship.

The first empirical study looks into the relationship between vocabulary breadth, vocabulary depth, and writing abilities with the 8th and 9th graders. Measures include tests of vocabulary size, word association, and morphological awareness, and English writing samples. Standard multiple regression analyses show that vocabulary breadth makes a bigger contribution to writing performance across grades. However, some

aspect of vocabulary depth is only related to the 9th graders' writing performance, suggesting a growing impact of vocabulary depth on writing development.

Using the same sample of students, the second empirical study investigates: (1) the relative contribution of vocabulary knowledge, grammatical knowledge, and idea-generating ability to writing quality; (2) the impact of individual motivation and after-class English literacy experiences on writing quality. In addition to the measures utilized in the first empirical study, this study also utilizes a background questionnaire and tests of grammar and idea-generating ability. Path analyses identify overall vocabulary knowledge as the most prominent predictor of the students' writing quality. Furthermore, the 9th graders' after-class literacy activities have a significant, yet indirect relationship with writing through vocabulary. Therefore, it is likely that the contribution from the literacy activities to ELLs' early writing development may be mediated by their language proficiency levels.

## DEDICATION

To my parents, for their unconditional love and punctual lunch deliveries;

To my husband Peng Zhang, for being a strong shoulder to lean on and a soft pillow to fight with;

To YOYO, the cutest yet craziest, meanest, and loudest companion, without whom my dissertation would have been done two years earlier and would have been better, too.

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## TABLE OF CONTENTS

	Page
INTRODUCTION .....	1
DOES VOCABULARY REALLY MATTER IN ENGLISH LANGUAGE LEARNERS' WRITING? A SYSTEMATIC REVIEW .....	3
Research Questions .....	5
Method .....	6
Results .....	10
Contexts for the Studies .....	10
Characteristics of the Participants .....	11
Study Designs and Sampling .....	11
Characteristics of the Measures .....	12
Relationship between Vocabulary and Writing .....	16
Discussion .....	27
Characteristics of the Studies .....	28
Vocabulary Breadth, Vocabulary Depth, and Writing .....	30
Future Directions .....	33
Classroom Implications .....	34
DEPTH OR BREADTH: THE ROLE OF VOCABULARY IN CHINESE ENGLISH-LANGUAGE BEGINNING WRITER'S DEVELOPMENT .....	36
Literature Review .....	37
Vocabulary Breadth and Depth .....	37
Vocabulary and Writing .....	41
Research Questions .....	45
Method .....	46
Participants .....	46
Measures .....	47
Procedures and Analysis .....	51
Results .....	53
Participants' Background Information .....	53
Descriptive Statistics .....	55
Performance Comparisons between Grades .....	60
Predictors of English Writing .....	61
Discussion .....	65
Relationship between Vocabulary Breadth and Depth .....	66
Vocabulary Breadth, Vocabulary Depth, and Writing Quality .....	68

Classroom Implications .....	73
Limitations and Future Studies .....	75
<b>VOCABULARY, GRAMMAR OR IDEATION, WHICH MATTERS MOST IN SECOND-LANGUAGE WRITING? .....</b>	<b>76</b>
Literature Review .....	77
Theoretical Framework .....	77
Vocabulary and Writing .....	78
Grammar and Writing .....	80
Ideation and Writing .....	84
Language Learning, Motivation, and Home Literacy Activities .....	85
Research Questions .....	88
Method .....	89
Participants .....	89
Measures .....	90
Analyses .....	94
Results .....	95
Participants' Background Information .....	95
Descriptive Statistics .....	98
Correlational Relationships .....	98
Background and Performance Differences across Grades .....	104
Predictors of English Writing .....	105
Discussion .....	111
Vocabulary, Grammar, and Writing .....	112
Ideation and Writing .....	115
Literacy Activities, Motivation, and Writing .....	116
Classroom Implications .....	119
Limitations and Future Studies .....	120
<b>CONCLUSIONS .....</b>	<b>121</b>
<b>REFERENCES .....</b>	<b>124</b>
<b>APPENDIX A .....</b>	<b>139</b>
<b>APPENDIX B .....</b>	<b>142</b>
<b>APPENDIX C .....</b>	<b>144</b>
<b>APPENDIX D .....</b>	<b>147</b>



## LIST OF FIGURES

	Page
Figure 1 Flowchart of the Literature Search .....	9
Figure 2 English Proficiency Levels before Junior High School Entry .....	54
Figure 3 The Simple View of Writing Illustrated by Berninger and Amtmann (2003) .....	77
Figure 4 Path Analyses Involving the Componential Writing Skills and Writing Performance .....	105
Figure 5 Path Analyses Involving the 9th Graders' Componential Writing Skills and Writing Performance .....	107
Figure 6 Proposed Model Involving Literacy Activities, Componential Writing Skills, and Writing Performance .....	108
Figure 7 Path Analyses Involving the 8th and 9th Graders' Literacy Activities, Componential Writing Skills, and Writing Performance .....	109
Figure 8 Proposed Model Involving Motivation, Componential Writing Skills, and Writing Performance .....	110
Figure 9 Path Analyses Involving the 9th Graders' Motivation, Componential Writing Skills, and Writing Performance .....	111

## LIST OF TABLES

	Page
Table 1 Descriptive Statistics of Vocabulary and Writing Measures .....	56
Table 2 Correlations between the 8th Graders' Vocabulary Variables and Writing Quality .....	58
Table 3 Correlations between the 9th Graders' Vocabulary Variables and Writing Quality .....	59
Table 4 Regression Analyses Predicting Overall Writing Quality and Individual Componential Skills of Writing Quality .....	64
Table 5 Demographic Summary for the Participating Students .....	89
Table 6 Internal Consistency Estimates (Cronbach's Alpha) and Inter-Rater Reliability of the Measures .....	91
Table 7 Students' Involvement in After-Class English Literacy Activities .....	97
Table 8 Descriptive Statistics of Vocabulary, Grammar, Ideation, and Writing Measures .....	100
Table 9 Correlations between Observed Variables among the 8th Graders .....	101
Table 10 Correlations between Observed Variables among the 9th Graders .....	102
Table 11 Correlations between Observed Variables and Background Information among the 8th and 9th Graders .....	103
Table 12 Performance and Individual Differences between the 8th and 9th Graders .....	104

## INTRODUCTION

Vocabulary knowledge is an essential building block to young English language learners' (ELLs) early writing development. However, in the current literature, there are few empirical studies documenting the effects of ELLs' English vocabulary knowledge on English writing quality. Even fewer studies have investigated the multidimensionality of vocabulary knowledge in the context of ELL writing or the relative contributions of vocabulary knowledge, grammatical knowledge, and idea-generating ability in the prediction of ELL writing quality. The scarcity of such studies justifies the need for more vocabulary studies in terms of diversified populations, research foci, measures, and designs.

Focusing on the role of vocabulary in ELLs' writing development, this dissertation is composed of three studies: one systematic literature review and two empirical studies. To help determine the nature of my empirical studies, I synthesized the findings of the current literature on the relationships between ELLs' breadth of vocabulary, depth of vocabulary, and writing performance. Then, I designed two empirical studies to address specific gaps identified in the systematic review. The first empirical study looked into the relationship between young learners' breadth of vocabulary, depth of vocabulary, and writing abilities with a sample of Chinese junior high school students. The second empirical study compared the contributions of these Chinese students' vocabulary knowledge, grammatical knowledge, and idea-generating ability to their writing and investigated how these contributions might be impacted by

their after-class English literacy activities and motivation for learning English. Finally, based on the overall findings, I addressed classroom implications regarding a systematic approach to vocabulary instruction.

## DOES VOCABULARY REALLY MATTER IN ENGLISH LANGUAGE LEARNERS' WRITING? A SYSTEMATIC REVIEW

As a complex process involving appropriate and even creative applications of both linguistic and metacognitive skills, writing has been one of the most serious challenges for English-only students and more so for ELLs. For example, according to the 2011 national writing assessment in the U.S. (National Center for Education Statistics, 2012), around 50% of eighth- and 12th-graders performed at the basic level and 20% below the basic level in writing. The percentages of the students at Basic did not significantly differ by race/ethnicity. However, Hispanic students, most of whom were probably ELLs, were more likely to write below Basic (30%) than White students (13%), and less likely to write at Proficient (11%) than White students (30%) (National Center for Education Statistics, 2012). ELLs in non-English-speaking countries have more difficulty with writing in English, a non-societal language. They may not have sufficient English to readily express ideas in writing even after years of formal English learning. By the time they attend universities in English-speaking countries, they might find it still three or four times more difficult to complete writing assignments than their native English-speaking peers (Mullins, Quintrell, & Hancock, 1995).

Among various methods of improving students' writing, increasing vocabulary knowledge seems to be a fundamental approach. Learners' acquisition of vocabulary knowledge has both direct and indirect effects on reading comprehension for both English-only students and ELLs (Proctor, Uccelli, Dalton, & Snow, 2009; Reed,

Petscher, & Foorman, 2016). Given the symbiotic relationship between reading and writing, it naturally follows that writing proficiency should also depend on vocabulary knowledge that a writer has acquired.

There is a clear consensus that vocabulary knowledge is a multidimensional construct. To master a word, a learner needs to acquire nine aspects of vocabulary knowledge: (1) pronunciation; (2) spelling; (3) root, base, and stem; (4) link between a particular form and meaning; (5) concept(s) in a variety of contexts; (6) associations with other words; (7) grammatical functions; (8) collocations; and (9) register and frequency (Nation, 1990, p. 31; 2013, p. 49). In empirical studies, the common operational dimensions of vocabulary knowledge are receptive versus productive vocabulary, and breadth of vocabulary versus depth of vocabulary.

Of the commonly paired dimensions, vocabulary breadth and vocabulary depth have been receiving growing research interest, particularly in studies of reading (Reed et al., 2016). Breadth of vocabulary knowledge, also known as vocabulary size, measures the quantity of words known, with emphasis on pronunciation, spelling, and basic meaning(s) (Qian, 2002). On the other hand, depth of vocabulary knowledge looks deeper into quality of knowing a word, including “register, frequency, and morphological, syntactic, and collocational properties” (Qian, 2002, p. 514). Though both vocabulary breadth (Lee, 2011) and vocabulary depth (Proctor et al., 2009) have been independently found to significantly predict English reading, new research suggests that different dimensions of vocabulary knowledge may be associated with performance on different measures of English reading (Li & Kirby, 2015). In their study of Chinese

high school students, Li and Kirby (2015) found that vocabulary breadth predicted general reading comprehension as measured by a multiple-choice test, whereas vocabulary depth facilitated a post-reading summary writing, which required a more detailed understanding of the text.

Comparatively, the rigorous examination of the effects of vocabulary knowledge has been much less common in studies of writing than in studies of reading, which leaves unanswered major questions about the nature of the vocabulary-writing relationship. For example, has the vocabulary-writing relationship really been supported by empirical studies? How do different dimensions of vocabulary knowledge contribute to writing development? Could one dimension of vocabulary knowledge play a more important role in writing development than others? Are there any factors moderating the association between vocabulary knowledge and writing abilities, such as ELL status?

### **Research Questions**

To address the gap in the literature, this systematic literature review synthesizes what role English vocabulary plays in English writing development and how this role might change in the presence of various factors. Moreover, this literature review has two foci: first, on ELLs who are learning English as a second/foreign language and second, on studies involving either one or both of the dimensions of vocabulary knowledge, breadth of vocabulary knowledge and depth of vocabulary knowledge. Specifically, this review answers the following questions:

- What are the major characteristics of the reviewed studies?
- What is the nature of the association between ELLs' vocabulary breadth,

vocabulary depth, and writing quality?

- What are the possible factors moderating the relationship between vocabulary and writing quality?
- What are the major directions for future studies?

### **Method**

The systematic search was completed in March 2016. Four databases were utilized for the search: ERIC, PsycInfo, Linguistics and Language Behavior Abstract (LLBA), and Education Full Text (H. W. Wilson). A broad search strategy for identifying vocabulary-writing studies was initially used. Two groups of search terms were combined in the search: one group consisted of “writing” and its variation terms “composition,” “essay,” and “prose;” the other group was composed of “vocabulary” and “lexicon.” Limited to peer-reviewed scholarly journals, the initial search yielded 6,738 hits. After 681 duplicates were removed, the 6,057 retrieved titles and abstracts were screened using the following criteria:

- Purpose & context: Studies should empirically examine the relationship between English vocabulary and English writing quality either in English-as-second-language (ESL) or English-as-foreign-language (EFL) contexts where English was acquired as an additional language.
- Participants: Participants should not be reported to have any language impairments. In each study, those who spoke languages other than English as their first language should comprise at least part of the sample. As studies involving non-traditional adult learners would be excluded, the participants



would be undergraduates or younger.

- Measures:
  - The final written products should be paragraphs or essays developing a central idea. However, studies would be excluded if they focused on academic writing, that is, any writing done to fulfill a course requirement or used for publications or conference presentations. As academic writing requires a specific set of vocabulary, structure, and style, it would be hard to justify the decision to mix studies of academic writing and general writing in this review.
  - Independent vocabulary measures should be adopted. If the vocabulary measures were derived from the writing samples, the study would be excluded.
  - In a single study, independent variables might include vocabulary and other skills/knowledge.
  - Quality of writing samples should be reported.

Using the selection criteria, 777 non-empirical articles and studies involving participants with impairments, disabilities, and emotional disturbance were first removed. Then excluded were 4,131 studies that focused exclusively either on vocabulary acquisition or writing improvement. The screening also led to the removal of 208 studies, as the outcome variables of interest in these studies were word-level or sentence-level writing. Next, among those removed for failing to meet the screening criteria, there were 577 corpus-based studies that conducted linguistic pattern analyses

(e.g., spelling error, or sentence complexity) of ESL writing samples, or compared linguistic features between ELLs' and their English-only peers' writing samples. Three hundred and nineteen studies addressing academic writing were also removed during the screening. Out of the remaining 45 studies, 15 examined the relationship between vocabulary and writing in other languages (e.g., German, Chinese, Korean, or Spanish); 19 studies had English-only participants. Eleven studies were thus retained. Two more studies were identified when the reference lists of the 11 studies were checked against the inclusion criteria. No systematic reviews or meta-analyses were identified in the screening process (see Figure 1).

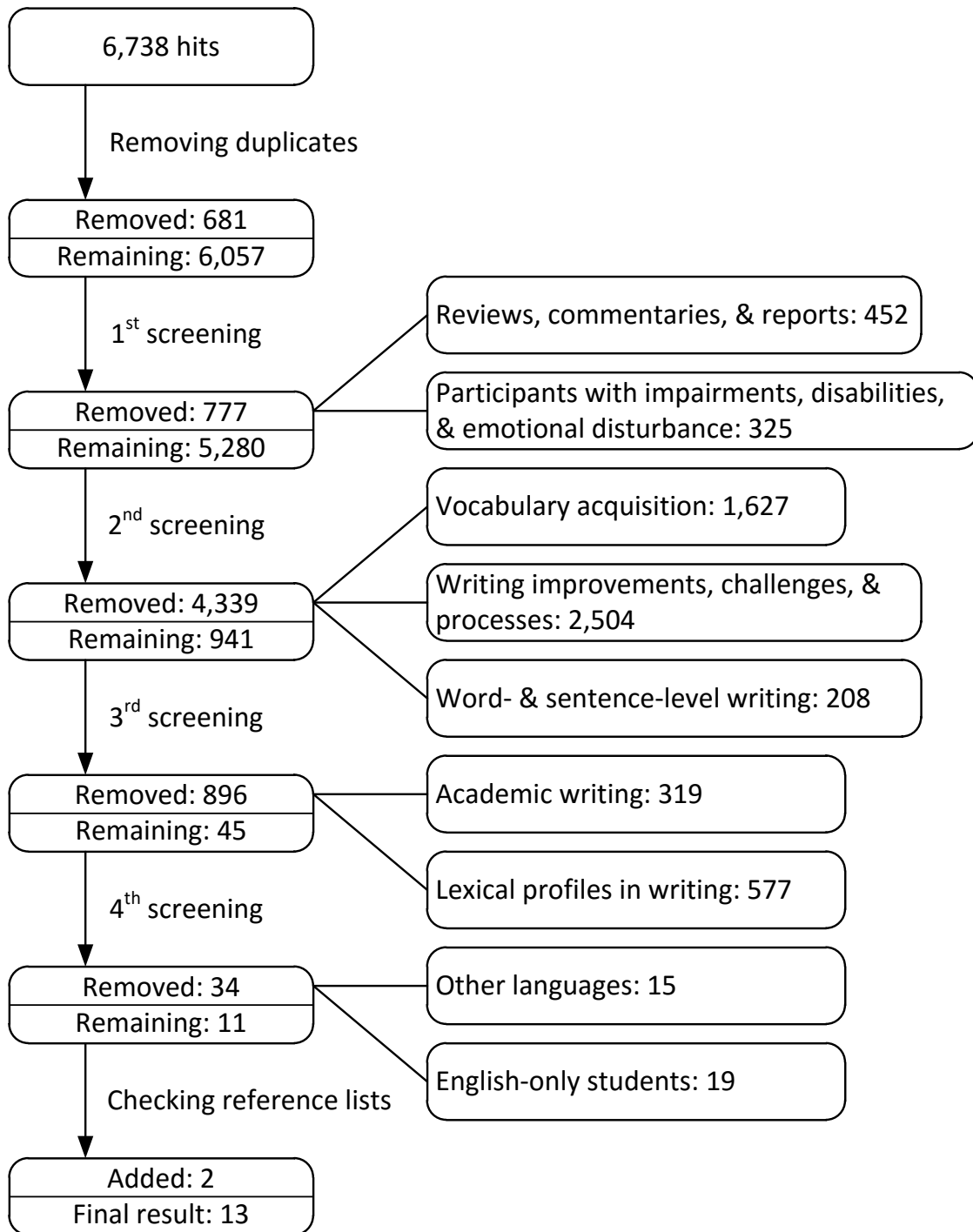


Figure 1. Flowchart of the literature search.

The 13 identified studies were coded for major characteristics, namely, publication date, participant characteristics (ethnicity, ESL/EFL context, age, language proficiency, and hours of formal English instruction), measures (dimension of vocabulary measured, standardized or researcher-developed tests, writing genre, and inter-rater reliability), and methodological characteristics and qualities (research paradigm, sample size, sampling, design, and statistical techniques). Of special note was that not every study neatly categorized the vocabulary measure(s) into either breadth or depth dimensions. For the coding purpose of this review, the description of the measures in each study was carefully analyzed. Vocabulary measures that required test-takers to link words with their general meanings were coded as breadth measures, while those focusing on semantic collocations and associations were coded as depth measures. All the findings were synthesized based on the nature of relationship between vocabulary and writing quality (i.e., positive, negative, or no relationship). Mediator variable(s) in each study, if any, were also recorded.

## **Results**

### **Contexts for the Studies**

Of the 13 studies identified, 10 were published between 2008 and 2016, indicating an emerging area of research on the vocabulary-writing relationship. Slightly more studies were conducted in EFL than ESL contexts. Five took place in Canada (Harrison, Goegan, Jalbert, McManus, Sinclair, & Spurling, 2016; Lee, 2003), England (Babayigit, 2014), and the U.S. (Mancilla-Martinez, 2010; Silverman, Coker, Proctor, Haring, Piantedosi, & Hartranft, 2015). The remaining eight involved participants from

Japan (Baba, 2009; Sasaki & Hirose, 1996), Hong Kong (Zhang, McBride-Chang, Wagner, & Chan, 2014), Spain (Llach & Gallego, 2009), the Netherlands (Schoonen et al., 2003; Schoonen, van Gelderen, Stoel, Hulstijn, & de Gloopper, 2011; van Gelderen, Oostdam, & van Schooten, 2011), and Denmark (Stæhr, 2008).

### **Characteristics of the Participants**

The number of participants ranged from 49 to 389 in these studies; eight studies recruited more than 100 participants. Six studies involved primary school students (Babayigit, 2014; Harrison et al., 2016; Llach & Gallego, 2009; Mancilla-Martinez, 2010; Silverman et al., 2015; Zhang et al., 2014); five focused on secondary school students (Lee, 2003; Schoonen et al., 2003; Schoonen et al., 2011; Stæhr, 2008; van Gelderen et al., 2011), and two examined university students (Baba, 2009; Sasaki & Hirose, 1996). While the studies in ESL contexts involved participants from lower primary grades, those in EFL contexts had participants from upper primary grades, secondary schools, and universities. Regarding participants' background information, the studies highlighted different aspects. Some reported students' English proficiency levels and/or hours of instruction, and others provided participants' socioeconomic status. Three studies (Babayigit, 2014; Harrison et al., 2016; Silverman et al., 2015) explored relationships between early literacy skills and writing outcomes with both English-only and ELL students.

### **Study Designs and Sampling**

From a methodological perspective, there were two longitudinal studies conducted in the Netherlands (Schoonen et al., 2011) and Hong Kong (Zhang et al.,

2014), two cross-sectional studies involving secondary students (Lee, 2003) and upper primary school students (Silverman et al., 2015), and three vocabulary intervention studies (Lee, 2003; Mancilla-Martinez, 2010; van Gelderen et al., 2011). Out of the 13 studies, nine did not provide any information concerning their sampling methods; three (Llach & Gallego, 2009; Mancilla-Martinez, 2010; Sasaki & Hirose, 1996) explicitly stated that their participants came from intact classrooms; one adopted a stratified random sampling method (Silverman et al., 2015). Regression analysis and structural equation modeling were the most common statistical methods, which were used in 11 out of the 13 studies.

### **Characteristics of the Measures**

Except for the three vocabulary intervention studies (Lee, 2003; Mancilla-Martinez, 2010; van Gelderen et al., 2011), the identified studies generally included measures other than vocabulary and writing, such as spelling, working memory, metacognitive knowledge, and writing abilities in first language (L1). However, this review focuses mainly on the measures of English vocabulary and English writing. Overall, only four studies (Baba, 2009; Llach & Gallego, 2009; Silverman et al., 2015; Stæhr, 2008) clearly categorized their vocabulary measures as measures of breadth or depth, and the remaining studies labeled their vocabulary measures broadly as measures of vocabulary knowledge.

#### **Vocabulary measures**

To quantify vocabulary size, nine studies adopted either the Vocabulary Level Test (VLT) and the like (Baba, 2009; Llach & Gallego, 2009; Schoonen et al., 2003,

2011; Stæhr, 2008) or picture vocabulary tests (Babayiğit, 2014; Harrison et al., 2016; Silverman et al., 2015; Zhang et al., 2014).

