使用英語語境線索推敲字義之研究：以台灣的大學生為例

Using Context Clues to Infer Word Meanings:

A Case Study of EFL University Students in Central Taiwan

by

研究生：林靖偉 Chingwei Lin

指導教授：尤菊芳 博士 Dr. Jyu-fang Yu

THESIS

Presented to the Faculty of the Department of Foreign Languages and Literature of Tunghai University

in Partial Fulfillment of the Requirements for the Degree of

MASTER OF ARTS in

Teaching English as A Foreign Language

TUNGHAI UNIVERSITY

July 2007

私立東海大學外文系英語教學組碩士班

中 華 民 國 九 十 六 年 七 月

使用英語語境線索推敲字義之研究：以台灣的大學生為例

ABSTRACT (Chinese)

中文摘要

以英語為外語的學習者字彙量的不足，直接影響了他們的閱讀理解和學術成就，這是英語教師不得不面對的問題。從事字彙與閱讀研究的學者們建議學習者優先學習英文中的高頻率字彙：包括常用字彙表內的 2,000 **個字彙家族以及學術字彙表內的** 570 **個字彙家族。因為這些高頻字彙家族幾乎涵蓋了任何英文文體中** 90%**的字。除此之外，學習者更須使用各種不同的策略來協助理解文章中不熟悉的字彙以增加閱讀的流暢度。**

在眾多字彙和閱讀策略中，最為學者推崇的就是根據上下文語境去推敲生字字義。英語教師必須注意學生是否能察覺語境線索，因為使用上下文語境推敲字義的能力，和字彙知識及閱讀技巧一般重要，都是學習成功的指標。因此，關於學生如何使用英語語境線索推敲字義來幫助閱讀理解的相關資訊，對教師而言顯然相當重要。

本研究採用 Ames（1969）**對英語語境線索的分類來探索台灣學生對不同語境線索的敏感度；對象為台灣中部地區某私立大學外國語言學系的** 101 **位大一新生。根據自行設計的英語語境線索考卷考試結果，研究者企圖建構出一個語境線索使用頻率表及難度表。為避免研究對象因字彙量不足影響語境線索推敲字義的表現，致使**

本研究做出錯誤的結論，這份語境線索考卷中所有的考題用字都仔細地控制在英文最常用的1,000個字彙表(GSL)內；同時，1000（Huang, 1999）及2000高頻字彙（Schmitt, Schmitt, & Clapham, 2001）測驗卷也被用來當過濾未通過基本門檻的研究對象。

研究結果顯示：88.1%的研究對象通過這 1,000 個高頻率字彙的門檻；在滿分為 78 分的語境線索測驗中，他們平均得到 73.5 分。這表示研究對象普遍具備在閱讀中使用各種語境線索推敲字義的能力。根據研究對象表現整理出來的語境線索難易表，可提供了語言教師明確指標以檢視及修正字彙策略教學方式。此外，本研究結果亦建議：當選擇語境線索的閱讀練習教材時，必須考慮學生的字彙能力——至少必須認識 95%的字。最後，本論文亦針對探討語境線索的其他研究方式提出討論與建議。

關鍵字： 字彙量，閱讀理解，字彙學習策略，根據上下文語境推敲字義，語境線索

Using Context Clues to Infer Word Meanings: A Case Study of EFL University Students in Central Taiwan

ABSTRACT (English)

Inadequate vocabulary size of EFL learners, which directly influences reading comprehension and academic success, is an unavoidable problem for language instructors. Vocabulary and reading researchers thus suggest that EFL students make it a priority to learn the 2,000 high frequency word families and the 570 word families in the Academic Word List that together cover approximately 90% of common words used in typical English passages. Further, EFL learners need to use various strategies that will help them construct the meanings of unfamiliar words encountered in reading.

The most compelling strategy researchers in both vocabulary and reading fields have promoted is using context clues to infer the meanings of unknown words during the reading process. Language instructors need to be aware of how sensitive their students are to context clues, since the ability to use this strategy, along with vocabulary knowledge and reading skills, is a predictor of academic success. Therefore, information about how well students can use context clues to gain knowledge of unknown words in text and to increase English reading comprehension is essential to language instructors.

Adopting the framework of context clues developed by Ames (1966), the current

study explores Chinese-speaking EFL learners' sensitivity to different context clues. One hundred and one college freshmen from Tunghai University in central Taiwan participated in the study. A frequency and a difficulty rank order of context clues were constructed, based on the results from a vocabulary controlled context clues test (CCT). All the lexical items used in the assessment instrument were carefully controlled within the limit of the 1,000 most frequently used word families from the revised General Service List (1998), to prevent the vocabulary insufficiency of the subjects from impeding their performance and thus yielding erroneous conclusions. Huang's (1999) 1,000 word level and Schmitt, Schmitt, and Clapham's (2001) 2,000 word level of the Vocabulary Levels Test (VLT) served as the criteria to exclude participants lacking the requisite vocabulary knowledge from interpreting the CCT results.

Most of the participants (88.1%) reached the vocabulary threshold in this study, and the mean of the context clues test was 73.5 (the maximum score is 78), indicating that college participants from Chinese-speaking backgrounds in Taiwan overall have good knowledge of the use of context clues when encountering unknown words in text. The difficulty rank order of context clues test from the descriptive statistics provides useful guidelines for language instructors to inspect and modify their vocabulary strategy instruction. Moreover, the findings suggest that materials in which at least 95% of the words are known to the readers better enable them to practice the strategy of inferring

from context. Suggestions for the language instructors, textbook writers, and language learners are also discussed. Finally, further research based on different data collection approaches on diverse subjects is proposed.