By drawing words from frequency word lists, the VLT was developed to test learners' vocabulary size (Nation, 1990, 2013; Schmitt, Schmitt, & Clapham, 2001). The frequency word lists consist of words grouped by frequency of occurrences in daily or academic English usage. Five frequency bands are usually used in the VLT: the most frequent 2000 words, 3000 words, 5000 words, 10,000 words, and academic vocabulary. The test may take a definition-matching format (i.e., to choose three words from six given words that match with three given definitions) (Baba, 2009; Stæhr, 2008), or a fill-in-the-blank format (i.e., to fill in the missing word in a sentence) (Llach & Gallego, 2009). Schoonen et al. (2003, 2011) borrowed the idea of word-frequency levels when developing their vocabulary measures. The words in their vocabulary measures were selected from the 5000 most frequent words in the Collins COBUILD corpus and checked against a word list compiled from EFL textbooks used in the Netherlands.

Instead of the VLT test, the studies with primary school students implemented picture vocabulary tests in a one-to-one format, such as the Woodcock-Johnson III Picture Vocabulary subtest (Silverman et al., 2015), the Peabody Picture Vocabulary Test (Harrison et al., 2016; Zhang et al., 2014), and the British Picture Vocabulary Scale-II (Babayiğit, 2014). These picture vocabulary tests assess how well students can name or identify objects presented in pictures. The test items become increasingly difficult as the words become less frequently used in daily life.

In contrast with measures of vocabulary breadth, measures of vocabulary depth were less utilized in the selected studies. Only four studies explored knowledge of word relations using the following measures: the Word Association Test (WAT; Baba, 2009), the Clinical Evaluation of Language Fundamentals (CELF; Silverman et al., 2015), a word-defining test (Baba, 2009), and a semantic fluency test (Babayiğit, 2014). The WAT, developed by Read (1993) and also referred to as the Depth-of-Vocabulary-Knowledge test, measures knowledge of word meaning and collocation in English. Students need to choose a total of four synonymous adjectives and collocative nouns for each adjective target word. In the CELF test, students choose, from four orally presented words, two words that are semantically related. Unlike the WAT and CELF tests, the word-defining (Baba, 2009) and semantic fluency tests (Babayiğit, 2014) tap the productive skills of vocabulary depth. The word-defining test requires students to define the target words in as many different ways as possible, and the semantic fluency test asks students to name as many as possible words that are categorically related to two umbrella terms “animal” and “fruit” within 60 seconds.

### **Writing measures**

Writing samples in the studies were all timed essays. The writing time ranged from 10 minutes to 1.5 hours. In the studies involving primary school students, researchers tended to administer 10-minute writing tests (Babayiğit, 2014; Harrison et al., 2016; Mancilla-Martinez, 2010; Zhang et al., 2014). Two studies allowed dictionary use; therefore the allocated writing time was noticeably longer than in the other studies: 45 minutes in Baba’s (2009) study and 1.5 hours in Stæhr’s (2008) study.



The writing tasks predominately targeted students' ability to create informative and persuasive texts, except for Silverman et al.'s (2015) study in which students wrote stories in response to picture prompts. The informative writing prompts asked students to describe their favorite vacation, pet, sports, or other personal interest (Babayiğit, 2014; Harrison et al., 2016; Llach & Gallego, 2009; Lee, 2003; Schoonen et al., 2003, 2011; Zhang et al., 2014), summarize their reading (Baba, 2009), or write job application letters (Stæhr, 2008). The persuasive writing tasks instructed students to take a stance on an idea and write a persuasive argument to convince an audience (Mancilla-Martinez, 2010; Sasaki & Hirose, 1996; van Gelderen et al., 2011).

Three different approaches to scoring writing samples were adopted: holistic scoring (Babayiğit, 2014; Stæhr, 2008), primary trait scoring (Schoonen et al., 2003, 2011; van Gelderen et al., 2011), and analytic scoring, which was utilized in all other eight studies. For holistic scoring, raters assign a unitary score to each essay based on their overall impression of clarity, relevance, accuracy, quality, and depth of the content (Babayiğit, 2014; Stæhr, 2008). Primary trait scoring, usually criterion-referenced, involves evaluating one or more traits of an essay. Evaluation criteria depend entirely on the writing purpose and acceptability on the part of the intended audience. For example, in studies of Dutch-speaking ELLs (Schoonen et al., 2003, 2011; van Gelderen et al., 2011), raters evaluated text quality by gauging whether the texts fulfilled the descriptive purpose. Similar to primary trait scoring, analytic scoring is also criterion referenced. Analytic scoring requires "isolating one or more characteristics of writing and scoring them individually" (Stiggins, 1982, p. 148). Content, organization, word choice, and

language use are some of these characteristics (e.g., Harrison et al., 2016; Llach & Gallego, 2009).

### **Relationship between Vocabulary and Writing**

Based on the findings from the studies, vocabulary breadth seems to make a bigger contribution to English writing performance than vocabulary depth. Vocabulary breadth, in particular, may significantly impact writing development over time. However, when compared to other language writing skills such as grammatical knowledge and metacognitive knowledge, the contribution from vocabulary to writing is not as strong. Moreover, the vocabulary-writing relationship may become nonsignificant depending on components of scoring rubrics or productive/receptive dimension of vocabulary measure.

#### **Positive role of vocabulary breadth**

Three studies (Llach & Gallego, 2009; Stæhr, 2008; Zhang et al., 2014) involving EFL learners provided evidence in support of the positive role of vocabulary breadth in writing performance. The longitudinal study (Zhang et al. 2014) even noted that for young EFL children, the contribution from vocabulary breadth might remain significant, especially during the first few years of learning to write in English.

Significant correlations were found between performance on the VLT test and writing tasks (Llach & Gallego, 2009; Stæhr, 2008). The more words known, the more likely that students will write better. The participating Spanish-speaking sixth-grade EFLs, who received 629 hours of classroom instruction, wrote introductory letters to prospective English host families (Llach & Gallego, 2009). The letters were evaluated

with regard to content, organization, language use, and mechanics. The quality of their letter writing was positively correlated with the 1000 frequency-band ( $r = .54, p < .01$ ) and 2000 frequency-band of the VLT ( $r = .50, p < .01$ ). With a similar amount of classroom instruction (i.e., a minimum of 570 hours), the Danish-speaking ninth-grade learners of English also composed letters on a writing test, though for the purpose of applying for one of the four jobs presented in the task (Stæhr, 2008). The holistic rating scale outlined the same rating criteria as those in Llach and Gallego's (2009) study. The Danish EFL's English vocabulary size was also significantly correlated with letter writing performance ( $r = .73, p < .01$ ). However, as the two studies (Llach & Gallego, 2009; Stæhr, 2008) only used bivariate correlations, the true nature of the impact of vocabulary breadth on writing may not have been revealed.

The longitudinal study by Zhang et al. (2014) demonstrated the positive impact of vocabulary breadth on 153 native Cantonese-speaking EFL children's expository writing. However, vocabulary breadth made a smaller contribution to English writing than other literacy skills such as English reading and Chinese writing ability. Zhang and colleagues (2014) followed the children from age five to nine in Hong Kong. All the children began to learn English at the age of 3.5 years and attended school where Cantonese was the language of instruction. Each year, English picture vocabulary, English reading, and several Chinese language measures were tested. Yet, English writing was only measured at age nine. The writing assessment instructions explicitly stated that students should not be over-concerned with spelling and Chinese words were allowed in English writing no more than three times. The scoring rubric included three

categories: content, organization, and intelligibility. Stepwise regression analyses were conducted using early literacy skills at each of the ages between five and nine years to predict English writing at age nine.

The results showed that English vocabulary size at each age except age eight remained as a unique correlate of English writing quality at age nine (Zhang et al., 2014). Between ages five and seven, the amount of variance in age nine writing explained by the students' English vocabulary size beyond Chinese writing ability increased from 9% at age five, and 12% at age six, to 15% at age seven. At ages eight and nine, English reading turned out to be the most significant predictor of English writing, followed by Chinese writing ability. Beyond the variance in writing accounted for by these predictors, only English vocabulary at age nine explained a small yet significant amount (3%). Judging from this trend, vocabulary breadth may have a long-term, positive effect on ELLs' English writing. In the beginning stage of writing, young writers, who are learning how to apply their knowledge of conventions to their writing, may easily become differentiated by vocabulary size. As writing gets longer and more complicated at upper grades, successful writers need more than a large bank of words that they can spell correctly, which may explain why the amount of unique contribution from vocabulary size begins to decrease at later ages.

### **Nonsignificant role of vocabulary breadth**

The positive role of vocabulary size in writing seems to be challenged by the findings of three studies whose participants were older and possibly, more proficient in English (Harrison et al., 2016; Schoonen et al., 2003, 2011). The longitudinal design

(Schoonen et al., 2011), the method of collecting multiple writing samples from each student (Schoonen et al., 2003, 2011), and the explicit focus on the component processes of ESL writing (Harrison et al., 2016) all increase the validity of the findings. In both ESL (Harrison et al., 2016) and EFL contexts (Schoonen et al., 2003, 2011), ELLs' vocabulary size did not always significantly contribute to the prediction of English writing proficiency. Instead, grammatical knowledge and spelling consistently turned out to be significant predictors of writing quality (Harrison et al., 2016; Schoonen et al., 2003), even across years (Schoonen et al., 2011).

The three studies share several features in common. First, each study had more than 100 participants, who were in the early stages of English writing development. Harrison et al.'s (2016) study involved ESL third graders from five schools in a Canadian suburban community. Most of these ESL children entered kindergarten with very little or no English. Schoonen et al.'s (2003, 2011) Dutch-speaking eighth graders had about 3.5 years of formal English instruction when the studies began. As Schoonen et al. (2011) explained, ELLs in the Netherlands are constantly immersed in a very stimulating language environment through high print exposure present in media and advertisement. Consequently, the participating students in their studies (Schoonen et al., 2003, 2011) might be more proficient in English than other typical EFLs, therefore more comparable to the Canadian ESL students in Harrison et al.'s (2016) study. Second, vocabulary breadth was measured in all three studies, though in different testing formats. Schoonen et al. (2003, 2011) measured vocabulary size with a multiple-choice test, which required students to choose the correct Dutch translation of an English target word

in a carrier sentence, while Harrison et al. (2016) adopted the Peabody Picture Vocabulary Test to assess vocabulary size. In addition, along with vocabulary knowledge, orthographic and grammatical knowledge were also assessed in the studies. Third, as Schoonen et al. (2003, 2011) and Harrison et al. (2016) observed, vocabulary size had a very small or nonsignificant correlation with writing performance, respectively. Fourth, all the studies adopted scoring rubrics that did not include the component of vocabulary. Schoonen et al.'s (2003, 2011) primary trait scoring focused on the communicative function of writing rather than sub-skills such as vocabulary. Similarly, Harrison et al. (2016) scored the writing samples by spelling accuracy, text fluency, content, and structure.

However, the findings of the studies concerning vocabulary breadth may not be as contradictory as they seem. The impact of vocabulary breadth on writing may be mediated by an English-print-rich environment, and individual learners' intellectual maturity and English proficiency levels. As the studies showed, the positive impact of vocabulary was found exclusively on EFLs (Llach & Gallego, 2009; Stæhr, 2008; Zhang et al., 2014), yet undetected on EFLs and ESLs who had easy access to print-rich English learning environments (Harrison et al., 2016; Schoonen et al., 2003, 2011). Additionally, compared to the Chinese children (Zhang et al., 2014), the participants in Harrison et al.'s (2016) and Schoonen et al.'s (2003, 2011) studies were from upper grades. Possibly, with development of their intellectual maturity and English proficiency, the vocabulary impact on their writing dwindled.

In considering the characteristics of the studies that yielded nonsignificant results, there might be a couple of possible explanations for the little contribution from English vocabulary size to English writing. To start with, the vocabulary measures in the studies might not accurately reflect the part of vocabulary knowledge that is essential for text generation. The translation tests (Schoonen et al., 2003, 2011) and picture vocabulary test (Harrison et al., 2016) were associated with either the receptive dimension of vocabulary size or oral vocabulary skills. Writing, on the other hand, requires a different set of vocabulary skills, i.e., the written and productive vocabulary skills. ELLs may need to reach a threshold in receptive and oral vocabulary skills before they can translate these skills into their productive written vocabulary skills. To compensate for their deficit in productive vocabulary, ELLs may choose to use in their writing only the words that they know how to spell. Perhaps those who knew more oral or sight words might not attempt to vary their word choices in writing, thus undermining the role of vocabulary in writing.

The characteristics of the scoring rubrics may also impact the relationship between vocabulary and writing. Vocabulary size seemed to contribute little to the content and structure of English writing (Harrison et al., 2016; Schoonen et al., 2003, 2011). However, different results may have been yielded if different scoring rubrics were adopted.

Another explanation would be that given the low correlation between vocabulary and writing, vocabulary alone might not make any unique contribution to writing development. However, the strong interconnection between vocabulary and meta-

cognitive knowledge (Schoonen et al., 2003, 2011) or between vocabulary and grammatical knowledge (Harrison et al., 2016) suggested that vocabulary might help build up other writing-related language skills.

### **Role of vocabulary depth**

The need to differentiate between receptive and productive aspects of vocabulary depth seems plausible in light of the findings of Baba's (2009), Babayigit's (2014) and Silverman et al.'s (2015) studies. The study measuring receptive vocabulary depth (Silverman et al., 2015) showed little contribution from vocabulary depth to English writing. Contrarily, the other two studies assessing productive vocabulary depth revealed a non-negligible impact of vocabulary depth on writing quality.

Silverman et al. (2015) investigated how vocabulary breadth and depth might be related to writing quality among upper elementary school students from diverse linguistic backgrounds in the U.S. Productive vocabulary breadth was measured by the Woodcock-Johnson Picture Vocabulary test, and receptive vocabulary depth by a word relation test in which the students chose two words that were semantically related. The students were given a writing sample first, five minutes to brainstorm ideas, and 15 minutes to write a story based on the pictures. Controlling for grade level, transcription skills, and knowledge of word relations, vocabulary breadth was a significant predictor of the story components of the compositions (i.e., content, word choice, and style). Vocabulary depth as measured by the word relation test was not significantly related to the story components, controlling for other variables in the model. Since writing is an expressive task, it is not surprising that expressive vocabulary would influence writing



performance. Moreover, so far, there is no empirical evidence favoring the need to further divide expressive vocabulary into the dimensions of breadth and depth.

Baba's (2009) and Babayiğit's (2014) studies differed in participants, measures of vocabulary size and writing, and statistical methods. Baba (2009) investigated how Japanese university students' lexical proficiency impacted their summary writing. The participants came from different majors and demonstrated intermediate English proficiency as determined by the standardized tests. Their writing task was to write a 200-word summary after reading a passage. Their receptive vocabulary size was assessed by the VLT, depth of receptive vocabulary by the WAT, and productive vocabulary by a word-defining test. Multiple regression analyses were adopted to examine whether the three different lexical proficiency variables (vocabulary size, vocabulary depth, and word-defining ability) could predict these EFL students' summary writing performance after controlling for general English proficiency, L1 (Japanese) writing proficiency, L1 vocabulary knowledge, English reading comprehension, and length of summaries. Babayiğit (2014) examined how verbal skills accounted for the variance in expository writing performance with ESL primary students in England. In multi-sample SEM analyses, a latent variable named verbal skill was created by inferring from three observed variables, picture vocabulary size, verbal working memory, and semantic fluency.

The two studies (Baba, 2009; Babayiğit, 2014), however, reported a similar finding: the ability to produce words in speech or in writing had a significant association with writing quality. Though named differently, the word-defining (Baba, 2009) and

semantic fluency tests (Babayiğit, 2014) measured the same vocabulary skill, the productive aspect of vocabulary depth, which turned out to be a significant predictor of writing quality in both studies.

The importance of productive vocabulary depth is also underscored by a 20-week intervention that successfully improved Spanish-speaking ESL fifth graders' overall writing quality by increasing their productive use of vocabulary depth (Mancilla-Martinez, 2010). The vocabulary intervention focused on building vocabulary knowledge through repeated exposure to frequently occurring academic words in various contexts and teaching word study strategies. Additionally, the intervention also engaged the students in classroom discussion to facilitate their reasoning skills and weekly persuasive writing to enhance their use of the target words. The students' writing quality was significantly improved only during the last 10 weeks of the intervention, suggesting that it might take time before such a vocabulary intervention exerted any effect on students' writing. However, as the intervention expanded not only vocabulary knowledge but also reasoning capabilities, it seems unclear whether the improvement in writing could be solely attributed to the strengthened vocabulary. Nevertheless, the successful intervention (Mancilla-Martinez, 2010) would allow a safe assumption that training on vocabulary depth, along with other learning activities, may help ELLs improve their English writing performance.

### **Breadth or depth**

Compared to vocabulary depth, vocabulary breadth tended to be a stronger correlate and predictor of writing. In studies that concurrently utilized measures of

vocabulary breadth and depth, the two measures generally had correlations of medium to strong strengths (Baba, 2009; Babayiğit, 2014; Silverman et al., 2015). The high interconnection between vocabulary depth and breadth was, therefore, used to justify the analytic decision to drop vocabulary depth from the regression analyses (Baba, 2009). On the surface, previous empirical studies seem to suggest that vocabulary depth may not be a direction worthy of pursuing in future vocabulary studies, as depth and breadth of vocabulary are indistinguishable aspects of vocabulary knowledge. In reality, the nature of the vocabulary-writing relationship may depend more on the distinctions between receptive and productive aspects of vocabulary knowledge than between vocabulary breadth and depth.

By suspending the distinction between vocabulary breadth and depth, van Gelderen and colleagues (2011) found that productive vocabulary knowledge could promote writing development. Their intervention study involved Dutch-English secondary school students in the Netherlands, who were randomly assigned to one of the two experimental groups or the control group. The control group only took the writing test without receiving any training. Both experimental groups received identical training on genre knowledge. Moreover, one group received experimental lessons focusing on productive use of lexical retrieval and word collocations of topic-related words; the other group spent extra time learning topic knowledge. Students in both experimental groups produced texts of better global writing quality than those in the control group. However, there was no significant difference in writing quality between the experimental groups. The success of the vocabulary intervention was likely because the experimental lessons

involved training on both vocabulary breadth and depth, and more importantly, focused on productive use of both dimensions of vocabulary knowledge. As the two experimental groups wrote equally well, this intervention study also suggested that vocabulary knowledge, though important, might not be the only contributing skill to writing development.

### **Studies with insufficient evidence**

Two studies (Lee, 2003; Sasaki & Hirose, 1996) could not provide any evidence as to whether vocabulary played any significant role in improving writing quality. The ways that the vocabulary (Sasaki & Hirose, 1996) or writing measure (Lee, 2003) was utilized in the analyses rendered it impossible to draw any conclusion about the vocabulary-writing relationship.

Sasaki and Hirose (1996) explored what factors might impact Japanese university students' English expository writing. The students' overall English proficiency was measured by the structure, listening, and vocabulary sections of the Comprehensive English Language Test for Learners of English. The total score of the test was then used as one predictor variable in the regression analysis. Though the students' overall English proficiency explained around 52% of English writing ability variance, the study could not answer the question whether vocabulary alone could make a unique contribution to these EFL learners' writing abilities.

Lee (2003) conducted a vocabulary intervention study with 65 ESL secondary school students in Vancouver, Canada. The vocabulary intervention focused on teaching topic-specific words in depth. After an explicit vocabulary instruction, a writing frame

was also provided before the writing activity to ensure that the students could concentrate on optimizing vocabulary use in the writing. As the real focus of the paper was on vocabulary learning and retention, the quality of the writing samples was only briefly mentioned. The writing samples were scored by one native speaker of English, who “found” that the students’ post-instruction essays were richer in content, more varied in vocabulary, and better in sentence syntax. Without reliable scoring of the writing samples and controlling for other factors that might have been at play, it is hard to establish the conclusion that the students’ strengthened vocabulary knowledge was crucial in improving their overall writing performance.

### **Discussion**

In this review study, the primary research question was whether ELLs’ English vocabulary breadth and depth predicted their English writing performance. With a systematic search of peer-reviewed empirical studies in four major education databases, 13 studies were identified that assessed ELLs’ vocabulary knowledge and writing quality. Overall, compared to vocabulary depth, vocabulary breadth is a more commonly utilized measure of vocabulary knowledge in the studies. Yet, no definitive conclusion can be drawn concerning the relative contribution of vocabulary breadth and depth to writing. The vocabulary-writing relationship may be mediated by ELLs’ learning contexts, lexical knowledge and overall proficiency, components of the scoring rubric, and receptive/productive dimension of vocabulary measures. In this section, the research questions will be summarized and discussed in connection with the results, future studies, and classroom implications.

## **Characteristics of the Studies**

Despite the small number of studies that met the selection criteria and were included in the review, most of the studies were published in recent years, indicating a recent upsurge of research interest in the relationship between vocabulary and writing. In addition, these studies involved a variety of participants in different contexts. Students from primary schools to universities participated in studies that were conducted either in English-speaking or non-English-speaking countries. The participating students also showed a diversity of L1s, such as Cantonese, Japanese, Spanish, and Dutch.

Only 15% of the studies used longitudinal designs. Sixty-nine percent of the studies did not specify the sampling method involved; 23% used intact classrooms; 8% adopted a stratified random sampling method. Eighty-five percent of these studies used either regression analyses or structural equation modeling.

With the exception of four studies, the identified studies in this review did not differentiate dimensions of vocabulary knowledge. Only three studies measured vocabulary depth, though almost every study assessed vocabulary breadth. Predominantly, students were assigned expository writing tasks. In 62% of the studies, writing samples were mainly scored using an analytic scoring approach.

Regarding these study characteristics, the overall limitations of research designs were noticeable. In addition to the rather small number of relevant studies, the lack of sampling information undermines the possibility of drawing definite conclusions about the vocabulary-writing relationship. Due to the concern for sampling bias, it may not be appropriate to generalize any synthesized findings to a larger population or populations

that have characteristics different from the participants in the studies. Because longitudinal studies were rare, there was no concrete evidence to back up the developmental relationships between vocabulary and writing.

Vocabulary depth was a much neglected measure in the vocabulary-writing studies whereas vocabulary breadth was the main choice for vocabulary measures. The high interconnection between vocabulary breadth and depth, both conceptually and empirically, may explain why vocabulary knowledge was seldom investigated from both breadth and depth perspectives in a single study. Some researchers propose that depth and breadth of vocabulary are indistinguishable from each other (Nurweni & Read, 1999; Vermeer, 2001). The more words a learner knows, the more likely he/she knows more about the words. Or, conversely, a deeper knowledge of words will naturally expand a learner's vocabulary repertoire. For learners, they can grow their vocabulary strengths in either of the two dimensions with an adequate amount of input (Vermeer, 2001). The empirical studies in this review also point to high correlations between vocabulary breadth and depth (Baba, 2009; Babayiğit, 2014; Silverman et al., 2015). Therefore, once vocabulary breadth was utilized in a study, there seemed no need to include the aspect of depth. Even when vocabulary depth was measured, it was likely to be dropped from the analyses due to its high correlation with vocabulary breadth.

However, the strengths of the correlations may become smaller if receptive and productive dimensions of vocabulary knowledge are also considered. For example, receptive vocabulary breadth had a higher correlation with receptive vocabulary depth (Silverman et al., 2015) than with productive vocabulary depth (Babayiğit, 2014). This

synthesized finding supports the multidimensionality of vocabulary knowledge and calls for more inclusive measures of vocabulary knowledge in empirical studies.

As most of the reviewed studies utilized only one writing genre, expository writing, it is unclear whether different writing genres could possibly impact the relationship between ELLs' English vocabulary knowledge and English writing quality. Studies with monolingual English-speaking primary school students suggest that sizes of different types of vocabulary have different impacts on writing quality across genres. For example, in a study with second and fourth graders (Olinghouse & Wilson, 2013), the students who knew more general vocabulary words scored higher in story writing, whereas those with a larger number of content words produced better persuasive and informative texts. Therefore, studies involving diversified writing genres are still needed to examine how writing genres might impact the relationship between ELLs' vocabulary and writing quality.

### **Vocabulary Breadth, Vocabulary Depth, and Writing**

The role of vocabulary in ELL writing was empirically supported in all but two studies. In short, vocabulary breadth or vocabulary depth can be foundational to ELLs' English writing. Possible factors mediating the relationship between vocabulary and writing are learning contexts, students' lexical and English proficiency levels, scoring rubrics, and vocabulary measures.

#### **Learning contexts**

The effect of vocabulary breadth on EFLs' writing quality seems obvious (Llach & Gallego, 2009; Stæhr, 2008; Zhang et al., 2014), yet less clear on ESLs' writing



quality (Harrison et al., 2016). Differences in English learning environments may be one explanation. As EFLs generally have less exposure to authentic use and learning of English outside the classroom, they tend to have an underdeveloped vocabulary compared to not only English-speaking monolinguals but also ESLs. When it comes to writing, EFLs are more likely to be challenged by vocabulary recall and word choice. As the simple view of writing proposes (Berninger, 2000; Juel, 1988), learners with stronger vocabulary knowledge may have a bigger portion of their writing time for expanding ideas and writing longer, which, in many cases, will result in higher writing quality scores.

### **Lexical and English proficiency levels**

The unique contribution from English vocabulary breadth to English writing remained significant, yet grew smaller over time (Zhang et al., 2014). Though few studies have determined specific lexical thresholds in EFL learning contexts, EFL learners are expected to master the 2,000-3,000 most frequent English words as soon as possible in order to speak and write effectively (Nation, 1993; Nation & Waring, 1997). It is possible when EFLs cross a certain lexical threshold or reach a higher level of English proficiency, the metacognitive knowledge that they have learned in L1 would be more readily transferrable into their L2 writing. The gap in their writing abilities could then be due to more diversified sources rather than just vocabulary, such as idea generation, organization, and grammar.

### **Scoring rubrics**

When scoring rubrics focus on evaluating content or structures of writing samples, there might not be any significant relationship between vocabulary and writing (Schoonen et al., 2003, 2011). However, if the rubrics include the component of vocabulary, the vocabulary-writing relationship is more likely to be significant in the study (e.g., Zhang et al., 2014). One interpretation of the mediating role of scoring rubrics could be that there are different sets of literacy skills responsible for writing development. Some of the skills are related to linguistic abilities such as spelling, word choice, and grammar; others rely on cognitive abilities such as cohesion, logic, and elaboration. Though strong vocabulary knowledge may help learners focus more on honing cognitive skills by demanding less share of working memory resources, it may not have a strong and direct influence on these cognitive skills. In a sense, vocabulary helps improve some aspects, but not all aspects of writing performance.

### **Vocabulary measures**

Vocabulary knowledge has many different operational definitions in empirical studies, which makes it difficult to compare the results across studies. Especially for vocabulary depth, the existing studies differ in how to measure it. The different measures may have resulted in some of the discrepancies across findings of these studies on the contribution of vocabulary knowledge to L2 writing. Productive knowledge of vocabulary depth (i.e., word-defining abilities and knowledge of semantic relations in oral and written tests) (Baba, 2009; Babayiğit, 2014) rather than receptive knowledge of vocabulary depth (i.e., collocation knowledge measured in a multiple-choice test)

(Silverman et al., 2015) significantly predicted English writing performance. Moreover, as none of the studies included register or frequency properties in their vocabulary measures, whether an inclusion of more diversified measures of vocabulary depth could further complicate the relationship between vocabulary and writing remains an open question.

### **Future Directions**

At this point, the empirical evidence for the relationship between vocabulary knowledge and writing performance is thin. The vocabulary-writing research would benefit from more studies that measure multi-dimensions of vocabulary knowledge and written texts of different genres. There is also a strong need for more studies using different research designs and methods. By controlling for possible confounding variables, true experiments (i.e., random assignment to conditions) or quasi-experiments can better determine causes and effects of the relationship between vocabulary and writing. Longitudinal studies will help document relationships between vocabulary knowledge and writing development over a longer period of time. Even though qualitative or mixed research methods have been rarely adopted so far, these methods could shed new light on beliefs and practices of vocabulary acquisition, as well as their impacts on writing development. Additionally, studies involving participants such as teachers are essential for examining how teachers' vocabulary knowledge and instructional strategies might intervene into the relationship between ELLs' vocabulary knowledge and writing quality.

The literature search also reveals that concurrently in the literature, the relationship between vocabulary knowledge and writing proficiency has also been examined using lexical profiles in written compositions across proficiency groups. As Laufer and Nation (1995) proposes, language learners' vocabulary size can be equally well measured by either independent vocabulary tests or productive use of the language in writing. Overall, there are significant differences in lexical use between learners of different English proficiency levels. Compared to low-proficiency groups, intermediate- and high-proficiency groups tend to use more infrequent words, longer (presumably more sophisticated) words, and more diverse types of words. This pattern has been observed among a group of third graders with mixed L1 backgrounds (Roessingh, Elgie, & Kover, 2015), EFL university students in New Zealand and Israel (Laufer & Nation, 1995), and TOEFL iBT takers (Sawaki, Quinlan, & Lee, 2013). Therefore, for future review articles, it would be beneficial to converge evidence from corpus and experimental data for a fuller picture of the vocabulary-writing relationship.

### **Classroom Implications**

Even though it is still too early to draw any definite conclusion about the relationship between vocabulary and writing, the importance of vocabulary to writing is undeniable. However, neither vocabulary knowledge nor writing skills are learned automatically. Teachers, especially those in EFL contexts, need to offer opportunities and guidance for English learners to expand vocabulary knowledge, and more importantly, put this knowledge to productive use in writing. Literacy instruction that is associated with increasing vocabulary size and learning “particular words in productive

vocabulary-focused activities” can enhance use of vocabulary in writing (Nation, 2013, p. 268). Reading activities, for example, can be a springboard for vocabulary acquisition and writing development. A teacher may start class with reading a text, and then engage students in reviewing familiar words and learning new words in the text, such as defining words and inferring word meaning by clues. The next step for the teacher would be to ask the students to paraphrase original sentences with alternative words and structures. Finally, depending on the students’ English proficiency levels, the teacher may assign them to use the newly learned words in free writing. To align learning outcomes with vocabulary acquisition and writing development, the teacher should provide constant feedback to help the students reflect on their word choice and edit their writing.

## DEPTH OR BREADTH: THE ROLE OF VOCABULARY IN CHINESE ENGLISH- LANGUAGE BEGINNING WRITER'S DEVELOPMENT

There is broad agreement among researchers and teachers that vocabulary is an essential building block for young language learners' early writing development. Disagreement exists, however, regarding which dimensions of vocabulary exert more impact on writing development. The debate is further complicated in that there are different perspectives to operationalize vocabulary knowledge: receptive and expressive vocabulary; oral, reading, listening and writing vocabulary; or breadth and depth of vocabulary.

Of the commonly paired dimensions, vocabulary breadth and depth have been investigated the least in the context of young English learners' writing development. Among studies that have examined the relationship between writing and vocabulary, few have differentiated between types of vocabulary knowledge. In addition, Chinese English-language beginning writers represent a unique population that has not been adequately studied in current vocabulary-writing studies in the area of second language acquisition. They are unbalanced bilinguals dominant in Chinese; while they grow up immersed in and thereby acquire Chinese (a non-alphabetic language), they begin to learn English (an alphabetic language), possibly past the critical age for second language learning; the majority of them have little exposure to authentic English input outside the classroom. Given this group's unique characteristics, synthesized findings from current

vocabulary-writing studies involving English-only students or English language learners of other linguistic backgrounds may not be applicable to these language learners.

The purpose of this study is, therefore, to examine the relationship among English beginning writers' vocabulary breadth, vocabulary depth, and writing abilities with a sample of Chinese junior high school students in Mainland China. In light of the study results, the need for vocabulary enrichment in foreign language classrooms will be discussed in relation to young learners' writing development.

## **Literature Review**

### **Vocabulary Breadth and Depth**

Researchers have been using categorizations of vocabulary knowledge to create language learners' varying profiles of vocabulary strengths and weaknesses. Two of the most common categorizations are breadth and depth of vocabulary knowledge (Meara, 1996; Read, 1993, 2000). Vocabulary breadth, namely vocabulary size, counts the number of words whose meanings a learner is at least partially familiar with (Qian, 2002), whereas vocabulary depth tests quality of lexical knowledge (Read, 1993), including components such as “pronunciation, spelling, meaning, register, frequency, and morphological, syntactic, and collocational properties” (Qian, 2002, p. 514).

To quantify vocabulary size, the Vocabulary Level Test (VLT; Nation, 1990, 2013) and picture vocabulary tests (i.e., the Woodcock Johnson III; Woodcock, McGrew, & Mather, 2001) are common measures designed to “test as many words as possible within the time allocated and require only a single response in relation to each word tested” (Nation, 1993, p. 357). In assessing vocabulary depth, two well-known

measures are the Word Associate Test (WAT; Read, 2004b) and the Vocabulary Knowledge Scale (VKS; Paribakht & Wesche, 1993, 1996, 1997; Wesche & Paribakht, 1996). Vocabulary depth can also be assessed with interview questions (e.g., Verhallen & Schoonen, 1993; Vermeer, 2001) and/or tests on morphology, semantics, and syntax (e.g., Proctor, Silverman, Haring, & Monticello, 2012; Qian, 1999).

### **Relationship between vocabulary breadth and depth**

There is no definitive conclusion concerning the relationship between vocabulary breadth and depth (e.g., Lesaux, Kieffer, Faller, & Kelley, 2010; Nurweni & Read, 1999; Perfetti, 2007; Schmitt & Meara, 1997). On the one hand, empirical studies provide evidence in support of conceptual relatedness between these two dimensions (Vermeer, 2001). In studies about Dutch monolingual and bilingual kindergarteners (Vermeer, 2001), EFL university students (Nurweni & Read, 1999), and young EFL adults (Schmitt & Meara, 1997), high correlations were reported between scores on tests of vocabulary size and depth.

However, the correlation between vocabulary breadth and depth may fluctuate as learners' language proficiency levels or other individual characteristics vary. In Nurweni and Read's (1999) study, the correlation between vocabulary breadth and depth was the highest among the high-proficiency group and lowest among the low-proficiency group. Yet, Nurweni and Read (1999) advised caution in interpreting the findings. As the low-proficiency students might have used lots of guessing in the test, the study results may not necessarily reflect the real nature of the relationship between vocabulary breadth and depth. Moreover, in some cases, performance gaps on vocabulary depth tests might be



better explained by test takers' personal characteristics than their vocabulary depth (Vermeer, 2001). For instance, test takers who talked little during an oral test may actually know more about the words than their test scores revealed (Vermeer, 2001).

On the other hand, other researchers have advocated vocabulary breadth and depth as separate constructs and developed quite different measures to assess each of them (e.g., Ouelette, 2006). This view has been largely corroborated by intervention studies designed to improve reading comprehension through vocabulary instruction (Kieffer & Lesaux, 2012). Students in experimental groups receiving rich instruction about synonyms, multiple meanings, or semantic associations performed significantly better on reading comprehension tests than those in control groups (Carlo et al., 2004; Lesaux et al., 2010). As Laufer, Elder, Hill, and Congdon (2004) summarized, "for diagnostic purposes we need separate estimates of both size and strength to fully understand the degree of a learner's vocabulary knowledge" (p. 224).

### **Developments in vocabulary breadth and depth**

Vocabulary acquisition occurs along a continuum of development toward ever-increasing levels of proficiency. Knowledge of a word stems from a recognition of its form and a vague understanding of its meaning, and gradually extends to mastery of its syntagmatic and paradigmatic relations with other words and ability to use it productively in different contexts (Henriksen, 1999; Laufer, 1998). In short, learners usually learn general meanings of a large number of words before they can process the words at deeper levels of understanding.

Vocabulary breadth grows over time. On average, a native speaker of English could learn 1,000 new words every year until they reach a vocabulary size of around 20,000 words (Goulden, Nation, & Read, 1990). As for second/foreign language learners, their vocabulary seems to grow at a much slower rate. Based on the findings of a longitudinal study with EFL high school students in Taiwan, Webb and Chang (2012) contend that with support of systematic vocabulary instruction, EFL students are capable of acquiring around 400 words per year.

The developmental patterns of vocabulary breadth have been proposed and investigated with reference to word frequency, receptive and productive dimensions. Language learners start off by learning the 1,000 most frequent words. Once they acquire the majority of the words in this frequency band, they will advance to learn words in lower-frequency bands, such as the 2,000-, 3,000-, 4,000-word frequency bands (Meara, 1992; Milton, 2009). Similarly, the order in which learners acquire receptive and productive dimensions of vocabulary breadth stays generally constant. ESL and EFL learners tend to develop receptive vocabulary size first and productive vocabulary size at a later time (Melka, 1997). Though learners usually comprehend more words than they can produce, there is a strong association between receptive vocabulary size and productive vocabulary size (Laufer & Goldstein, 2004; Laufer & Paribakht, 1998; Webb, 2008). However, it is important to note that developments in vocabulary breadth can take place in parallel (Schmitt & Meara, 1997). For instance, beginning learners, whose vocabulary mostly concentrate in the 1,000-word frequency band, may still acquire a certain number of words in the 3,000-word frequency band.

Developing vocabulary depth is a mental process of network building (Meara, 2009; Read, 2004a), revolving around creating and strengthening lexical and conceptual links among words. One predominant approach to understanding developments in vocabulary depth is the component approach (Read, 2000). Within the component approach, word associations can be divided into three basic relationships: paradigmatic (i.e., synonyms), syntagmatic (i.e., collocates), and analytic (i.e., words representing a key element of the meaning of the target word) (Read, 2004). In assessing developments in knowledge of word associations, some empirical studies grouped target words based on word classes. To chart developments in quality of word knowledge across word classes, Dóczy and Kormos (2015) followed a group of pre-intermediate Hungarian EFL secondary school students in a 16-month longitudinal study. These students demonstrated a significantly deeper understanding of the targeted nouns, verbs, and adjectives over time. However, across the three word classes, their knowledge of the adjectives remained the least proficient. Based on the findings, Dóczy and Kormos (2015) proposed that as adjectives might be less central to building the network of mental lexicon compared to nouns and verbs, adjectives tended to show the smallest development among the EFL learners.

### **Vocabulary and Writing**

The fundamental role of vocabulary in writing is indisputable. According to the simple view of writing (Berninger, 2000; Juel, 1988), lower-order skills such as accurate word choice frees up more working memory space, allowing a writer to be more involved with idea generation, process monitoring, or text revision. Empirical studies

involving different dimensions of vocabulary knowledge yield compelling evidence supporting the bidirectional relationship between vocabulary and writing (e.g., Llach, 2009; Olinghouse & Wilson, 2013; Schoonen et al., 2011). In general, strengthening either vocabulary or writing skills leads to improvement in both. Specifically, vocabulary knowledge is positively related to writing quality; extensive writing training also increases vocabulary knowledge.

Learners' overall vocabulary knowledge is a significant predictor of writing quality (e.g., Astika, 1993, Daller & Phelan, 2007; Engber, 1995). Such evidence is often found in studies that adopt holistic scoring rubrics and measure lexical richness in written texts. By lexically analyzing writing samples, researchers found that students' lexical sophistication significantly correlated with their holistic writing scores (Daller & Phelan, 2007), and even accounted for 84% of the holistic score variance (Astika, 1993). However, lexical richness may be unrelated to writing quality if raters choose to focus on other aspects of writing (e.g., lexical errors) instead of the overall quality of compositions (Llach, 2009).

As two primary dimensions of vocabulary knowledge, vocabulary breadth and depth each can have a positive impact on writing quality and can be further divided into binary components such as receptive versus productive vocabulary. Vocabulary breadth is strongly related to writing proficiency. Learners with a larger productive vocabulary demonstrated more lexical sophistication in their writing (Laufer & Nation, 1995); those who scored higher on receptive vocabulary size tests received higher writing test scores (e.g., Albrechtsen, Haastrup, & Henriksen, 2008; Llach & Gallego, 2009; Stæhr, 2008).

The relationship between vocabulary breadth and writing proficiency remains significant across different writing genres and is also influenced by students' knowledge of general and content vocabulary. In Olinghouse and Wilson's (2013) study, the more general words known, the better stories the students wrote, whereas the more content words acquired, the higher quality of persuasive and informative texts they produced.

It is worth noting that the positive effects of vocabulary breadth on writing quality may be mediated by students' learning environments, vocabulary measures, and scoring rubrics. Studies involving typical English-as-foreign- language (EFL) learners yielded consistent support for the unique role of vocabulary breadth in writing development (Llach & Gallego, 2009; Stæhr, 2008; Zhang et al., 2014). This finding was inconsistent with other studies that examined EFLs and ESLs who had more access to high-quality English input outside of school (Harrison et al., 2016; Schoonen et al., 2003, 2011). The input-rich environments may help the learners in these studies develop both lower-order and higher-order writing skills, which may be one major reason why their vocabulary breadth did not make any unique contribution to writing performance. Furthermore, in the studies that showed a nonsignificant role of vocabulary breadth (Harrison et al., 2016; Schoonen et al., 2003, 2011), the vocabulary measures assessed the receptive dimension of vocabulary breadth or oral vocabulary. Additionally, the scoring rubrics for writing samples focused on evaluating how well student writers fulfilled the major purpose of the writing task (Schoonen et al., 2003, 2011), or developed ideas (Harrison et al., 2016).

Vocabulary depth, productive vocabulary depth in particular, can also be a strong predictor of certain aspects of writing skills. In studies with Japanese university students (Baba, 2009) and ESL primary school students (Babayiğit, 2014), the ability to orally define words or produce words in the same word family explained a significant portion of variance in overall writing quality. A 20-week vocabulary-depth intervention also improved Spanish-speaking children's overall English writing quality, even without any explicit writing instruction (Mancilla-Martinez, 2010). By contrast, receptive vocabulary depth may be less likely to contribute to writing quality (Silverman et al., 2015). One hundred ninety-seven upper elementary school students from diverse linguistic backgrounds in the U.S. took a word-relation cloze test to assess their semantic awareness. Their performance on this vocabulary test failed to significantly predict how well they could write English stories with well-developed content, accurate word choice, and appropriate style (Silverman et al., 2015).

In the few studies measuring vocabulary knowledge from both breadth and depth perspectives, there were positive correlations of medium or strong strengths between the two vocabulary scores (Baba, 2009; Silverman et al., 2015). No definitive conclusions have been arrived at as yet in relation to the comparative contribution of vocabulary breadth and depth to writing. However, if we focus on the distinction between productive and receptive vocabulary rather than on the distinction between vocabulary breadth and depth, one fairly consistent conclusion may be drawn. Productive vocabulary knowledge has made a more noticeable contribution to writing than receptive vocabulary knowledge. Compared to their receptive vocabulary breadth and depth,

Japanese university students' productive vocabulary depth turned to be the unique predictor of their summary writing after controlling for reading comprehension and the length of summaries (Baba, 2009). Similarly, productive vocabulary breadth rather than receptive vocabulary depth significantly predicted the story components of compositions (i.e., content word choice and style) (Silverman et al., 2015). The importance of productive vocabulary knowledge is most likely due to the fact that writing is a self-expressive endeavor, requiring productive applications of vocabulary knowledge.

Conversely, vocabulary acquisition can be enhanced through extensive writing. For example, through continuous teacher elicitation, composition writing, and other multimodal exposure to the target words (such as film watching, cloze tests, reading, and classroom discussion), intermediate secondary-school ESL learners improved their lexical frequency profile (Lee & Muncie, 2006). In combination with other learning activities, writing practice helped the learners retain the words (Lee & Muncie, 2006), though it remains inconclusive whether writing practice alone could exert any positive impact on vocabulary acquisition.

### **Research Questions**

In the current literature, there still seems to be a lack of empirical studies investigating the comparative impact of vocabulary breadth and depth on writing quality. Among different types of English language learners, learners with a non-alphabetic L1 literacy background have received the least attention in this line of research. Therefore, the present study aims to assess the roles of English vocabulary breadth and vocabulary

depth in Chinese EFL learners' English writing quality. Two research questions guided this study:

- What is the relationship between English vocabulary breadth and depth among Chinese-speaking junior high school students who are learning English as a foreign language? Does this relationship vary according to grade level?
- Which contributes more to English writing performance, English vocabulary breadth or depth? Does the relative contribution of vocabulary breadth and depth vary across grades?

## **Method**

### **Participants**

The junior high school involved in this study is located in a suburb of a small city in southwestern China. Of the three grades 7-9, each grade has around eight classes with about 70 students in each classroom. Ninety percent of the students study and live on campus during weekdays. As a large portion of their parents have left home to search for work in the city and may only come home for short visits, many of the students live with their grandparents, who serve as their primary caregivers.

Although starting from 2001 the Chinese government began to require that English instruction should start in Grade 3, suburban and rural primary schools may make different decisions regarding whether they offer English classes and how many hours per week they should offer. In this junior high school, the students tend to have different levels of English proficiency before their school entry.



As a common practice, the teachers usually start their first English classes with the letters of the English alphabet. Each week, in addition to five 45-minute classes of English, the students also have approximately four self-study classes, during which they review textbooks, do exercises, or occasionally take quizzes. These students will have received approximately 270 hours of formal English instruction by the end of Grade 8 and 405 hours by the end of Grade 9. Outside their English classes, they have little exposure to the English language, as the dominant medium of instruction and common language outside of school is Chinese.

Two hundred sixty-seven students from this junior high school agreed and had parental consent to participate in the study, among whom 120 were 8th graders (mean age: 13.7, SD = .50) and 147 were 9th graders (mean age: 14.9, SD = .48). They came from four intact classes (two Grade 8 classrooms and two Grade 9 classrooms). The male to female ratio of 4:5 was similar across the two grades.

## **Measures**

### **Background questionnaire**

All the student participants filled out a short survey, providing their background information with regard to age and gender (see Appendix A). The survey also included questions prompting them to describe their English proficiency levels prior to junior high school attendance, feelings about writing in general, current literacy activities, and self-perceptions of challenges in English and Chinese writing.

### **Breadth of vocabulary: vocabulary test**

The 60 target words in this vocabulary test were randomly drawn from the 3000-word frequency list compiled by the Corpus of Contemporary American English (n.d.). The word list was checked against the participating students' textbooks: 40 words also appeared in either the 8th or 9th graders' English textbooks. Of the remaining 20 words, one half came from the 2000-band word list, the other half from the 3000-band word list. Additionally, on this test, the ratio of nouns, verbs, adjectives, and other words was 2:1:1:1, the same as in the students' textbooks.

To assess the students' vocabulary size, receptive and productive translation subtests were adopted. Thirty of the target words were randomly chosen and presented in English and the other 30 words in Chinese (see Appendix B). The students were required to translate the English words into the closest Chinese equivalents or the Chinese words into the closest English equivalents on a blank line next to each printed word.

The total score for each subtest was 30 points. Two graduate students rated this test using sensitive scoring: (1) minor misspellings were accepted as correct answers if the misspellings did not result in different words; (2) English translations that had inflectional or derivational suffixes different from the target word were marked as correct; (3) in the no-context condition, a couple of the target words (particularly those in the Chinese forms) elicited multiple semantically correct responses, all of which were scored as correct translations. As productive vocabulary tends to develop later than receptive vocabulary (Melka, 1997), the measures of the receptive and productive vocabulary size were treated as separate variables in this cross-sectional study. Internal

consistency estimates of  $\alpha = .80$ , and  $\alpha = .85$  on the receptive vocabulary subtest were calculated for the 8th graders and 9th graders, respectively. Internal consistency estimates for the productive vocabulary subtest were  $\alpha = .79$  (8th grade), and  $\alpha = .84$  (9th grade). The inter-rater reliability was  $\alpha = .96$  (8th grade) and  $\alpha = .96$  (9th grade) for the receptive vocabulary size test, and  $\alpha = .90$  (8th grade) and  $\alpha = .92$  (9th grade) for the productive vocabulary size test.

### **Depth of vocabulary: word association and morphological awareness test**

The Word Association Test measures students' familiarity with adjective synonyms and noun collocations of the target adjective words (Read, 2004b). After consultation with the teachers, 20 items out of the original 40-item Word Association Test were adopted. With one point given for one correct answer, the total points for the test were 80. As the current literature has revealed, learners' early lexicons may not be evenly distributed across word classes and their knowledge of some word classes may be acquired earlier than that of others (Dóczy & Kormos, 2015). Therefore, to capture possible changes in the participants' word knowledge of different word classes, the participants' performance on adjective synonyms and noun collocations were treated as separate variables. Internal consistency estimates of  $\alpha = .68$  (8th grade) and  $\alpha = .74$  (9th grade) on the subtest of adjective synonyms were calculated. Internal consistency estimates of  $\alpha = .71$  (8th grade) and  $\alpha = .73$  (9th grade) on the subtest of noun collocations were also calculated.

For the purpose of measuring students' morphological awareness (Berninger, 2007; Kuo, Ramirez, Baab, Li, & Bollinger, 2011), the "*Are they related?*" test in the

*Process Assessment of Learners* (Berniger, 2007) requires students to judge whether a given pair of words (e.g., “corn” and “corner”) are morphologically related. Again, half of the original 40 items were selected. The total points for the morphological awareness test were 20. Internal consistency estimates of  $\alpha = .72$  (8th grade) and  $\alpha = .72$  (9th grade) on the morphological awareness test were calculated.

### **English writing samples**

In considering the students’ English proficiency levels across the two grades, a free writing task, *My Friend*, was used to measure their writing abilities. The students were given 10 minutes to write an essay. There was no word limit. They could write anything about their friend, such as how they met, what their friend was/looked like, and what they liked to do together for fun. Kent, Wanzek, Petscher, Al Otaiba, and Kim’s (2014) 5-point rubric was adapted to score the English writing samples across six categories: focus and idea generation (the ability to develop ideas and details around a given topic), organization (the ability to structure the writing with appropriate transitions and a strong beginning, middle, and end), word choice (the ability to use words accurately and effectively), grammar (the ability to apply grammar knowledge for high readability), sentence fluency (the ability to use varied sentence lengths and styles), and length of writing samples (the total number of topic-relevant words in the essay). Each category has a maximum of five points, with “1” indicating experimenting, “2” emerging, “3” developing, “4” capable, and “5” experienced level of writing skills (see Appendix C for more details). The highest possible score for the writing sample is 30.

Before the actual rating, the research team met in a training session on the scoring rubrics. After the training, two graduate students individually rated 40 writing samples from each grade and established a good level of overall interrater reliability of .88 (8th grade) and .85 (9th grade). More specifically, the interrater reliability was .80 or higher for most of the rubric components, except for organization (both grades), and spelling and word choice (9th grade). The interrater reliability for organization was .75 (8th grade) and .70 (9th grade). The interrater reliability for spelling and word choice was .79 (9th grade). Next, the raters resolved the discrepancies through discussion and clarified the criteria. As a result of their discussion, one final score was obtained for each of the 80 writing samples. Then, the raters independently scored the remainder of the writing samples collected.

### **Procedures and Analysis**

The assessments were conducted in a paper-delivered format in the middle of December, 2015; the background questionnaires were distributed and collected one week before the assessments. By the time of testing, the 8th and 9th graders had received 202 and 337 hours of formal English instruction, respectively. The tests were administered to the four intact classes and the whole testing was monitored by their head teachers. Before the testing began, the teachers assured the students that the test scores would not impact their school records and there would be no penalty for leaving any part of the tests unanswered.

Of the 267 participating students, seven (two were 8th graders) did not write a single word for the writing task; six (two were 8th graders) left the word association test

blank; one did not provide any answer to the vocabulary size and morphological awareness tests. As the percentage of the missing test scores for each measure was very low, the missing data were treated as a random loss of data. Listwise deletion was therefore adopted to remove participants with any missing test scores from the dataset. The resulting final dataset for analysis was comprised of 253 junior high school students. One hundred sixteen were 8th graders and 137 were 9th graders.

Means and standard deviations were computed for all the tests. The subsequent analyses were conducted using z scores separately from the 8th and 9th grade datasets. Correlation analysis was done to examine the relationships among all the variables.

*T*-tests were used to examine performance differences between the two grades. For an additional understanding of qualitative differences in the writing samples across the two grades, the raters also made note of prominent features in each writing sample: variety of ideas (i.e., major ideas developed around the writing prompt); uses of nouns, verbs, and transitional words (i.e., the most frequently used words from each word class); and complexity of sentence structure (i.e., occurrence of complex sentences).

Multiple regression analyses were conducted separately for the students in each grade: receptive vocabulary breadth, productive vocabulary breadth, word-association knowledge of adjectives, word-association knowledge of nouns, and morphological awareness were the predictor variables; writing quality was the outcome variable. All the independent variables were entered together into the regression equations.

Additionally, the current literature shows that the vocabulary-writing relationship may be mediated by the focus of scoring rubrics (Schoonen et al., 2003, 2011; Zhang et

al., 2014). Therefore, to test the impact of the scoring rubrics on the vocabulary-writing relationship, the six components of the writing quality were regrouped into three major criteria for evaluating writing quality: word usage in writing (spelling, word choice, and length of writing), applications of grammar knowledge to writing (grammatical correctness and sentence complexity), and higher-order thinking skills (ideation and structure). Each of the three criteria was used as the dependent variable in the regression analyses, respectively, where the independent variables remained vocabulary breadth and depth.

When conducting multiple regression analyses on the same data, the chance of committing a Type I error increases. To keep the Type I error rate from being inflated, a Bonferroni correction was conducted. The Bonferroni-adjusted  $p$ -value was the alpha-value ( $\alpha_{\text{original}} = .05$ ) divided by the number of analyses (4): ( $\alpha_{\text{adjusted}} = .05/4$ ) = .013. Therefore, to determine whether a result would be statistically significant, the  $p$ -value should be smaller than .013.

## **Results**

### **Participants' Background Information**

The self-report survey showed that 92.1% of the 8th graders and 93.4% of the 9th graders learned English before junior high school entry, yet to varying degrees. The distribution of the 8th graders across English proficiency levels was comparable to that of the 9th graders: approximately 75% of the students in either grade learned at least some simple words before school entry (see Figure 2).

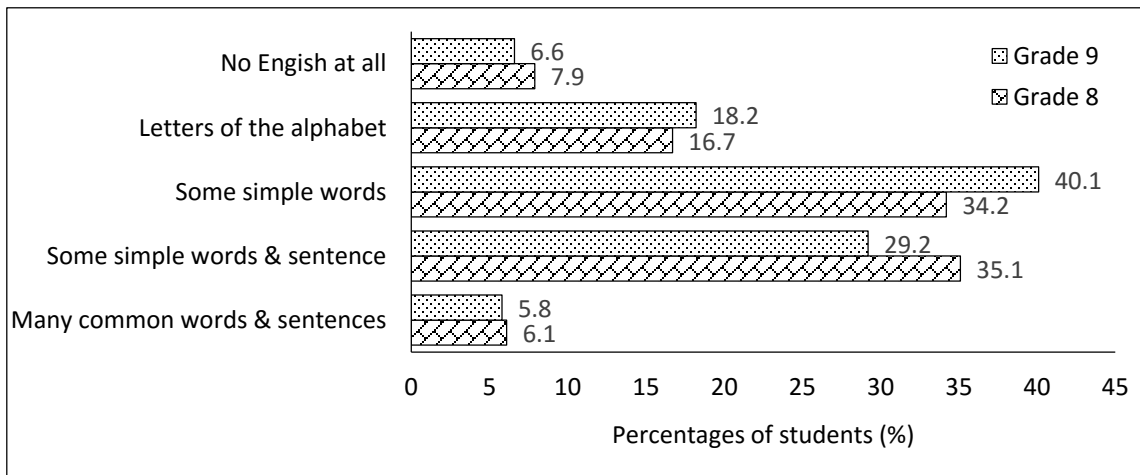


Figure 2. English proficiency levels before junior high school entry.

When asked “what is your strongest motivation for learning English?” the 8th graders tended to agree with either of the two statements: “English is a prerequisite for me to get admitted to an institution of higher education and land a satisfactory job” (26.1%) and “Personally, I feel interested and curious in learning a new language and culture (23.5%).” For the 9th graders, the two most popular choices were “I have to learn English, as it is a required school subject (28.1%),” and “English is a prerequisite for me to get admitted to an institution of higher education and land a satisfactory job (27.4%).”

For the question “do you enjoy writing in English?” the students in the two grades displayed similar patterns of feelings. In both grades, approximately 70% of the students expressed mild enthusiasm (i.e., “somewhat”) about writing in English, whereas 10.5% of the 8th graders and 7.3% of the 9th graders reported enjoying English writing “very much.”



In the survey, the students were also asked to rank “vocabulary,” “grammar,” and “ideation” based on the degree to which these skills challenged their writing in English, with “1” as the biggest challenge, “2” the second biggest, and “3” the third biggest. Approximately 41% of the 8th and 9th graders stated that limited English vocabulary was their biggest challenge.

### **Descriptive Statistics**

Means and standard deviations by grade are presented in Table 1. The students’ mean scores in the vocabulary tests were low. On average, the students in the sample answered less than half the items correctly on the vocabulary size tests. As for the vocabulary depth tests, only the 9th graders were able to recognize slightly more than half of the synonyms, collocates, and morphologically related words shown to them on the tests. With the exception of the rating on the 8th graders’ word choice ( $M = 2.36$ ,  $SD = .69$ ), the ratings of the students’ writing quality by the individual components averaged from 2.5 to 3.4.

Table 1  
*Descriptive Statistics of Vocabulary and Writing Measures*

	Grade 8 (N = 116)			Grade 9 (N=137)		
	M	SD	Range	M	SD	Range
<b>Breadth measure (total)</b>	15.94	4.89	2-26	25.24	9.54	2-42
<i>Receptive vocabulary</i>	7.24	2.23	1-14	12.72	4.61	2-22
<i>Productive vocabulary</i>	8.70	3.22	1-14	12.53	5.32	0-22
<b>Depth measures</b>						
<i>Word association (total)</i>	42.25	7.82	22-56	44.52	8.43	21-60
<i>Adjective synonyms</i>	18.79	5.23	7-29	19.88	5.14	6-31
<i>Noun collocates</i>	23.45	5.22	10-35	24.65	6.13	10-37
<i>Morphological awareness</i>	9.73	1.92	4-14	11.45	2.15	4-17
<b>English writing quality (total)</b>	16.55	3.43	7-27	17.94	4.60	6-28
<i>Focus &amp; idea generation</i>	2.51	.68	1-5	2.66	.93	1-5
<i>Organization</i>	2.55	.75	1-4	2.78	.90	1-5
<i>Spelling &amp; word choice</i>	2.36	.69	1-4	2.77	.90	1-5
<i>Grammar &amp; readability</i>	3.37	.88	1-5	2.94	.80	1-5
<i>Sentence fluency &amp; complexity</i>	3.04	.50	1-4	3.37	.78	1-5
<i>Length</i>	2.70	.93	1-5	3.42	1.21	1-5

Tables 2 and 3 present bivariate correlations between all the observed variables. Out of the 43 correlations significant for both groups, only three correlations displayed higher coefficients for the 8th graders than the 9th graders. For correlations between the vocabulary variables, the strongest one was found between productive vocabulary and receptive vocabulary sizes (8th grade:  $r = .59, p < .001$ ; 9th grade:  $r = .85, p < .001$ ). The 8th graders' productive vocabulary size also had a small correlation with their knowledge of adjective synonyms ( $r = .24, p = .010$ ) (see Table 2). For the 9th graders, there were more positive, significant correlations between vocabulary breadth and vocabulary depth, though the strengths of the associations were weak as indicated by the correlation coefficients of .30 or smaller. Especially, the 9th graders' receptive

vocabulary size showed positive, significant associations with all the depth measures (see Table 3).

Regardless of grade level, productive and receptive vocabulary sizes had positive correlations with either overall writing quality or quality of specific scoring components. These correlations tended to be stronger for the 9th graders than for the 8th graders. The 8th graders' depth of vocabulary knowledge only yielded a couple of significant correlations with their writing quality. For example, the 8th graders' knowledge of adjective synonyms and morphological awareness gave small but positive correlations with their overall writing quality ( $p < .05$ ) (see Table 2). Yet, each of the 9th graders' vocabulary depth measures significantly correlated with their writing quality (see Table 3).

Table 2

*Correlations between the 8th Graders' Vocabulary Variables and Writing Quality*

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
1. Receptive vocabulary size	-										
2. Productive vocabulary size	.59**	-									
3. Adjective synonyms	.16	.24**	-								
4. Noun collocations	.13	.17	.12	-							
5. Morphological awareness	.05	-.05	-.00	.03	-						
6. English writing quality	.52**	.55**	.20*	.08	.21*	-					
7. Focus & idea generation	.31**	.42**	.17	.03	.19*	.80**	-				
8. Organization	.48**	.50**	.24*	.14	.10	.84**	.58**	-			
9. Spelling & word	.42**	.47**	.18	.04	.21*	.86**	.69**	.69**	-		
10. Grammar & readability	.37**	.32**	.13	.09	.15	.61**	.30**	.44**	.31**	-	
11. Sentence fluency & complexity	.32**	.36**	-.01	.05	.11	.64**	.50**	.38**	.48**	.38**	-
12. Length	.48**	.45**	.17	.01	.20*	.87**	.68**	.74**	.80**	.29**	.46**

*Note.* The breadth measure is divided into productive & receptive vocabulary components; the depth measures include morphological awareness and word association (adjective synonyms and noun collocations).

\*\*  $p < .01$       \*  $p < .05$

Table 3

*Correlations between the 9th Graders' Vocabulary Variables and Writing Quality*

	1	2	3	4	5	6	7	8	9	10	11
1. Receptive vocabulary size	-										
2. Productive vocabulary size	.85**	-									
3. Adjective synonyms	.24**	.30**	-								
4. Noun collocations	.30**	.30**	.12	-							
5. Morphological awareness	.22**	.24**	.15	.21*	-						
6. English writing quality	.74**	.74**	.36*	.27**	.31**	-					
7. Focus & idea generation	.64**	.62**	.38**	.23**	.31**	.91**	-				
8. Organization	.59**	.58**	.23**	.23**	.18*	.86**	.77**	-			
9. Spelling & word	.62**	.66**	.40**	.22**	.31**	.88**	.82**	.71**	-		
10. Grammar & readability	.61**	.61**	.23**	.22**	.25**	.67**	.51**	.51**	.48**	-	
11. Sentence fluency & complexity	.57**	.56**	.26**	.19*	.26**	.78**	.64**	.57**	.59**	.59**	-
12. Length	.65**	.63**	.28**	.26**	.25**	.86**	.75**	.71**	.73**	.38**	.58**

*Note.* The breadth measure is divided into productive & receptive vocabulary components; the depth measures include morphological awareness and word association (adjective synonyms and noun collocations).

\*\*  $p < .01$       \*  $p < .05$

## Performance Comparisons between Grades

Paired and independent t-tests were used to compare the performance differences within and across the two groups. For vocabulary size, the 8th graders had bigger productive vocabulary than receptive vocabulary ( $t(115) = 5.99, p < .001$ ) whereas the 9th graders displayed no significant differences between the sizes of receptive and productive vocabulary. For knowledge of vocabulary depth, students in both grades performed better on identifying correct noun collocations than adjective synonyms (8th grade:  $t(115) = 7.24, p < .001$ ; 9th grade:  $t(136) = 7.41, p < .001$ ). Compared to the 8th graders, the 9th graders demonstrated significantly larger sizes of receptive vocabulary ( $t(251) = 11.70, p < .001$ ) and productive vocabulary ( $t(251) = 6.76, p < .001$ ). The 9th graders also performed significantly better on morphological awareness than the 8th graders ( $t(251) = 6.63, p < .001$ ). However, there was no significant performance difference in knowledge of noun collocations or adjective synonyms between the two groups.

The 9th graders also produced better essays overall ( $t(251) = 2.70, p = .010$ ). When each of the writing quality components was examined, significant performance differences still existed in favor of the 9th graders, except in the aspect of focus and ideation ( $t(251) = 1.41, p = .160$ ). A qualitative examination of the writing samples also confirmed the 9th graders' performance advantage over the 8th graders in writing. There were three major types of writing differences between the students in the two grades. Overall, the 9th graders wrote longer texts by presenting more topic-relevant ideas and supporting details. The majority of the 8th graders only described their friends' physical

features and hobbies in a manual-like manner, whereas around 30% of the 9th graders told more detailed stories about how they first met their friends, how they spent a memorable day, or even how they resolved conflicts in friendship. Moreover, the 9th graders tended to use more transitional words such as “so,” “after,” “then,” and “for example” in their writing, in addition to 8th grader’s “and.” Though misspellings were rare in all the writing samples, the 9th graders displayed more frequent use of action verbs (e.g., “encourage,” “borrow,” “solve”), adjectives (e.g., “lonely”) and prepositions (e.g., “without”), as compared to the 8th graders’ heavy use of a few general verbs (e.g., “is,” “has,” “like,” “play”) and nouns. Furthermore, regardless of grade status at the time, the most common and salient grammatical errors included articles, verb tenses, and prepositions. However, the 8th graders wrote predominantly simple sentences, usually fewer than 10 words per sentence. Some of the 9th graders used more varied sentence types like complex sentences (e.g., “she is also a happy girl, because she smiles every day”) and subordinate clauses within a sentence (e.g., “when she grew up”).

### **Predictors of English Writing**

By applying the Bonferroni correction, the threshold  $p$ -value for statistical significant was .013. First, when the composite scores of the English writing samples were entered as the dependent variable, significant regression models were found for the 8th grade ( $F = 15.16, p < .013$ ) with a  $R^2$  of 40.8%, and for the 9th grade ( $F = 43.31, p < .013$ ) with a  $R^2$  of 62.3%. Receptive and productive vocabulary sizes were identified as significant predictors of all the students’ writing quality. Morphological awareness uniquely predicted the 8th graders’ writing performance whereas knowledge of adjective

synonyms appeared to be one additional predictor of the 9th graders' writing quality (see Table 4).

Then, each of the three aspects of writing quality (i.e., word usage in writing, applications of grammar knowledge, and higher-order thinking skills) was used as the dependent variable in the regression analyses (see Table 4). For word usage in writing, productive and receptive vocabulary made more significant contributions than the other variables, though the comparative contributions of these two predictors varied by grade. Specifically, productive vocabulary size had the largest contribution to the 8th graders' word usage in writing ( $\beta = .33, p = .001$ ), followed by receptive vocabulary size ( $\beta = .27, p = .006$ ). However, for the 9th graders' word usage in writing, the order of the two strongest predictors was switched. Moreover, there was one unique significant predictor for each grade: morphological awareness significantly predicted the 8th graders' word usage ( $\beta = .22, p = .006$ ), and knowledge of adjective synonyms significantly predicted the 9th graders' word usage ( $\beta = .15, p = .012$ ).



For the ability to apply grammar knowledge in writing, receptive vocabulary was the only significant predictor for the 9th graders ( $\beta = .36, p = .003$ ), though the regression coefficient of productive vocabulary was .30 and  $p$ , with a value of .013, almost reached significant level. No significant predictors were identified for the 8th-grade group. However, productive and receptive vocabulary sizes were near-significant predictors, with  $p$ -values of .019 and .017, respectively.

For the higher-order thinking skills, the 8th and 9th graders had a different predictor. The 8th graders who performed better on productive vocabulary ( $\beta = .39, p < .001$ ) tended to develop ideas more fully and organize ideas more logically. The 9th graders with bigger sizes of receptive vocabulary ( $\beta = .38, p = .002$ ) were more likely to write in a more focused, logical, and detailed way.

Table 4

*Regression Analyses Predicting Overall Writing Quality and Individual Componential Skills of Writing Quality*

<b>Outcome Variable</b>	<b>Predictors</b>	<b>R<sup>2</sup></b>	<b>F</b>	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>t</b>	<b>Sig.</b>
<i>Overall writing quality</i>	<b>Grade 8</b>	.41	15.16					.000
	Productive vocabulary size			.41	.10	.38	4.08	.000
	Receptive vocabulary size			.42	.14	.28	3.02	.003
	Morphological awareness			.38	.13	.22	2.91	.004
	<b>Grade 9</b>	.62	43.31					.000
	Productive vocabulary size			.27	.09	.31	3.03	.003
	Receptive vocabulary size			.41	.10	.41	4.01	.000
Adjective synonyms			.13	.05	.14	2.53	.012	
<i>Word usage in writing</i>	<b>Grade 8</b>	.35	11.72					.000
	Productive vocabulary size			.16	.05	.33	3.40	.001
	Receptive vocabulary size			.18	.07	.27	2.78	.006
	Morphological awareness			.18	.06	.22	2.83	.006
	<b>Grade 9</b>	.55	31.69					.000
	Productive vocabulary size			.11	.04	.31	2.70	.008
	Receptive vocabulary size			.15	.05	.36	3.22	.002
Adjective synonyms			.06	.02	.15	2.54	.012	
<i>Application of grammar knowledge</i>	<b>Grade 8</b>	.23	6.59					.000
	Productive vocabulary size			.09	.04	.25	2.38	.019*
	Receptive vocabulary size			.13	.05	.25	2.43	.017*
	<b>Grade 9</b>	.49	25.19					.000
	Receptive vocabulary size			.11	.04	.36	3.03	.003
<i>Higher-order thinking skills</i>	<b>Grade 8</b>	.34	11.35					.000
	Productive vocabulary size			.16	.04	.39	3.98	.000
	<b>Grade 9</b>	.48	24.19					.000
	Receptive vocabulary size			.14	.05	.38	3.23	.002

Note. The Bonferroni-adjusted p-value threshold is .013. Predictors with the p-values smaller than .020 are presented in this table.

\*  $p > .013$

## Discussion

This study involved 253 Chinese-speaking junior high school students from 8th and 9th grades, most of whom had limited exposure to English before they started receiving formal instruction upon junior high school entry. As this junior high school is located in an inland area of China, the students seldom have any opportunities to use English outside school. The majority of these students reported instrumental motivations for learning English: the pressure to learn a compulsory subject and concerns with future education and careers. Less than 10% of them expressed high enthusiasm for writing in English and around 41% picked out English vocabulary as their biggest writing challenge.

The results of the vocabulary and writing tests showed low correlations between the students' vocabulary breadth and depth. These correlations were also comparatively stronger with the 9th graders than the 8th graders, suggesting that the strengths of the association between vocabulary breadth and depth may increase over time. In predicting overall writing quality, vocabulary breadth demonstrated more predictive power than vocabulary depth. Furthermore, it is interesting to note that different aspects of vocabulary depth proved helpful in predicting the 8th and 9th graders' writing performance. This finding seems to support the component approach that different components of vocabulary depth may develop at different rates and different stages of second language learning (Read, 2000). When knowledge of words deepens, some components of vocabulary depth may begin to emerge as skills that can differentiate students with different levels of writing competence.

## **Relationship between Vocabulary Breadth and Depth**

The results showed not only stronger but also emerging relationships between vocabulary breadth and vocabulary depth among the 9th-grade students. The positive, significant associations between the students' vocabulary size and vocabulary depth increased not only in numbers but also in strength with grade. For the 9th graders, all the vocabulary variables were significantly positively correlated with each other. Yet, for the 8th graders, only one significant correlation was found between their productive vocabulary size and knowledge of adjective synonyms.

Overall, this finding is consistent with previous studies that have supported the relatedness between breadth and depth of vocabulary knowledge (Nurweni & Read, 1999; Schmitt & Meara, 1997; Vermeer, 2001), though the correlation coefficients in this study are smaller than those in previous studies. Participants' different levels of English proficiency may be the main reason for the varying strengths of association between vocabulary breadth and depth across studies. As the breadth-depth association tends to be stronger among learners with higher language proficiency (Nurweni & Read, 1999), it is not surprising that the EFL beginning learners in this study displayed a weaker association than EFL university students (Nurweni & Read, 1999) or young EFL adults (Schmitt & Meara, 1997). Even within this study, it is noticeable that English language proficiency may affect the strength of the relationship between vocabulary breadth and depth. The 9th graders, whose overall better writing performance provided evidence of their higher English proficiency as compared to the 8th graders', demonstrated a stronger association between their vocabulary breadth and depth.

The observed performance differences in vocabulary breadth and depth between the two grades also suggest that a large vocabulary size is highly facilitative of an increased understanding of individual words. In this study, the EFL 9th graders had larger productive and receptive vocabulary sizes and better morphological awareness than the 8th graders; yet there were no significant differences in their knowledge of word association. Moreover, the positive relationship between receptive vocabulary size and knowledge of vocabulary depth only emerged among the 9th graders.

The gaps in the vocabulary knowledge between the 8th and 9th graders were rather predictable based on the general patterns of vocabulary development. Breadth and depth of vocabulary knowledge are not only conceptually but also empirically intertwined. Learners usually acquire general meanings of words in large numbers first, then become aware of possible associations among words and deepen vocabulary knowledge in terms of synonyms, antonyms, collocations, and hierarchical positions in the word family (Henriksen, 1999; Laufer, 1998). Especially for EFL learners whose learning mainly comes from direct instruction at school, their deeper understanding of words may develop later, and be enhanced through repeated encounters with a large number of words over time.

Therefore, compared to the 8th graders, the 9th graders in this study made more significant improvements in both receptive and productive vocabulary sizes but not in all aspects of their vocabulary depth. The 9th graders' increased vocabulary sizes seem to help strengthen the association between their vocabulary size and knowledge of word association, despite the less noticeable growth in knowledge of word association.

However, as few empirical studies have examined the breadth-depth relationship longitudinally and this study only involves students from two different grades, more research is needed to confirm the foundational role of vocabulary breadth in strengthening the breadth-depth relationship.

It is also worth mentioning that the relationships between breadth and depth of vocabulary can vary greatly depending on measures adopted by researchers (Schmitt, 2014). Empirical studies have adopted different measures to quantify vocabulary size (e.g., the VLT and Woodcock Johnson III) and map connections among words both syntactically and semantically (e.g., the WAT and the VKS). Measures emphasizing different sets of sub-skills or targeting words of different frequencies may also lead to different conclusions concerning the breadth-depth relationship (Schmitt, 2014). For example, this study adopted a receptive association test to conceptualize and measure one element of vocabulary depth. The breadth-depth relationship may have varied if a productive association test were utilized instead. Therefore, when comparing the breadth-depth relationships across studies, researchers need to first examine how the constructs of vocabulary breadth and depth were conceptualized and measured.

### **Vocabulary Breadth, Vocabulary Depth, and Writing Quality**

The present study not only supports the predictive role of EFL learners' vocabulary abilities in their writing performance but also differentiates the predictive relationship by types of vocabulary abilities and components of writing quality. Overall, at least one of the receptive and productive vocabulary sizes could significantly predict both 8th and 9th graders' writing performance. However, depth of vocabulary

knowledge was not always predictive of writing quality. More specifically, neither morphological awareness nor knowledge of adjective synonyms showed any predictive power in understanding how well the EFL learners could apply their grammar knowledge in writing or create a logical progression of ideas in writing. When depth of vocabulary knowledge showed its predictive power, morphological awareness was a predictor of the 8th graders' writing whereas knowledge of adjective synonyms was for the 9th graders.

In this study, the receptive and productive vocabulary sizes tended to predict the writing quality as a pair of predictors, except for the higher-order thinking skills demonstrated in the writing. Though no significant predictors were identified for the 8th graders' grammar usage in writing, productive and receptive vocabulary sizes were the only predictors whose predictive power almost reached statistical significance. Similarly, receptive vocabulary size significantly predicted the 9<sup>th</sup> graders' grammar usage in writing while productive vocabulary size was an almost significant predictor. Moreover, no matter how the writing performance was operationally defined in the analyses (either by the overall writing quality or quality of individual scoring groups), the productive vocabulary size was the strongest predictor of the 8th graders' writing performance whereas the receptive vocabulary size made the biggest contribution to the 9th graders' writing quality.

These findings are partially consistent with previous studies. As writing is considered a productive skill, the strong link between productive vocabulary size and writing performance has been well documented in the literature (Laufer & Nation, 1995;

Llach & Gallego, 2009). Comparatively, the role of receptive vocabulary size in writing development is more questionable in previous studies. Some studies have shown a nonsignificant relationship between receptive vocabulary size and writing quality (Harrison et al., 2016; Schoonen et al., 2003, 2011).

However, the nonsignificant impact of receptive vocabulary size was exclusively reported in the studies that involved ESLs or EFLs living in English-input-rich environments (Harrison et al., 2016; Schoonen et al., 2003, 2011). These ESL and EFL participants were likely to have higher levels of English proficiency and more advanced vocabulary knowledge, which allowed them to develop other componential skills of beginning writing. As a result, the impact of vocabulary knowledge on writing decreased while the impacts of other componential skills increased. The EFL students in this study were learning English in a less favorable environment. The majority of their primary caregivers knew little English; English was rarely used outside of school. At the time of this study, these students demonstrated noticeably small sizes of both receptive and productive vocabulary. It would be reasonable to expect that vocabulary deficiency, in both receptive and productive dimensions, would pose a common challenge to these students. Those who could overcome the vocabulary challenge wrote better.

In addition to the environmental factor, the comparative contribution of receptive and productive vocabulary sizes to writing may also depend on the strength of association between the two sizes. This association may become strengthened over time, as suggested by the varying strengths of the correlations across grade (8th grade:  $r = .59$ ,  $p < .01$ ; 9th grade:  $r = .85$ ,  $p < .01$ ). As receptive vocabulary may eventually develop



into productive vocabulary (Melka, 1997), a large receptive vocabulary can fuel growth in productive vocabulary size. However, as the 8th graders in this study still had a much smaller size of receptive vocabulary, they might rely more heavily on their similarly limited productive vocabulary for their writing endeavors. Then, it is possible that the impact of receptive vocabulary would be too small to be detected. Conversely, as receptive vocabulary developed, the 9th graders might find it easier to retrieve words from their lexical storage and, therefore, demonstrated a stronger association between their receptive vocabulary and writing quality.

The finding of this cross-sectional study also implied a longitudinal effect of vocabulary depth on EFL learners' writing development, though the result should be interpreted with caution. Depth of vocabulary knowledge ensures better word choices and improves content clarity, as reported in several studies (Baba, 2009; Babayiğit, 2014). In this study, morphological awareness showed its predictive power over the 8th graders' writing only, whereas knowledge of adjective synonyms was uniquely related to the 9th graders' writing. The developmental pattern of different components of vocabulary depth may help explain why the impact of different types of vocabulary knowledge showed up with the students in different grades.

Morphological awareness enables learners to recognize and understand meanings of word parts, such as *-s*, or *-ed*. Such skills can be developed with a small vocabulary size and enhanced by direct instruction in classroom. According to teachers whose students participated in this study, explicit instruction of morphological knowledge frequently took place in their classrooms, as early as Grade 7. Probably due to the

continuous development since their early stage of English learning, morphological awareness showed its impact on the 8th graders' writing.

Acquisition of adjective synonyms presents a different scenario. Compared to nouns and verbs, knowledge of adjectives may develop at a later time and a slower rate (Dóczy & Kormos, 2015). In this study, the students' growth in knowledge of adjective synonyms may also be impacted by the content covered in their textbooks and instruction. The ratio of nouns, verbs, adjectives, and other words was approximately 2:1:1:1 in their textbooks. Apparently, these students were exposed to more nouns than adjectives. The teachers also admitted that they rarely focused on teaching adjective synonyms in English classes. As there are usually no morphological markers to highlight the semantic connections between adjective synonyms, the vocabulary expansion in this aspect demands more mental effort in learning new words and recording their connections. Therefore, it is not surprising that the impact of adjective synonyms on writing appeared in the 9th grade, when students increased their knowledge of adjective synonyms after one more year of formal English learning.

In comparison to vocabulary depth, the prominent role of vocabulary breadth in writing presents no surprise. Language learners generally need to familiarize themselves with general meanings of a large number of words before they learn to acquire other aspects of vocabulary knowledge (Henriksen, 1999; Laufer, 1998). Therefore, the strong impact of vocabulary breadth on writing quality is expected. Consistent with the few studies that measured both vocabulary breadth and depth (Baba, 2009; Babayiğit, 2014; Silverman et al., 2015), the vocabulary size had a bigger contribution to the EFL 8th and

9th graders' writing performance in this study. Though some components of the vocabulary depth such as morphological awareness and knowledge of adjective synonyms were still significant variables predicting the overall writing quality, word usage, and higher-order thinking skills, their predictive powers were much smaller than those of vocabulary breadth. Since no longitudinal studies have investigated the comparative contribution of vocabulary breadth and depth to EFLs' writing development, the question of whether the impact of vocabulary depth may eventually exceed the impact of vocabulary breadth over time remains a question that requires more research.

### **Classroom Implications**

This study reveals correlative relationships between Chinese-speaking EFL beginning writers' knowledge of English vocabulary breadth and depth and identifies English vocabulary breadth as a more significant predictor of English writing quality. These findings can help inform vocabulary instructional practices in EFL classroom settings.

First, the correlative relationship between vocabulary depth and breadth makes us aware that each new word added to learners' vocabulary repertoire may help them deepen understanding of words that they have learned. Similarly, the better they understand individual words, the more likely they can expand their vocabulary reservoir with newly acquired synonyms, antonyms, and collocations. Therefore, teachers should systematically plan vocabulary instruction to optimize this strong relationship between vocabulary breadth and depth. For example, teachers may enrich vocabulary instruction by purposefully introducing new words in groups rather than individually. Teachers may

also explicitly teach word formation rules at an early stage so that learners can learn to independently explore new word territories and be amazed by exceptions to these rules.

Second, though vocabulary size is a stronger predictor of EFL beginning learners' writing quality, the potential longitudinal impact of vocabulary depth should not be ignored as well. As students move to upper grades, they need to meet higher expectations for their English writing in terms of length, accuracy, and originality. The ability to learn new words through word connections, which is at the core of knowledge of vocabulary depth, makes a noticeable difference in writing quality. One way to help students broaden their knowledge of vocabulary depth could be to engage them in editing for word choice as part of the writing process. When students establish the habit of reflecting deeply on their word choice, they may improve both vocabulary knowledge and writing quality.

Third, despite the facilitative role of vocabulary in writing development, vocabulary acquisition and writing development can take place concurrently. It is quite unnecessary, even harmful to postpone writing assignments until language learners have acquired certain amount of vocabulary. Instead, teachers should become creative in helping students benefit from the bidirectional vocabulary-writing relationship. Repeated writing practice accompanied by teachers' feedback can effectively promote vocabulary growth; learning new words and using them consciously in writing can increase accuracy and expressiveness.

### **Limitations and Future Studies**

The cross-sectional design of this study determines that the data in this study are an approximation of a developmental pattern of vocabulary and writing development at best. As the data were not collected longitudinally, there is no solid evidence to support any claims that involve how relationships between vocabulary breadth and depth, or vocabulary and writing, might change across grades. Therefore, longitudinal studies are needed to corroborate these claims. Furthermore, as the two groups of students in this study received English instruction from different teachers, it would be interesting to see if the teachers' different instructional strategies might strengthen or undermine these relationships. Future studies with classroom observations should be able to shed some light in this aspect. In addition, free writing samples were collected in this study. Given the intervening effect of writing genres on the vocabulary-writing relationship, future studies may also collect writing samples of different genres to further test the vocabulary-writing relationships.

## VOCABULARY, GRAMMAR OR IDEATION, WHICH MATTERS MOST IN SECOND-LANGUAGE WRITING?

Despite extensive research on second language (L2) writing, young students learning English as a foreign language (EFL) are still an understudied population. Of the studies conducted in EFL contexts, the majority have examined school-age learners whose first language employs an alphabetic orthography and who subsequently learn to write in a second alphabetic orthography. However, learners with a non-alphabetic L1 background such as Chinese have received less attention.

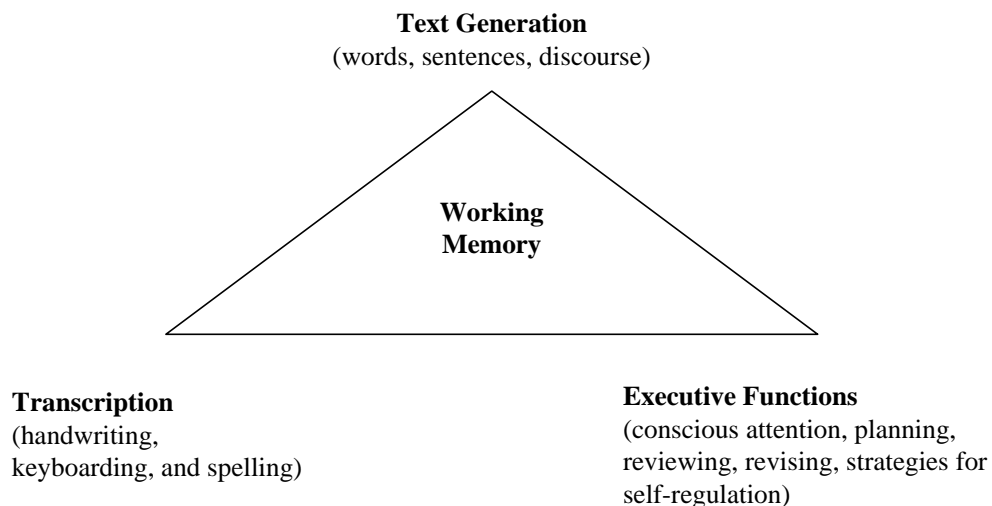
The scarcity of such studies leaves many essential questions unanswered, one of which is the role of basic language skills in these learners' early writing development. Specifically, what language skills are most important for their English writing development? Can the roles of these skills shift over time?

In an effort to answer these questions, this study focuses on three English skills: vocabulary, grammar, and idea generation. The purpose of this study is to empirically examine the relative effects of these skills on Chinese junior high school students' English writing abilities and explore whether these effects might change across grades. The findings of this study have practical implications for teaching English writing in an EFL classroom such as monitoring students' changing learning needs and restructuring teaching strategies accordingly.

## Literature Review

### Theoretical Framework

The simple view of writing is a theoretical framework that guides researchers to conceptually unravel the complexities of the writing process. Proposed by Juel (1988) and modified by Berninger and colleagues (Berninger, 2000; Berninger et al., 2002; Berninger & Graham, 1998), this framework identifies two major components in a working-memory context: “self-regulation executive functions” and “transcription skills” (Berninger & Amtmann, 2003) (see Figure 3). Self-regulation executive functions refer to cognitive and metacognitive skills associated with generating, sequencing, and representing ideas. Transcription skills, on the other hand, are mechanical abilities to efficiently manipulate written symbols for writing purposes, such as handwriting and spelling.



*Figure 3.* The simple view of writing illustrated by Berninger and Amtmann (2003).

Self-regulated functions and transcription skills compete for writers' working memory resources throughout the writing process (Berninger et al., 2002). As an individual's working memory is a limited resource, more allocation of it to one aspect results in less to the other. In writing, if a writer spends too much attention dealing with lower-order transcription skills, they may not be able to focus on higher-order skills such as idea generation, process monitoring, or text revision (Berninger et al., 2002).

The simple view of writing captures how beginning writers are fumbling with basic writing skills and learning to generate and organize ideas concurrently. Furthermore, as this simple model is easy to dissect, researchers can easily check which elements work (Juel, Griffith, & Gough, 1986) among different participants and/or in different contexts.

Considering the facilitative role of vocabulary skills in accurate spelling, vocabulary skills should be indispensable even in light of the simple view of writing framework. Vocabulary skills alone, however, cannot ensure the successful completion of a writing endeavor. Though the simple view of writing only proposes idea generation as the other major contributing skill, additional skills such as grammatical skills may still be important for writing development, especially for beginning writers.

### **Vocabulary and Writing**

As a basic language skill, vocabulary mastery is one building block for language learners' writing development. Existing research has revealed the positive impact of English vocabulary on English writing.



Vocabulary size is strongly correlated to writing proficiency (e.g., Albrechtsen et al., 2008; Laufer & Nation, 1995; Llach & Gallego, 2009; Stæhr, 2008). However, sizes of different types of vocabulary may have different impact on writing quality across genres. For example, the number of general vocabulary could uniquely predict the holistic writing quality of story texts, whereas the number of content words was the unique predictor of the writing quality for persuasive and informative texts (Olinghouse & Wilson, 2013).

A positive association also exists between vocabulary depth and writing quality. Baba (2009) measured Japanese university students' three aspects of English lexical proficiency: vocabulary size, word association knowledge, and word-defining ability. The word-defining ability, an ability to define words in detail and write sentences using the words, alone made a significant unique contribution to their English summary writing performance (Baba, 2009). Along with other aspects of vocabulary knowledge and/or cognitive skills, vocabulary depth may also make a collective contribution to writing quality. In a study with ESL primary students in England, Babayiğit (2014) created a new variable of English verbal skills by inferring from three observed variables: picture vocabulary size, verbal working memory, and semantic fluency (the ability to name as many as possible words that are categorically related to two umbrella terms "animal" and "fruit" within a given time). The analysis found that the young learners' English verbal skills as a whole exerted a pronounced impact on the quality of their English expository writing.

Therefore, interventions on learners' vocabulary knowledge yield positive results in writing improvement. Without a component of explicit writing instruction, a vocabulary-depth intervention improved the overall writing quality of Spanish-speaking children in the U.S. (Mancilla-Martinez, 2010). When in combination with writing training on genre knowledge, the intensive lexical training on lexical retrieval of topic-related words and syntactic/semantic relations among words helped Dutch EFL secondary students expand their use of vocabulary and produce better written texts (van Gelderen et al., 2011).

Additionally, vocabulary acquisition is possible from extensive writing practice. For example, through continuous teacher elicitation and multimodal exposure to the target words (e.g., film watching, cloze tests, reading, classroom discussion, and composition writing), intermediate secondary school ESL learners showed their improvement in lexical frequency profile (Lee & Muncie, 2006). With so many different exposure modes involved in this intervention, it seems unclear whether writing practice alone could have any positive impact on vocabulary acquisition. However, it would be safe to assume that a combination of different learning activities including writing practice may help learners retain newly acquired words.

### **Grammar and Writing**

The role of grammar in writing has evolved from a linguistic application to a facilitative tool over the last 20 years (Christie & Unsworth, 2006; Halliday, 1993, 1994; Myhill & Watson, 2014). The new understanding of the relationship between grammar and writing highlights that grammatical knowledge is noticeably responsible for helping

writers efficiently tap into language resources and make meanings across to their target audience (Derewianka & Jones, 2010).

A large number of empirical studies and reviews have presented little evidence of how traditional grammar teaching might positively impact students' writing proficiency (e.g., Andrews et al., 2006; Hillocks, 1986; Wyse, 2004). Hillocks and Smith (1991) claimed, "research over a period of nearly 90 years has consistently shown that the teaching of school grammar has little or no effect on students" (p. 603). In a recent meta-analysis of 115 experimental or quasi-experimental studies, Graham, McKeown, Kiuahara, and Harris (2012) found that of the six writing interventions involving explicit instruction of writing skills and knowledge, only grammar instruction (such as systematic instruction on parts of speech and sentence structures) yielded a non-significant effect on writing improvement.

Contextualized grammar teaching has been gaining ground in today's classroom due to its clear connection between pedagogical conditions and effective transfer of grammatical knowledge into written outputs (Jones, Myhill, & Bailey, 2013). The positive impact of contextualized grammar teaching is evident in recent studies (e.g., Feng & Powers, 2005; Jones et al., 2013; Myhill, Jones, Watson, & Lines, 2013). For example, after analyzing the grammar errors in the fifth graders' writing, Feng and Powers (2005) developed mini-lessons targeting these errors. The reanalysis of the errors in the follow-up writing samples revealed that the students improved their writing accuracy in both short- and long-term measurements. In a mixed method study, Jones et al. (2013) reported a positive effect of contextualized grammar instruction on Year 8

students' writing performance. Moreover, this intervention impact was mediated by the teachers' grammatical subject knowledge and the students' original writing abilities. Specifically, the students whose teacher had lower grammatical knowledge made less writing improvement; the students with lower original writing abilities also seemed to benefit much less from the contextualized grammar teaching.

Studies on the contribution of grammatical knowledge to the prediction of ELLs' writing quality have found mixed results and raised questions that require more research (Harrison et al., 2016; Schoonen et al., 2011). For 62 ESL third graders in five Canadian schools, their performance on the syntactic awareness test was the second largest predictor, after their letter-naming speed, of the written content and structures of their writing. However, when the overall writing performance was used as the outcome variable in the stepwise regression model, transcription (the composite variable of word spelling and handwriting fluency) rather than grammatical knowledge was the only significant predictor (Harrison et al., 2016). A longitudinal study (Schoonen et al., 2011) with a sample of 400 secondary school EFL students in the Netherlands also identified grammatical knowledge as one of the significant contributors to English writing proficiency as measured via a primary trait scoring approach. The predictive power of grammatical knowledge even grew more prominent over time (Schoonen et al., 2011).

One possible explanation for the inconsistent results is that the role of grammatical knowledge depends on emphases in the writing scoring scheme. Grammatical accuracy is likely to improve the overall readability of writing, which consequently leads to high scores on macro-features including content, mechanics, and

functionality. Grammatical accuracy may not be strongly associated with writing quality, when the scoring rubric integrates more fine-grained linguistic elements such as spelling. However, this proposition concerning the effects of a scoring rubric on the grammar-writing relationship still needs further verification in more empirical studies.

Compared to vocabulary knowledge, grammatical knowledge contributes more to ELLs' writing quality (Harrison et al., 2016; Schoonen et al., 2011). For both ESL elementary students in Canada and Dutch-speaking EFLs in the Netherlands, vocabulary size failed to demonstrate any significant association with writing proficiency. This result remained the same even when the component parts of the scoring rubrics were taken into account. As Schoonen and colleagues (2011) proposed, the English-print-rich environment in the Netherlands facilitated the Dutch students' vocabulary acquisition. The students generally had similar levels of attainment in terms of vocabulary size. However, unlike English vocabulary, English grammar was less likely to develop through unguided, receptive exposure to print language, resulting in varying levels of grammatical knowledge among the Dutch students. Therefore, the Dutch EFLs' writing proficiency tended to be more differentiated by grammatical knowledge rather than vocabulary knowledge. Additionally, since only receptive vocabulary size was measured in these two studies (Harrison et al., 2016; Schoonen et al., 2010), it would be interesting to ask whether other dimensions of vocabulary knowledge (e.g., vocabulary depth) could make any significant contribution to writing quality, and whether such contribution may be comparable to that of grammatical knowledge.

## **Ideation and Writing**

A writer needs ideas for writing. However, the process of transforming ideas into words on the page is complex. Ideas can be either abundant or elusive, which, in turn, may facilitate or impede writing (Jones, 2014). Ideas can even change in the writing process: new ideas can always be generated during the act of writing (Galbraith, 1999, 2009).

Current research has focused largely on how ideas are generated during the writing process. For example, Jones (2014) investigated adolescent writers' metacognitive thinking during their composing process. In this study, the young writers displayed different composing styles. Many of the writers did not always generate ideas before their writing; instead they seemed to discover ideas through the writing process. Jones' study (2014) highlights the need to provide responsive, differentiated writing instruction that targets young writers' different pre- and post-composing strategies.

Few writing studies have empirically measured the concept of ideation; even fewer studies have included this measure in writing studies. One measurement of idea quality involves counting the number of different points that develop the main idea of an essay (Puranik & Al Otaiba, 2012, p.1530). However, as the number of the ideas measured in this way turned out to be highly correlated with the total number of words produced in the students' writing samples, Puranik and Al Otaiba (2012) removed the measure of ideas but retained the measure of writing length as the outcome variable in their multiple regression analysis.

## **Language Learning, Motivation, and Home Literacy Activities**

The likelihood of significant English exposure outside of the classroom is much smaller in EFL contexts than in ESL contexts. Individuals who can seek out new learning opportunities will gain an edge in English language learning. Therefore, many individual factors like English learning motivation and after-class English literacy activities, alone or in combination, make differences to a variety of English learning outcomes including English writing performance.

### **Motivation**

Motivation, which varies in levels and types, has been one of the most important factors that help explain variations in language learning outcomes. Learners with high levels of motivation tend to initiate and sustain learning, thus achieving long-term success in language acquisition (Csiz őr & D őrnyei, 2005; Gardner, 1985; Masgoret & Gardner, 2003). Intrinsic and extrinsic motivation may exert different impacts on learners' willingness to engage in language learning activities extensively and intensively (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997), which, partly, increases or decreases their possibility of attaining language proficiency.

In EFL contexts, intrinsic motivation is usually the non-predominant type among English learners, a phenomenon that can be potentially explained by environmental factors. For example, Chinese students are inclined to study English for instrumental reasons, such as getting a high-paying job or entering college (Lai, 2013). In examination of the effects of both instrumental and integrative motivation on Chinese undergraduates' English learning process, Wong (2011) found that instrumental

motivation was a stronger driving force in their English learning. Considering the uniqueness of the Chinese cultural setting, Warden and Lin (2000) even proposed the term *required motivation* to differentiate school requirements from integrative and instrumental motivation and emphasize its role in motivating Chinese EFL students. Chinese students' strong inclination towards non-intrinsic motivation has been largely due to the lack of environmental opportunities for authentic English use and the instrumental view of English prevailing in their society (Chen, Warden, & Chang, 2005). For many of these students, English has been nothing more than a major component of high-stake tests.

### **Home literacy activities**

A large proportion of after-class literacy activities take place at home. Young bilingual adolescents' home literacy activities range widely from school-related activities like studying for tests and writing homework to more leisure-oriented literacy activities such as television viewing and peer networking. Compared to children of preschool and elementary-school age, young adolescents, who have more autonomy in deciding how to allocate their free time, prefer activities that enable them to socialize with peers (de la Piedra, 2010; Lam, 2000) or pursue their personal interests (Cruickshank, 2004).

Research regarding bilingual adolescents' home literacy activities has provided evidence for their positive impact on the development of different language skills. In case studies of immigrant teenagers' L1 and L2 literacy activities, Yi (2007, 2008) and Lam (2000) documented how the teens' deliberate involvement in literacy activities,



especially online literacy activities, helped promote their literacy development in English (Lam, 2000) and maintain their advanced L1 proficiency (Yi, 2007, 2008). Longitudinal studies also found that Spanish-English kindergarteners' interactive home literacy activities with their parents positively impacted their Spanish literacy skills and English oral proficiency in kindergarten, and further, predicted their English reading in Grade 7 (López, Gallimore, Garnier, & Reese, 2007; Reese, Garnier, Gallimore, & Goldenberg, 2000).

The impact of after-class literacy activities on English language learning in EFL contexts has been a largely neglected research topic in language acquisition studies. On the one hand, EFLs' after-class English literacy activities are usually limited in both quantity and quality, thus undermining the case for evidence-based research. On the other hand, lack of research on linkages between these literacy activities and English learning outcomes in EFL contexts further impedes real changes in English learning practice, leaving educators, students, and parents unaware of potential benefits of being engaged in after-class literacy activities.

In summary, gaps exist in the current understanding of how basic English language skills contribute to EFL learners' early English writing development in EFL contexts. Specifically, few studies have broken down vocabulary knowledge by breadth and depth dimensions when investigating the relationship between vocabulary and writing. In addition, the importance of ideation seems to be generally assumed rather than empirically supported. Especially for EFL learners, little is known about how their ability in developing ideas in their mother tongue might impact their idea development

and writing quality in English (a language that they are learning as a foreign language). The comparative contribution of vocabulary, grammar, and ideation to writing development also remains unanswered in previous studies. Furthermore, there is still a relative dearth of empirical research examining the impact of motivation and engagement in after-class literacy activities in EFL contexts. More studies are needed to unravel how motivation and literacy engagement fit into the process of writing development among EFL learners.

### **Research Questions**

Considering the gap in the literature, this study empirically examines the extent to which young Chinese-speaking EFL learners' English writing performance may be predicted by three English language skills: vocabulary, grammar, and ideation, and how the contribution of these skills to writing might be accounted for by the learners' English learning motivation and engagement in after-class English literacy activities.

Specifically, three research questions were asked:

- Which componential skill, vocabulary, grammar, or idea generation, matters more to young Chinese-speaking EFL students' English writing proficiency?
- How might the predictive power of these componential skills differ across grades?
- How might the contribution of these skills be accounted for by the students' English learning motivation and engagement in after-class English literacy activities? Are there any variations across grades?

## Method

### Participants

Prior to data collection, this research was reviewed and approved by the IRB. Teachers and parents were first contacted to determine their interest in participating in this study. Students whose parents signed and returned the consent forms were then asked to give their written consent.

Two hundred sixty-seven junior high school students agreed to participate in this study, of whom 120 were 8th graders and 147 were 9th graders (for student demographics, see Table 5). The participating students came from four intact classes (two eighth-grade classrooms and two ninth-grade classrooms) in a junior high school located in a suburb of a small city in southwestern China. In this school, each grade has eight classes with about 70 students in each classroom. Generally, each of the 14 full-time English teachers teaches two classes in one grade. Considering that students enter this junior high school with varying levels of English proficiency, teachers make it their common teaching practice to start the first English classes with the letters of the English alphabet.

Table 5  
*Demographic Summary for the Participating Students*

	Total #	# of Females	# of Males	Mean Age (SD)
8th graders	120	63	53	13.7 (.50)
9th graders	147	75	62	14.9 (.48)

*Note.* As some students did not specify their gender on the questionnaire, the sum of female and male students was smaller than the total participants.

The participating students spend their 5-day school weeks on campus and weekends at home. They take five classes of English each week; each class lasts 45 minutes. In addition, each week, the students also have approximately four self-study classes, during which they review textbooks, do exercises, or occasionally take quizzes. Roughly, these students will have received 270 hours of formal English instruction by the end of Grade 8 and 405 hours by the end of Grade 9.

## **Measures**

### **Background questionnaire**

All the student participants filled out and returned a paper-based questionnaire. The questionnaire collected the students' demographic information, self-reports of English proficiency levels prior to junior high school attendance, motivation for English learning, and current after-class English literacy activities, as well as self-perceptions of challenges in English and Chinese writing (see Appendix A).

Performance measures included English vocabulary tests, English grammar tests, assessment of ideation in Chinese writing, and an English writing task. The internal consistency (Cronbach's  $\alpha$ ) was calculated for each measure where applicable (see Table 6). The values for the reliability coefficients were mostly .70 or higher, indicating acceptable levels of reliability. However, for the morpho-syntactic awareness test "*Does it Fit,*" the internal consistency estimates were  $\alpha = .55$  (8th grade), and  $\alpha = .58$  (9th grade). These relatively low coefficients were likely because that the test contained only 10 questions. For the measures involving raters' subjective judgment of quality, the

inter-rater reliability was monitored to ensure adequate levels of reliability throughout the scoring process (see Table 6). The coefficients ranged from .70 to .95.

Table 6  
*Internal Consistency Estimates (Cronbach's Alpha) and Inter-Rater Reliability of the Measures*

Measure		$\alpha$		Inter-rater Reliability	
		Grade 8	Grade 9	Grade 8	Grade 9
<b>Vocabulary knowledge</b>	<i>Vocabulary size</i>	.80	.83	.93	.94
	<i>Word association test</i>	.76	.72		
	<i>Are they related?</i>	.72	.72		
<b>Grammatical knowledge</b>	<i>Does it fit?</i>	.55	.58		
	<i>Writing fluency</i>			.93	.89
<b>Ideation</b>				.87	.90
<b>Writing performance</b>	<i>Overall</i>			.88	.85
	<i>Focus &amp; ideation</i>			.80	.80
	<i>Organization</i>			.75	.70
	<i>Spelling &amp; word choice</i>			.86	.79
	<i>Grammar &amp; readability</i>			.80	.85
	<i>Sentence fluency &amp; complexity</i>			.90	.89
	<i>Length</i>			.95	.93

**Breadth of vocabulary: vocabulary list**

The vocabulary list consisted of 60 words randomly drawn from the 3000-word frequency list compiled by the Corpus of Contemporary American English (n.d.): 40 words came from the 1000-band word list, 10 from the 2000-band, and the last 10 from the 3000-band (see Appendix B). The ratio of nouns, verbs, adjectives, and other words was approximately 2:1:1:1, identical to the students' textbooks. To assess the students'

productive and receptive vocabulary sizes, a random half of the 60 target words were presented in Chinese and the other half in English. The students need to write down the closest Chinese equivalents of the English words or the closest English equivalents of the Chinese words. Minor misspellings were counted correct if the misspellings did not result in different words. Words sharing the same root and a similar meaning with the target word were also counted correct. In addition, as the words, the Chinese words in particular, were presented in a no-context condition, more than one correct answer was allowed in some cases. Additionally, missing responses to individual questions on the test were recorded as incorrect. This scoring criterion was applied to all the other tests in this study.

#### **Depth of vocabulary: word association and morphological awareness tests**

After consultation with the teachers, 20 out of the original 40 items in the Word Association Test (Read, 2004b) were adopted to measure the extent to which the students knew the meanings of the common English adjectives. For each target word, students need to choose a total of four words that are semantically related to the word, i.e., its adjective synonyms and noun collocations. The “*Are they related?*” test measures students’ morphological awareness (Berninger, 2007; Kuo et al., 2011) by asking them to judge whether the given pairs of words (e.g., corner and corn) are morphologically related. Again, 20 items out of the original 40 were selected.

#### **Grammatical knowledge: morpho-syntactic awareness and sentence making**

The “*Does it fit?*” test is a multiple-choice 10-item test measuring students’ morpho-syntactic awareness (Berninger, 2007; Kuo et al., 2011). Relying on their

knowledge of derivational rules, the students need to choose one word from four pseudo words that fits grammatically with the rest of the sentence. For example, *She showed no \_\_\_ when she heard the news. a) vullion, b) vullful; c) vully; d) vullify.*

The first 16 items of the Woodcock Johnson Writing Fluency subtest were used to measure the students' productive grammatical knowledge. As required, the students were asked to make a sentence by using the three prompt words to describe each picture. High readability and proper grammar usage were the scoring components of a fluency score (for scoring details of vocabulary, grammar, and idea measures, see Appendix D).

### **Writing tests**

For young writers, writing is likely to become enjoyable when they can easily relate the writing to personal experiences. In search of a topic that was both interesting and easy to complete, the topic "My Friend" was finally selected. On the first school visit, a random half of the students in each class wrote to the prompt in English and the other half in Chinese. The second time around, which was eight days later, the students wrote in response to the same prompt, yet in the other language. The students were encouraged to write about their friends as much as possible (e.g., how they met, their friend's hobbies and personality) within 10 minutes.

Four graduate students scored the writing samples: two graded the Chinese samples and the other two rated the English samples. The whole research team attended a training session on the scoring rubrics before the actual grading. After the training, two graduate students individually rated the same 40 writing samples from each grade. They then met to resolve all discrepancies in scoring through discussion and reached an

agreement on one final score for each of the writing samples that they had rated. Finally, the raters independently completed the scoring of the remainders of the writing samples.

***Idea development: Chinese writing.*** The Chinese writing samples on the topic “My Friend” were rated based on idea relevancy, idea diversity, and idea development (see the scoring details in Appendix D).

***English writing quality: English writing.*** The English writing samples were rated using a 5-point rubric (adapted from Kent, Wanzek, Petscher, Al Otaiba, and Kim’s, 2014) from six categories: focus and idea generation, organization, word choice, grammar, sentence fluency, and length of writing samples. Each category ranges from one to five points, with higher scores indicating higher levels of knowledge/skills in this category (see Appendix C).

## **Analyses**

The dataset was first checked for causes of missing data. Nine students were absent on one of the test days and therefore did not complete all the sections. Five students did not answer the more important questions such as after-class English activities and English learning motivation in the survey. Another 12 students left one of the tests blank. As the percentage of the missing data for each variable was very low, the missing data were treated as a random loss of data. Listwise deletion was therefore adopted to remove participants with any missing test scores or incomplete background information from the dataset. Two hundred forty-one junior high school students were included in the resulting final dataset, of which 108 were 8th graders and 133 were 9th graders.



In preparation for data analysis, individual vocabulary and grammar measures were combined into single composite scores: vocabulary (in total) and grammar (in total), respectively. The justification for doing so was that as these individual measures were related to each other, both conceptually and statistically, the new composite scores then would present a fuller picture of the students' repertoire of vocabulary and grammatical knowledge. Additionally, the students' involvement in after-class English literacy activities was recoded. One point was assigned to participation in each of the five types of English literacy activities, meaning that a student who participated in all five activities would get a score of five whereas one who participated in none would get a score of zero. As a categorical variable, motivation was also recoded into a dummy variable: 0 representing extrinsic motivation and 1 representing intrinsic motivation.

Descriptive statistics for each variable was used to examine the characteristics of the data. T-tests and correlation analyses helped to identify differences in the participating students' background variables and language performances, and linear dependence between all the variables. To further test direct and indirect relationships of all the variables, the approach of path analysis was adopted using SPSS Amos 24.

## **Results**

### **Participants' Background Information**

#### **Prior English proficiency levels**

As shown in the questionnaire, the 8th and 9th graders displayed a similar distribution across English proficiency levels: only 7.9% of the 8th graders and 6.6% of the 9th graders never learned any English before junior high school entry.

Approximately 75% of the students in either grade learned at least some simple words before school entry (see Figure 2).

### **Writing interest**

For the question “do you enjoy writing in English/Chinese,” more than half of the 8th graders expressed mild enthusiasm (i.e., “somewhat”) about writing in English (72%) and Chinese (62.6%). More 8th graders (29%) enjoyed Chinese writing “very much” than English writing (9.3%). The 9th graders displayed similar patterns of feelings about writing, whether in Chinese or English: 72.2% “somewhat” enjoyed writing in English or in Chinese; 9% enjoyed Chinese writing “very much” and 6.8% enjoyed English writing “very much.” However, there was only a weak correlation ( $r = .25, p = .010$ ) between the interest in English and Chinese writing among the 8th graders, and no significant correlation among the 9th graders.

### **English learning motivation**

The two frequently chosen types of motivation among the 8th graders were preparation for high education and career, and personal interests. Twenty-five percent of the 8th graders agreed, “English is a prerequisite for me to get admitted to an institution of higher education and land a satisfactory job.” Another 24.1% reported, “Personally, I feel interested and curious in learning a new language and culture.” Similar to the 8th graders, 27.1% of the 9th graders chose preparation for higher education and career as a strong motivation for learning English. In addition, 27.8% of them were also highly motivated by school requirements (“I have to learn English, as it is a required school subject”).

### **After-class English literacy activities**

The questionnaire inquired about the students' engagement in five types of English literacy activities: watching English movies and TV programs, playing English games, browsing English websites, reading English books, and writing in English (not including homework). Comparatively, students in the two grades participated most in watching English movies and TV programs, and least in browsing English websites (See Table 7). On average, these students got involved in three home literacy activities: the 8th graders with a mean of 3.37 (SD = 1.20) and the 9th graders with a mean of 3.17 (SD = 1.26).

Table 7  
*Students' Involvement in After-Class English Literacy Activities*

	# of 8th graders (%)	# of 9th graders (%)
Movie & TV	100(92.6)	115(86.5)
Games	86(79.6)	95(71.4)
Websites	45(41.7)	53(39.8)
Reading	53(49.1)	68(51.1)
Writing (other than homework)	76(70.4)	90(67.7)

### **Challenges in English and Chinese writing**

In the survey, the students were also asked to rank three common writing challenges, vocabulary, grammar, and idea generation, with the numbers of “1,” “2,” and “3.” One denoted the biggest challenge, “2” the second biggest, and “3” the third

biggest. Vocabulary and grammar were consistently reported by the 8th graders and 9th graders as the most difficult parts of writing. The 8th graders reported grammar as their biggest challenge (41.7%) and vocabulary the second biggest challenge (38.4%). Vocabulary was the biggest challenge for the 9th graders (39.2%), closely followed by grammar (37.5%). Comparatively, regardless of grade level, the students felt the least challenged by ideation. Only 20.2% of the 8th graders and 23.4% of the 9th graders ranked ideation as the number one challenge in English writing.

### **Descriptive Statistics**

Descriptive statistics are presented in Table 8. On average, students in the two grades scored lower than 50% on the vocabulary size, morpho-syntactic awareness, and writing fluency tests. The ratings of the writing quality either overall or by individual components averaged at 2.5 or above, except for the 8th graders' word choice ( $M = 2.37$ ).

### **Correlational Relationships**

Quite a few positive, significant bivariate correlations were found between vocabulary, grammar, idea development, and writing (Tables 9 & 10). Vocabulary in total had positive, statistically significant correlations with all the other measures, except for morpho-syntactic awareness (the 8th graders) and idea development (the 8th and 9th graders). Grammar in total significantly correlated with all the other measures except for the 8th graders' two vocabulary measures (word association and morphological awareness tests) and ideation. As for the 9th graders, grammar in total showed no significant correlations with morphological awareness and ideation. Ideation had no

significant correlations with any other measures for the 9th graders; yet it had one small, significant correlation with writing fluency for the 8th graders ( $r = .20, p = .020$ ). The 9th graders' writing significantly correlated with all the other measures with the exception of their idea development, while the 8th graders' writing significantly correlated with all the other measures except for their morpho-syntactic awareness and idea development.

Table 8

*Descriptive Statistics of Vocabulary, Grammar, Ideation, and Writing Measures*

	Grade 8			Grade 9		
	M	SD	Range	M	SD	Range
Vocabulary Measures (total)	68.01	10.76	37-89	81.69	15.53	37-117
<i>Vocabulary size test</i>	16.04	4.92	2-26	25.63	9.20	2-42
<i>Word association test</i>	42.15	8.05	22-56	44.59	8.47	21-60
<i>Morphological awareness test</i>	9.82	1.94	4-14	11.47	2.16	4-17
Grammar Measures (total)	10.45	3.20	3-20	15.49	4.21	4-25
<i>Morpho-syntactic awareness test</i>	4.07	1.69	0-7	4.92	2.27	0-10
<i>Writing fluency test</i>	6.38	2.73	0-13	10.56	2.81	0-16
Ideation	9.82	2.15	0-15	11.53	2.44	7-18
English Writing Quality (total)	16.60	3.50	7-27	18.03	4.59	6-28
<i>Focus &amp; idea generation</i>	2.52	.69	1-5	2.68	.93	1-5
<i>Organization</i>	2.55	.77	1-4	2.79	.90	1-5
<i>Spelling &amp; word choice</i>	2.37	.71	1-4	2.79	.90	1-5
<i>Grammar &amp; readability</i>	3.39	.89	1-5	2.94	.80	1-5
<i>Sentence fluency &amp; complexity</i>	3.05	.50	1-4	3.39	.78	1-5
<i>Length</i>	2.73	.94	1-5	3.44	1.20	1-5

Table 9  
*Correlations between Observed Variables among the 8th Graders*

	Vocabulary (in total)	VS	WA	MA	Grammar (in total)	MSA	WF	Idea
Vocabulary (in total)	-							
<i>Vocabulary size (VS)</i>	.67**	-						
<i>Word association (WA)</i>	.88**	.28**	-					
<i>Morphological awareness (MA)</i>	.21*	.01	.03	-				
Grammar (in total)	.34**	.55**	.12	-.01	-			
<i>Morpho-syntactic awareness (MSA)</i>	.18	.14	.16	.00	.52**	-		
<i>Writing fluency (WF)</i>	.28**	.55**	.05	-.01	.85**	-.01	-	
Ideation	.06	.18	-.03	.01	.17	-.00	.20*	-
Writing	.45**	.60**	.19*	.21*	.44**	.12	.44**	.11

Note. \*\*  $p < .01$  \*  $p < .05$

Table 10  
*Correlations between Observed Variables among the 9th Graders*

	Vocabulary (in total)	VS	WA	MA	Grammar (in total)	MSA	WF	Idea
Vocabulary (in total)	-							
<i>Vocabulary size (VS)</i>	.84**	-						
<i>Word association (WA)</i>	.81**	.39**	-					
<i>Morphological awareness (MA)</i>	.43**	.26**	.25**	-				
Grammar (in total)	.54**	.67**	.23**	.12	-			
<i>Morpho-syntactic awareness (MSA)</i>	.28**	.36**	.10	.10	.78**	-		
<i>Writing fluency (WF)</i>	.58**	.72**	.27**	.11	.86**	.36**	-	
Ideation	.04	.03	.02	.08	-.01	.03	-.04	-
Writing	.72**	.76**	.41**	.32**	.56**	.33**	.56**	.08

Note. \*\*  $p < .01$  \*  $p < .05$



The students' background variables also showed some small but positive associations with their language skill variables (see Table 11). The involvement in English literacy activities displayed more significant correlations with the language skill variables among the 9th graders than the 8th graders. The 8th graders' English learning motivation also had small, negative correlations with vocabulary in total ( $r = -.26, p = .010$ ), grammar in total ( $r = -.24, p = .010$ ) and writing ( $r = -.22, p = .020$ ), none of which were found among the 9th graders.

Table 11  
*Correlations between Observed Variables and Background Information among the 8th and 9th Graders*

Grade 8					
	Vocabulary	Grammar	Idea	Writing	Literacy Activities
Grammar	.34**	-			
Ideation	.06	.17	-		
Writing	.45**	.44**	.11	-	
Literacy Activities	.16	.15	.09	.22*	-
Motivation	-.26**	-.24*	-.01	-.22*	.09
Grade 9					
Grammar	.54**	-			
Ideation	.04	-.01	-		
Writing	.72**	.55**	.08	-	
Literacy Activities	.20*	.16	-.06	.28**	-
Motivation	-.12	-.13	-.07	-.12	-.13

Note. \*\*  $p < .01$  \*  $p < .05$

## Background and Performance Differences across Grades

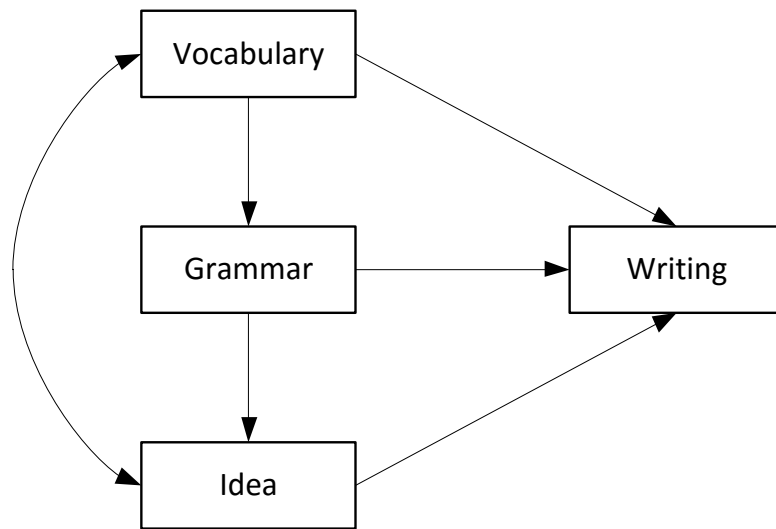
Independent t-tests were used to compare the differences in background information and language performances across the two groups. There were no significant differences in motivation for English learning and involvement in English literacy activities between the grades. However, overall, the 9th graders performed better on all the tests than the 8th graders (see Table 12). For example, in terms of overall writing quality, the 9th graders produced better essays ( $t(239) = 2.66, p = .010$ ). Even when examined by each of the writing quality components, the 9th graders' writing samples still received significantly higher ratings than the 8th graders', except on the component of focus and ideation ( $t(239) = 1.54, p = .130$ ).

Table 12  
*Performance and Individual Differences between the 8th and 9th Graders*

	Measures	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
				Lower	Upper
8th graders vs. 9th graders	Vocabulary	-7.77	.000	-17.15	-10.21
	Grammar	-10.26	.000	-6.00	-4.07
	Ideation	-5.70	.000	-2.30	-1.12
	English Writing	-2.66	.008	-2.48	-.37
	English literacy activities	1.28	.202	-.11	.52
	Motivation	.00	.999	-.62	.62

## Predictors of English Writing

Path analyses were conducted to test the relationship between vocabulary, grammar, idea development, and writing among the sample of EFL secondary school students. Drawing on the simple view of writing, the first model examined how the three componential writing skills were related to English writing. The proposed model was based on the following assumptions (see Figure 4): each of the three componential skills would make its own unique contribution to writing; as for the relationships among the skills, the foundational role of vocabulary should be emphasized in the model. Specifically, vocabulary knowledge would be important in predicting grammatical knowledge, which, in turn, could predict differences in outcomes of the ideation process. Specifically, vocabulary knowledge would be important in predicting grammatical knowledge, which, in turn, could predict differences in outcomes of the ideation process.



*Figure 4.* Path analyses involving the componential writing skills and writing performance.

However, all fit indices pointed to a poor fit between the hypothesized model and the sample data (the cutoff criteria for a good model fit when CFI > .95, TLI > .90, and RMSEA < .08). As the participants in this study were still in the earliest stage of English writing development, there was a possibility that their vocabulary knowledge was not strong enough to significantly contribute to grammar acquisition and idea development, at least not simultaneously. Therefore, a model modification was conducted by removing one path involving vocabulary at a time.

The best-fitting basic model for the 9th graders ( $X^2 = .18, p = .669$ ) resulted in a comparative fit index (CFI) value of 1.00, Tucker-Lewis index (TLI) value of 1.03, and a root mean square of approximation (RMSEA) value of .00 (See Figure 5). For the 9th graders, the standardized path coefficient between vocabulary and writing (.59,  $p < .001$ ) was more than double that of grammar and writing (.24,  $p < .001$ ). The connections between vocabulary and writing (.59,  $p < .001$ ), and vocabulary and grammar were similar in magnitude (.54,  $p < .001$ ). There was also a chain of influence, in that vocabulary influenced grammar (.54,  $p < .001$ ), which in turn affected writing (.24,  $p < .001$ ). No significant path between idea development and writing was found for the 9th grade. Though this model accounted for 55.6% of the variance in the 9th graders' writing, it was a poor fit for the 8th graders' data (CFI: .97 TLI: .80, RMSEA: .12).

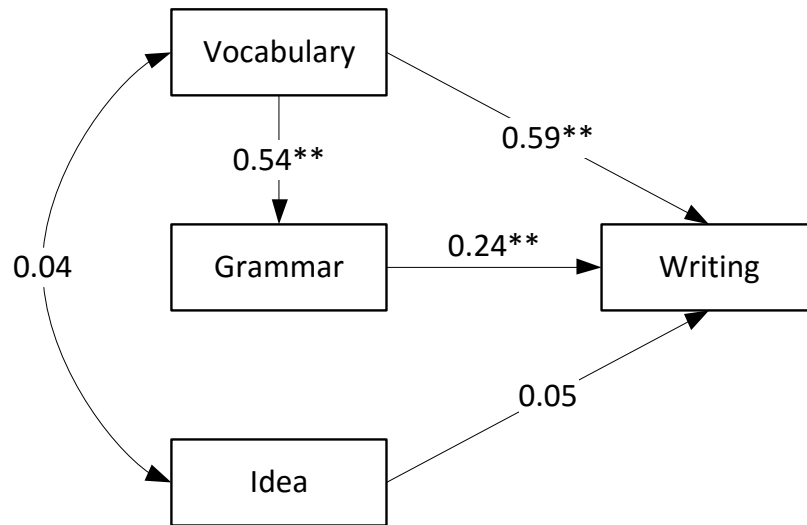
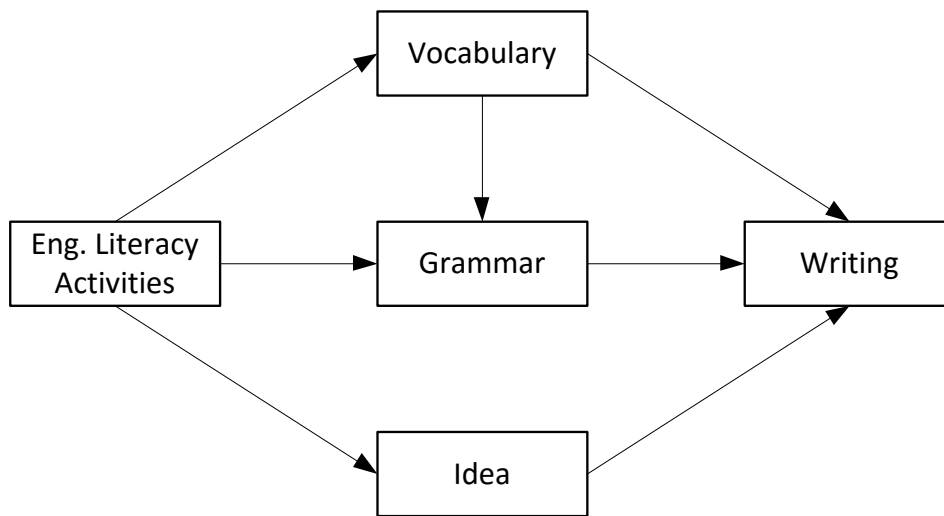


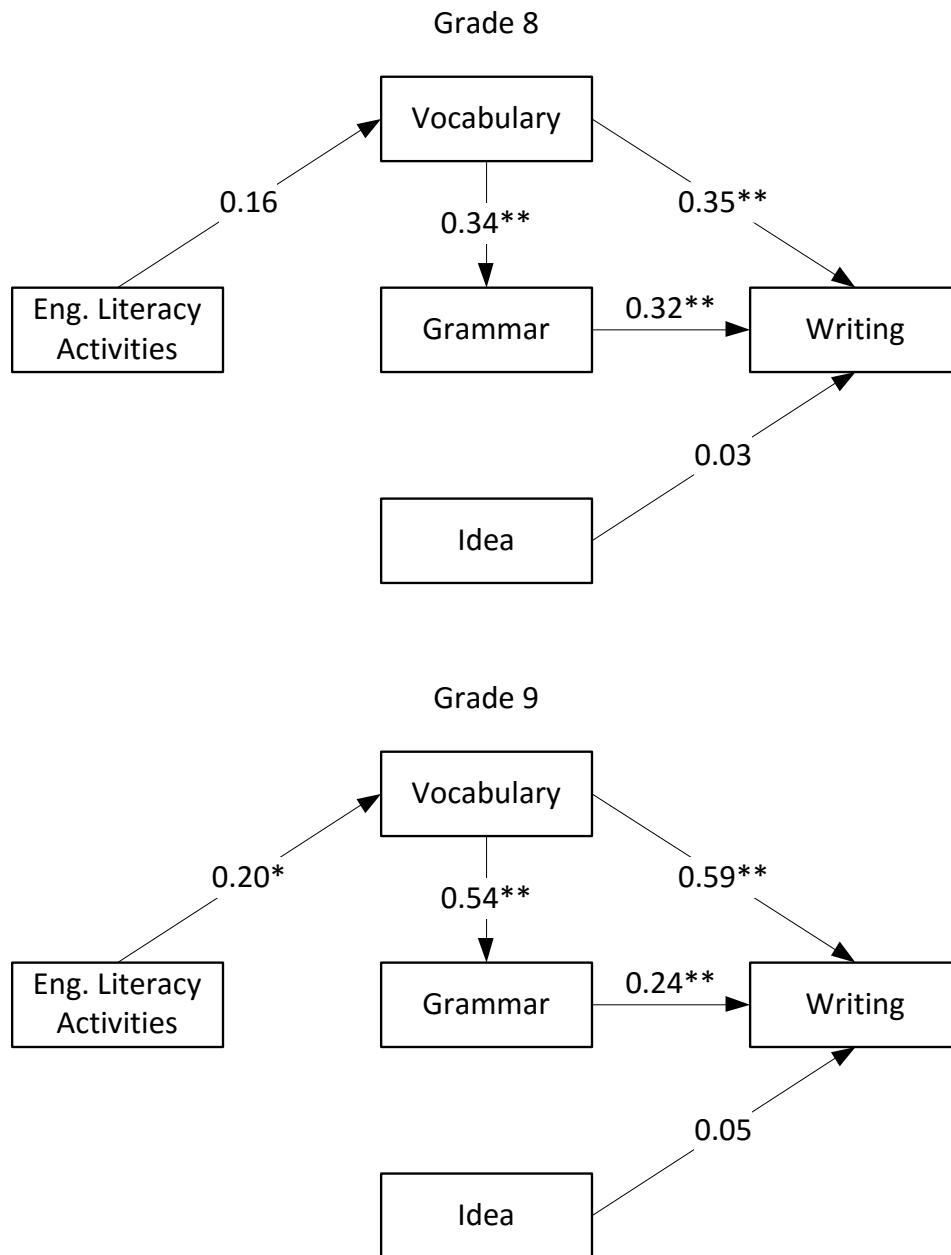
Figure 5. Path analyses involving the 9th graders' componential writing skills and writing performance.  
*Note.* \*\*  $p < .01$  The numbers on the straight lines represent standardized estimates; statistical significant estimates ( $p < .01$ ) are marked with asterisks.

A new variable of involvement in English literacy activities was then added into the model testing. New paths connecting literacy activities with vocabulary, grammar, and ideation were added accordingly (see Figure 6). This model turned out to be an acceptable fit for both the 8th grade data ( $X^2 = 4.52$ ,  $p = .210$ , CFI: .97; TLI: .90, RMSEA: .07) and the 9th grade data ( $X^2 = 5.63$ ,  $p = .131$ , CFI: .98; TLI: .943, RMSEA: .08). Realistically, as beginning language learners' self-initiated English literacy activities cannot foster all-around development of basic writing skills, the model was modified by dropping one path between after-class English literacy activities and writing skills (i.e., vocabulary, grammar, and ideation) at a time. The literacy model only containing the path from after-class English literacy activities to vocabulary had even better model fit indices for the 8th grade ( $X^2 = 6.55$ ,  $p = .256$ , CFI: .97; TLI: .94,

RMSEA: .05) and the 9th grade ( $X^2 = 6.82$ ,  $p = .234$ , CFI: .99; TLI: .98, RMSEA: .05)(see Figure 7). Three percent of the variance in vocabulary, 11.4% variance of grammar, and 29.4% variance in writing were accounted for in the 8th grade model; 4% of the variance in vocabulary, 29.2% variance of grammar, and 55.5% variance in writing were accounted for in the 9th grade model. For both grades, path analyses revealed direct and indirect relationships between vocabulary and writing, or through grammar. However, the impact of English literacy activities on writing through vocabulary was only detected in the 9th grade model.

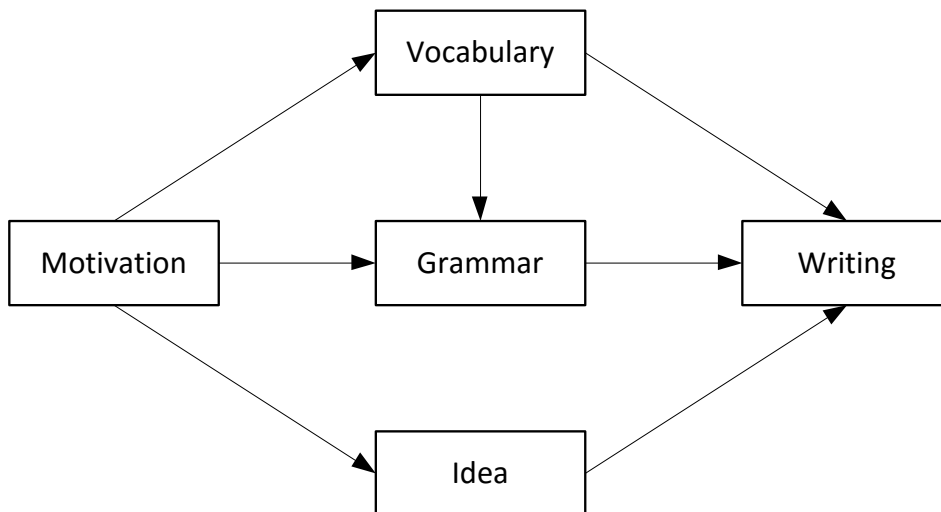


*Figure 6.* Proposed model involving literacy activities, componential writing skills, and writing performance.



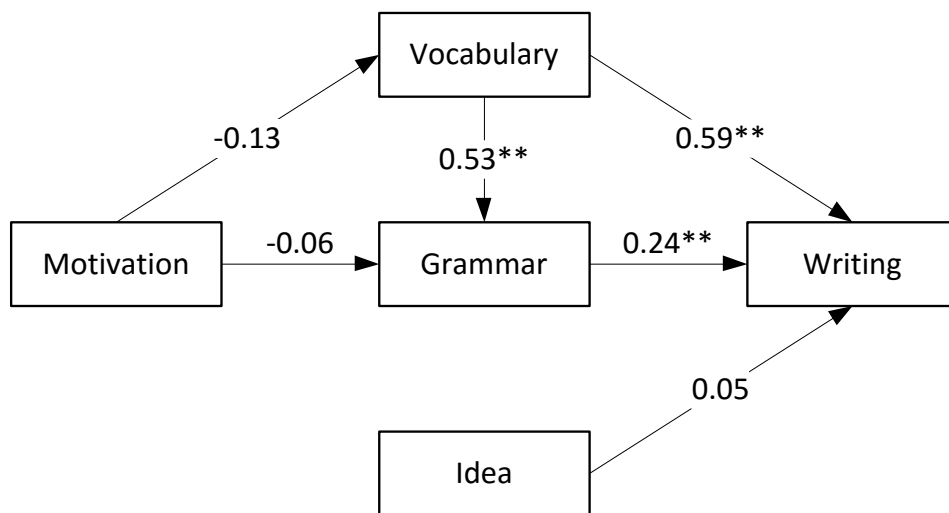
*Figure 7.* Path analyses involving the 8th and 9th graders' literacy activities, componential writing skills, and writing performance.  
*Note.* \*\*  $p < .01$  \*  $p < .05$

With English literacy activities replaced by a new background variable, English learning motivation, this new model looked at whether motivation might promote the development of the componential writing skills and, consequently, improve the writing performance (see Figure 8). TLI for the 8th grade data was .74, suggesting a not-good fit. The path between motivation and ideation was then dropped from the model (see Figure 9). The model fit  $X^2$  was not significant for both grades. For the 8th grade model, CFI increased from .92 to .94, TLI from .74 to .86, and RMSEA dropped from .11 to .08. Still, dropping the path from motivation to idea did not improve the fit of the 8th grade model. The path modification caused slight changes in the fit of the 9th grade model, which still fit the data nicely ( $X^2 = 2.00$ ,  $p = .74$ , CFI: 1; TLI: .1.03, RMSEA: .00). However, the 9th graders' motivation failed to exhibit any significant relationship with their vocabulary.



*Figure 8.* Proposed model involving motivation, componential writing skills, and writing performance.





*Figure 9.* Path analyses involving the 9th Graders' motivation, componential writing skills, and writing performance.  
 Note. \*\*  $p < .01$

### Discussion

Participants in this study had several unique characteristics. First, the participating students attended a junior high school that runs like a boarding school. They spent five full days in school and two weekend days at home. Most of them were raised by working-class parents, who knew little English and might work away from home for extended periods of time. Second, in the suburban community where the students lived, there were absolutely no cases where English is needed in daily life. Located in an inland part of China, this small community rarely saw any native English-speaking visitors. Third, overall, the students reported moderate interest in English writing and varying degrees of involvement in self-initiated English literacy activities

after class. They also tended to be most motivated by school requirements and plans for future education and career.

This study compares the contribution of the componential writing skills, vocabulary, grammar, and idea generation, to early writing development of young Chinese-speaking learners of English. Furthermore, the study also examines whether individual variables such as involvement in after-class English literacy activities and English learning motivation may enhance the writing skills within the EFL context. Overall, the models tested in this study fit the 9th grade data more adequately than the 8th grade data. Of the three writing skills, ideation does not show any significant association with vocabulary, grammar, or writing quality. Compared to grammar, vocabulary is a stronger predictor of writing quality. There is also an indirect relationship between vocabulary and writing via grammar. The addition of involvement in after-class literacy activities helps improve the model fit of the 8th and 9th grade data. Moreover, the 9<sup>th</sup> grade model shows one significant path from the involvement to vocabulary. The motivation model, on the other hand, only fits the 9th grade data. Yet, there are no significant paths between motivation and vocabulary or grammar.

### **Vocabulary, Grammar, and Writing**

Vocabulary and grammar knowledge turned out to be statistically significant predictors of the young EFLs in our sample's early writing development, with vocabulary being more prominent. In all the three good-fitting models, vocabulary and grammar had a direct causal effect on writing. One standard deviation unit change in vocabulary would be accompanied by .35 of a standard deviation unit change in the 8th

graders' writing or .59 of a standard deviation unit change in the 9th graders' writing. One standard deviation unit change in grammar would be accompanied by .32 of a standard deviation unit change in the 8th graders' writing or .24 of a standard deviation unit change in the 9th graders' writing. There was also an indirect effect of vocabulary on writing channeled through grammar: .34 of a standard deviation unit change in the 8th graders' grammar or .54 of a standard deviation unit change in the 9th graders' grammar in response to one standard deviation unit change in vocabulary. Especially, for the 9th graders, the strength of the association between vocabulary and writing (.59,  $p < .001$ ) was much stronger than that of grammar and writing (.24,  $p < .001$ ).

Moreover, the models depicting the relationships among vocabulary, grammar, and writing were more likely to fit the 9th grade data than 8th grade data. Of the three sets of models tested in this study, only the after-class literacy model adequately fit the 8th grade data, in which 29.4% of variance in writing was accounted for. In other words, vocabulary, grammar, and ideation did not significantly contribute to either the basic model or the motivation model. Quite differently, the same sets of models fit the 9th grade data more adequately, in which 55.5% variance in writing quality could be explained by the interaction among the 9th graders' vocabulary, grammar, and writing quality.

It is not surprising that English vocabulary and grammar both exerted positive influences on the participants' English writing performance in this study. Theoretically, this finding fits into the framework of the simple view of writing (Berninger & Amtmann, 2003). Basic language skills focusing on efficiently manipulating written

symbols, such as vocabulary knowledge (the ability to improve and expand vocabulary) and grammar knowledge (the ability to sequence and collocate words in a socially acceptable way), are foundational to successful writing. Empirically, observational and intervention studies have provided abundant evidence of the constructive roles of English vocabulary and grammar in improving English writing (e.g., Jones et al., 2013; Laufer & Nation, 1995; van Gelderen et al., 2011).

Contrary to previous studies (Harrison et al., 2016; Schoonen et al., 2011), English vocabulary made a bigger contribution to English writing performance than English grammar. Among the 9th graders who demonstrated higher mastery of vocabulary and grammatical skills and produced writing of better quality than the 8<sup>th</sup> graders, vocabulary was the strongest predictor of writing quality. As for the 8th graders, vocabulary was either a non-significant predictor or a predictor as strong as grammar.

Differences in participants' English proficiency levels seem to be the most likely reason for the inconsistent results across the studies. The previous studies were conducted in either an English-speaking environment (Harrison et al., 2016) or an environment rich with English print (Schoonen et al., 2011). Therefore, their participants were much more likely to have acquired more advanced vocabulary knowledge, and their writing quality tended to be differentiated by other componential writing skills such as grammar. The EFL students in this study were beginning to learn English in a less resourceful environment. Vocabulary was still one of the biggest challenges they were facing at this beginning stage. The impact of vocabulary on writing may start to show, or even grow with increases in vocabulary knowledge at least for the duration of this stage.

Gaps in vocabulary knowledge, generally negligible among beginning language learners, tend to widen over time. It may become more apparent that learners who acquire larger vocabulary knowledge will spend less effort on retrieving words and applying grammatical rules, thus allocating more effort toward generating and developing ideas. Consequently, they are more likely to write better and longer essays. As few longitudinal studies have explicitly compared the predictive power of vocabulary and grammar in writing models, there is still a lack of empirical support for the changing role of vocabulary in writing development.

Additionally, the two studies (Harrison et al., 2016; Schoonen et al., 2011) measured only the breadth dimension of vocabulary knowledge, whereas the present study utilized the dimensions of vocabulary breadth and depth. It is possible that due to a fuller estimate of the participants' vocabulary knowledge, vocabulary knowledge showed a stronger predictive power for writing quality in the present study.

### **Ideation and Writing**

Ideation measured in this study refers to the ability to generate and develop ideas that are relevant to a writing prompt. In many cases, when beginning language learners write in a new language, they feel more overwhelmed by the challenge of finding the right words and sentences to express ideas than generating ideas. Therefore, in this study, the idea-generating ability was assessed by the students' Chinese (mother tongue) writing in response to the same writing prompt, due to fewer language barriers that they might encounter in Chinese writing.

In this study, idea generation was the only non-significant predictor of the young EFLs' writing performance. Regardless of grade level, none of the paths from and to idea generation was significant in any of the models. This finding could be explained by the characteristics of the participating students in the study. As beginning language learners who are learning English as a foreign language mostly in a classroom, these students have only acquired limited English language proficiency. Learning new English words and grammatical rules still impose heavy cognitive load on them, so they may choose to write easily (i.e., using the words they can spell correctly) and safely (i.e., modeling sentences they read in the textbook). At the same time, after receiving formal Chinese literacy instruction for eight to nine years, they can focus more on providing details and achieving creativity in their Chinese writing due to their large Chinese vocabulary and mastery of Chinese grammar rules. As a result of such imbalance between English and Chinese writing competencies, a student's full ability to generate ideas, which they could easily demonstrate in their Chinese writing, was rendered untransferrable to their English writing. Following this line of thought, one prediction would be that these learners' idea-generating ability would gain prominence in determining their writing quality as their English language skills continue to grow.

### **Literacy Activities, Motivation, and Writing**

Results show that within the EFL context, the participating students' English vocabulary and grammar knowledge can be strengthened either by involvement in after-class English literacy activities or English learning motivation, yet to a very small extent. Moreover, involvement in after-class English literacy activities predicted only the 9th

graders' vocabulary knowledge while motivation failed to predict either group's vocabulary knowledge. These findings from the present study do not fully support previous findings that involvement in self-initiated literacy activities (Lam, 2000; Yi, 2007, 2008) and language learning motivation (Wong, 2011) can significantly contribute to language learning outcomes. Instead, this study suggests a mediating effect of overall English proficiency on the relationship between involvement in English literacy activities and English learning outcomes. As a small impact of literacy activities on vocabulary showed in the 9th grade data, it is likely that the increase in overall language proficiency might enable the learners to become more alert to English input available in the activities and pick up new words incidentally.

There are other possible explanations for the inconsistent impact of after-class literacy activities on writing quality. Though after-class literacy activities increase EFLs' exposure to the target language, the nature of involvement in these activities may decide how much gain learners can make in boosting their English literacy. For example, more than half of the students in this study reported watching TV/movie and playing games. However, if with visuals and Chinese subtitles, these activities would require little attention to English language details. Additionally, the absence of reinforcement during or after the activities could further minimize the literacy outcomes of these activities. The length of time or frequency of these literacy activities may also make a difference in whether engaging in the activities would enhance the English learning. Like the majority of the research on home literacy activities, this study relied on student self-report. The background questionnaire only asked the students whether or not they engaged in each

of five common literacy activities. Therefore, the study did not include the duration and frequency of literacy activities as possible mediating variables. Meanwhile, compared to yes-or-no questions, time-use diaries recording literacy activities or direct observation of the activities would provide more reliable data. When more detailed information is collected or other alternative measures are utilized, participation in these literacy activities may demonstrate a more noticeable impact on vocabulary and writing.

Motivation had a non-significant role in promoting writing development in this study. Consistent with what was found in previous motivation studies in China (e.g., Wong, 2011), around 70% of the participating EFL students reported extrinsic motivation. English learning motivation did not affect writing performance significantly, partly because of a lack of variation in the predictor variable. Motivation in this study was coded as the “extrinsic” and “intrinsic” categories and the majority of the students fell into the same category. Again, if more aspects of motivation are to be examined in future studies, motivation might not remain as a nonsignificant predictor of writing development. Participants in future studies may be asked to rate their motivation on a Likert scale. Researchers may also investigate if language learners with multiple types of motivation may be able to develop higher levels of English proficiency. Another possible reason for the disconnection between motivation and the componential writing skills would be that learning motivation does not readily translate into learning outcomes where there are limited language resources and practicing opportunities in EFL contexts. More intervention studies are still needed to provide further evidence that language



learning environments may interfere with the impact of motivation on language acquisition.

### **Classroom Implications**

Three major implications can be drawn from this study. First, given the foundational role of English vocabulary knowledge in fostering English writing development, teachers should prioritize English vocabulary instruction at an early stage. More importantly, how to teach students the techniques of improving and enlarging their English vocabulary should be the real focus of classroom instruction. Second, though this study did not identify idea generation as a contributing factor in English writing development, the importance of idea generation cannot be denied either. If teachers could take time to help students to reflect on what obstacles they encounter when putting ideas into paper and propose effective strategies of dealing with the obstacles, the students may feel less frustrated and more willing to meet the challenges. Third, involvement in after-class English literacy activities and strong English learning motivation may exert chain effects on vocabulary, grammar, and writing. However, unstructured activities or passive involvement are less likely to yield such positive effects. Nor can motivation possibly work any magic in an environment where learning resources and opportunities are scarce. To help EFL students enjoy the benefits of participating in self-initiated literacy activities and maintaining strong learning motivation, teachers should demonstrate support by providing resources and guidance.

### **Limitations and Future Studies**

With a cross-sectional design, this study presents an opportunity to establish whether there are links between the componential writing skills and writing performance. However, this study cannot provide definitive information about cause-and-effect relationships. Due to the participants' unique characteristics, the findings cannot be generalized to the population of Chinese-speaking EFLs. Future longitudinal studies will give researchers a better understanding of the causal relationships among these variables, which may help with developing effective interventions. Furthermore, the information concerning literacy activities and motivation relied on self-reports. Future studies may include more comprehensive measures inquiring into more details in these two aspects.

## CONCLUSIONS

Conducting writing studies on Chinese beginning EFLs has both research and practical implications. Writing studies involving the largest group of ELLs (i.e., English learners in mainland China) is an indispensable component of SLA research worldwide. More importantly, Chinese students' unsatisfactory English writing performance has been a major concern for educators and teachers. In large-scale standardized tests such as TOEFL, Chinese students generally fell far behind foreign peers in terms of writing performance (ETS, 2013). As writing takes time to develop, it is imperative for young learners of English to receive effective writing instruction as early as possible. As for teachers of English, instructional strategies supported by empirical studies can help them prepare young writers from the start.

The empirical studies in this dissertation reveal new insights into the relationship between EFLs' English vocabulary knowledge and writing. Vocabulary breadth was a significant predictor of writing quality across grades. Yet, the role of vocabulary depth was more elusive. Some aspect of vocabulary depth such as knowledge of adjective synonyms predicted the 9th graders' writing performance only, suggesting that the association between vocabulary depth and writing might take time to emerge and the strength of the association might vary with aspects of vocabulary depth measured in research. When compared to the other two componential writing skills, grammatical knowledge and idea generation, the predictive power of vocabulary knowledge stayed strong for both groups, especially for the 9th graders. Grammatical knowledge made less

contribution to the 9th graders' writing than the 8th graders', and idea generation turned out to be a nonsignificant predictor of writing for both groups. Moreover, after-class English literacy activities contributed only to the 9th graders' writing development via vocabulary, indicating that such contribution might be mediated by EFLs' language proficiency levels.

Part of the findings is contradictory to the synthesized findings of the systematic review. For the Chinese EFLs in the present studies, receptive vocabulary depth concerning knowledge of adjective synonyms significantly predicted writing quality, whereas productive vocabulary depth was more likely to exert a significant impact on writing in previous studies. Furthermore, in the present studies, vocabulary knowledge remained the most significant predictor of writing for both grades. Yet in previous studies, vocabulary knowledge had less contribution to writing compared to componential writing skills such as grammar and metacognitive knowledge. Possible explanations for these discrepancies could be differences in participants, measures, and scoring rubrics.

The findings of this dissertation also point to future directions for vocabulary-writing studies. The multidimensionality of vocabulary knowledge should be considered when researchers choose vocabulary measures for research purposes. Longitudinal studies following ELLs' development in writing and literacy skills over time can provide a new understanding of the long-term relationship between literacy skills and writing development.

Though more studies are needed to fully determine the effect of ELLs' vocabulary knowledge on writing performance, teachers can still implement effective vocabulary-related practices in writing instruction based on the findings in the current literature. To bring the awareness of multidimensionality of vocabulary knowledge to classroom instruction, teachers should focus on helping students map connections among words and provide opportunities to promote productive use of vocabulary. It may also help if teachers could teach word study skills so that students may be able to apply these skills for vocabulary acquisition during outside-of-class English literacy activities. Most importantly, as vocabulary instruction may take time to exert noticeable effects on writing development, teachers should be patient and creative in vocabulary instruction.

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## APPENDIX A

### BACKGROUND QUESTIONNAIRE

Name \_\_\_\_\_ Class \_\_\_\_\_

Birth date (month/day/year) \_\_\_\_\_

Gender:  Boy  Girl

1. Did you learn any English before you attended middle school?

Yes  No

2. How much did you learn before you attended middle school?

- I learned many common words and sentences
- I learned some simple words and sentences
- I learned some simple words
- I learned the letters of the alphabet (A, B, C.)
- I did not learn any English at all

3. What's your strongest motivation for learning English? Check one answer only.

- English is a prerequisite for me to get admitted to an institution of higher education and land a satisfactory job.
- Personally, I feel interested and curious in learning a new language and culture.
- I have plans for studying abroad, so I need to learn English well.
- I have to learn English, as it is a required school subject.
- I am a top student in my English class. So, I am motivated to work hard.
- My English textbooks are very interesting and entertaining. I like using and reading the books.
- I really like my English teacher and the way he/she teaches. We always have much fun in class.
- My friends/classmates are studying English hard and are very good at English. I don't want to lag behind.

4. Outside class, have you been engaged in any of the following English language activities?

- Do you watch any English movies or English TV programs?  
 Yes                       No  
If yes, how often?  
 frequently               sometimes               occasionally               never
- Do you play any English video/computer games?  
 Yes                       No  
If yes, how often?  
 frequently               sometimes               occasionally               never
- Do you browse any English websites?  
 Yes                       No  
If yes, how often?  
 frequently               sometimes               occasionally               never
- Do you read any English books?  
 Yes                       No  
If yes, how often?  
 frequently               sometimes               occasionally               never
- Do you write anything in English (other than your English assignments)?  
 Yes                       No  
If yes, how often?  
 frequently               sometimes               occasionally               never
- Other (please specify if you are engaged in English language activities that are not listed above) \_\_\_\_\_  
How often?  
 frequently               sometimes               occasionally               never

5. Do you enjoy writing in Chinese?

- Very much               Somewhat               Not at all

6. Do you enjoy writing in English?

Very much       Somewhat       Not at all

7. Please rank challenges you have encountered when writing in Chinese (1 for the biggest, 2 for the second biggest, etc.)

**For example:** please rank the colors you like (1 for your most favorite, 2 for second favorite, 3 for third favorite)

So, if I like Green most and yellow the least, my answer would be

Yellow   3        Red   2        Green   1  

Vocabulary \_\_\_\_\_      Grammar \_\_\_\_\_      Ideas \_\_\_\_\_

- Other (please specify if you think you have other major challenge and rank it) \_\_\_\_\_

8. Please rank challenges you have encountered when writing in English (1 for the biggest, 2 for the second biggest, etc.)

Vocabulary \_\_\_\_\_      Grammar \_\_\_\_\_      Ideas \_\_\_\_\_

- Other (please specify if you think you have other major challenge and rank it) \_\_\_\_\_

## APPENDIX B

### VOCABULARY LIST

Please write down the Chinese equivalents of the English words, and the English equivalents of the Chinese words.

Earth	铁	(steel)
Television	也许	(maybe)
Connect	他们的	(their)
Bedroom	否则	(or)
Butterfly	为什么	(why)
When	在。。。过程中	(during)
Land	全部的	(whole)
Cartoon	干净	(clean)
Aside	潮湿	(wet)
Imagine	偷	(steal)
Shoot	有趣	(funny)
Fashion	幸运	(luck, lucky)
Win	啤酒	(beer)
Jump	成长	(grow)
Vast	想念	(miss)
Certain	城市	(city)
Special	认为	(think)
Jail	相信	(believe)
Crazy	仍然	(still)
Soft	故事	(story)
Quit	饭店	(restaurant)
Among	混合	(mix)
But	互联网	(internet)
Personal	图书馆	(library)
Before	锋利	(sharp)



If	舞蹈	(dance)
Via	乘客	(passenger)
Crime	阿姨	(aunt)
Fun	盐	(salt)
Chance	香烟	(cigarette)

APPENDIX C

SCORING RUBRIC FOR ENGLISH WRITING SAMPLES

	1	2	3	4	5
<b>Focus &amp; idea generation</b>	<p>The writing is lacking in focus. (A couple of sentences are mindlessly written).</p> <p>Ideas are confusing and few.</p> <p>Details are rare, and even irrelevant to the idea.</p>	<p>The writing addresses the topic; yet it loses focus by including extraneous and loosely related ideas.</p> <p>Ideas are mostly clear, yet general.</p> <p>Details for each idea barely exist.</p>	<p>The writing focuses on the topic; it may contain loosely related information.</p> <p>Ideas are clear.</p> <p>There are relevant details for some of the idea(s).</p>	<p>The writing closely focuses on the topic.</p> <p>Ideas are clear and sufficient.</p> <p>The majority of the details are telling and specific to each idea.</p>	<p>The writing closely focuses on the topic.</p> <p>Different ideas are clear even interesting or original.</p> <p>Details are relevant, high quality, and support each idea.</p>
<b>Organization</b>	<p>Neither beginning nor conclusion is absent.</p> <p>Transitions are not present.</p> <p>Ideas are randomly connected.</p>	<p>Either beginning or conclusion is present, which somewhat serves its purpose.</p> <p>Transitions are starting to emerge.</p>	<p>Either beginning or conclusion is present, which generally serves its purpose.</p> <p>Transitions rely on single transitional words.</p>	<p>Beginning and conclusion are present, which generally serves their purposes.</p> <p>Transitions work in predictable fashion.</p>	<p>Beginning attracts, and conclusion summarizes.</p> <p>Transitions are somewhat varied.</p> <p>Ideas are logically and naturally</p>

		Some connections between ideas are questionable.	The connection between ideas is mostly clear.	Ideas are mostly logically interconnected.	interconnected.
<b>Spelling &amp; word choice</b>	<p>Words are difficult to decode.</p> <p>No meaning conveyed through the words.</p> <p>Words do not create mental imagery.</p>	<p>Some misspellings slightly interfere understanding.</p> <p>Limited verb choice;</p> <p>Ineffective adverbs and adjectives;</p> <p>Inaccurate or ineffective words and phrases</p> <p>Words begin to create mental imagery.</p>	<p>A few misspellings do not interfere understanding.</p> <p>Ordinary verb choice;</p> <p>Adequate adverbs and adjectives;</p> <p>Somewhat accurate and effective words and phrases</p> <p>Words create general mental imagery.</p>	<p>Very few minor misspellings</p> <p>Accurate verbs choice;</p> <p>Accurate adverbs and adjectives;</p> <p>Accurate and effective words and phrases</p> <p>Phrases and word groups create specific mental imagery.</p>	<p>No spelling errors.</p> <p>Strong verbs inform actions;</p> <p>Creative adverbs and adjectives;</p> <p>Accurate and creative words and phrases</p> <p>Figurative language creates clear mental imagery.</p>
<b>Grammar &amp; readability</b> (Subject/verb agreement, proper tense, prepositions)	No sense of grammar exists.	Quite a few different types of grammatical errors, which noticeably interfere readability.	Two to three types of grammatical errors, which slightly interfere readability.	One type of grammatical errors, yet still with high readability.	Very few grammatical errors and with high readability.

<p><b>Sentence fluency &amp; complexity</b></p>	<p>Sentences are not used, but instead random words or marks.</p> <p>Rhythm is not evident.</p>	<p>Sentence parts are present, but not complete.</p> <p>Rhythm is choppy and repetitive.</p>	<p>Most simple sentence parts are present.</p> <p>Variety in beginnings or length exists.</p> <p>Rhythm is more mechanical than fluid.</p>	<p>There is some variation in sentence structure (simple &amp; compound).</p> <p>Variety in beginnings and length exists.</p> <p>Rhythm is more fluid than mechanical and is easy to read aloud.</p>	<p>Sentences vary in structure, as well as beginnings and length.</p> <p>Rhythm is fluid and pleasant to read aloud.</p>
<p><b>Length</b></p>	<p>1-20 words</p>	<p>21-40 words</p>	<p>41-60 words</p>	<p>61-80 words</p>	<p>81 or more words</p>

APPENDIX D

SUMMARY TABLE OF VOCABULARY, GRAMMAR, AND IDEA MEASURES

<b>Purpose</b>	<b>Measures</b>	<b># of Items</b>	<b>Total Scores</b>	<b>Scoring Rubric</b>
To assess vocabulary size	Vocabulary list	60	60	<ul style="list-style-type: none"> <li>• Minor misspellings were counted correct;</li> <li>• Words sharing the same root and similar meanings with the target word were counted correct;</li> <li>• More than one correct word were allowed in some cases.</li> </ul>
To assess depth of vocabulary knowledge	Word association test	20	80	Each correctly chosen word was awarded one point.
	Morphological awareness test	20	20	For each item, only one correct answer was allowed.
To assess grammatical knowledge	Morpho-syntactic awareness test	10	10	For each item, only one correct answer was allowed.
	Sentence writing	16	80	<p>For each sentence, one point was allocated for each of the following five criteria:</p> <ul style="list-style-type: none"> <li>• Overall, the sentence is understandable, despite some grammatical incorrectness.</li> <li>• Correct use of tenses</li> <li>• Subject-verb agreement</li> <li>• Correct use of definite and indefinite articles</li> <li>• Correct use of prepositions and adverbials</li> </ul>

To assess ability to generate ideas in writing	Chinese writings in response to the prompt “My Friend”	n/a	n/a	<p>All information should be relevant to the topic: 5 points (full credit)</p> <ul style="list-style-type: none"> <li>• 1 point off for each violation of relevancy</li> </ul> <p>The number of relevant ideas</p> <ul style="list-style-type: none"> <li>• 1 point awarded for one relevant idea</li> </ul> <p>The number of fully-developed ideas</p> <ul style="list-style-type: none"> <li>• 1 point awarded for one full-developed idea (An idea is considered fully developed if supported by details such as examples)</li> </ul>
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