Key words: vocabulary size, reading comprehension, vocabulary learning strategies, inferring from context, context clues

ACKNOWLEDGMENTS

In three and half a years of study at Tunghai University's TESOL program in Taichung, I've enormously improved my English, both in my use of it, and in my teaching of it, and most important of all, developed my ability to overcome hardships. During the long period of conducting research and writing thesis, I suffered from writing phobia and every now and then I was confronted by problems with the statistics. My advisor, Dr. Jyu-fang Annie Yu (**尤菊芳**), once told me that: "Writing a thesis is like running through a dark tunnel, in which you can't see yourself and don't know where the end is. But as long as you keep making progress, soon you'll find light penetrating from the exit." However, sometimes there was a voice from the bottom of my heart that kept whispering at me: "give up." With each day it appeared I'd not won, I felt a little more defeated. Each day, the problems of my research and the progress of my writing remained the same, my belief diminished. Fortunately, I met three wonderful professors.

My advisor, Dr. Yu, has been demanding but highly supportive in the whole process of tutoring me. I still remember that after reading several of her articles about vocabulary (**尤菊芳,** 1998**,** 1999), I went to her with strong admiration, and that's how the research ideas of this study were first generated, through some mutual brainstorming processes in her office. Without her, I would not be able to run extra miles during the writing process and fulfill the painstaking task. To me, she is like a family in Taichung and will be a

lifelong idol to learn from. Dr. Chin-chung Hunag (**黃金誠**), the Chair of Foreign Language Department in National Pintung University of Science and Technology, is not only the inventor of the 1,000 word-level Vocabulary Levels Test but also a very generous and inspiring scholar to the novice. Dr. Kunnan, a visiting professor from California State University, LA, is a grandmaster of statistics in this field. With his consistent help and inquiry, I really exceeded my personal limits. I'm grateful and have to express my sincere gratitude to them all. In addition, I want to show my sincere gratitude to my wonderful editor, Michael Turton, for his careful and patient work throughout the editing process.

Last, I would like to say "thank you" to my family members and close friends for their unchanging encouragements. Most important of all, I am thankful to my Buddhist faith, and Soka Gakkai, that unswervingly foster strength from the bottom of my heart and keep me up to facing the challenge. According to my lifelong mentor, SGI (Soka Gakkai International) President Dr. Ikeda, "The essence of Buddhism, in a sense, is not to seek the placid existence of a still pond but to establish a towering state of happiness that not even the stormiest seas can destroy." With the teaching in mind, I will remain steadfast in my faith and strive to lead a value-created live.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

This study explores the ability of college students to ascertain information related to unknown words in text based on context clues embedded in or among sentences. Many studies (Decarrico, 2001; Gu & Johnson, 1996; Haynes, 1993; Nation, 2001; Schmitt, 2000) have promoted guessing from context as a good vocabulary meaning discovery strategy for readers. However, there exists a research gap between the L1 context and L2/FL context. The researcher, therefore, intends to investigate how Taiwanese English as Foreign Language (EFL) learners can use information naturally embedded in various kinds of context clues. The significance of the study is to provide language instructors, textbook writers, and EFL learners with the difficulty rank order of context clues that will specify what types of context clues the Chinese-speaking college participants are un/able to use.

This chapter first introduces the background of the study and the research gap of the use of context clues for reading in Taiwan. Then, the purposes, the research questions, and the significance of the study will be unfolded. Terminologies that are crucial to understand this study are defined in the final part of this chapter.

1.1 Background of the Study

Many studies have revealed that the vocabulary knowledge of language learners significantly correlates to their reading comprehension and their academic success in general (Blachowicz, Fisher, & Watts-Taffe, 2005; Huang, 2003; Kameenui, Carnine, & Freschi, 1982; NRP, 2000; Qian, 1999). For example, student vocabulary profiles and their academic performance in two language related courses are found significantly correlated (Morris & Cobb, 2004). However, EFL learners do not easily achieve the suggested goal of knowing overall the 3,000 high frequency word families (WFs) essential for basic comprehension of any given English texts (Huang, 2003; Li, 2004; Lin, 2003; Nation & Waring, 1997; Nurweni & Read, 1999).

Because the lack of vocabulary knowledge often impedes reading comprehension, learners certainly need to use various vocabulary strategies to construct the meanings of new words encountered in reading (Arden-Close, 1993; Chern, 1993; Decarrico, 2001; Gu & Johnson, 1996; Haynes, 1993). Three strategies are thus highly encouraged in the vocabulary and reading fields as meaning discovery strategies: 1) guessing or inferring from context, 2) using word parts, and 3) consulting dictionaries (Nation, 2001, 2004; Schmitt, 1997, 2000). Among these, inferring from context has drawn the attention of researchers, textbook writers, and language instructors in both the vocabulary and reading fields, because the inferring strategy has advantages that can make up for the

disadvantages resulting from consulting a dictionary and using word parts. For example, it does not interrupt the flow of reading. In addition, inferring from context requires that the learner have the ability to analyze surrounding text and to make and test guesses, which enables learners to view reading as a whole, instead of paying attention to only certain words, a common result of the strategy of using word parts (Bengeleil & Paribakht, 2004; Dycus, 1997; Nation & Coady, 1988).

In addition, successful inferring outcomes are often reported as highly correlated with reading comprehension and vocabulary knowledge (Bengeleil & Paribakht, 2004; Herman et al., 1987; Nassji, 2004). Since the ability of inferring from context can enable gaining knowledge of unknown words in text and increase English reading comprehension, information about how well students can use that strategy is essential to understanding EFL contexts in Taiwan.

1.2 Statements of the Problem: the Research Gap

There is a history of developing or generating context clues or contextual aids from readings texts since 1940s. Although studies on the strategy of inferring or guessing from context have an abundant literature in the L1 context, the classification of context clues has rarely been based on empirical methods. Rankin and Overholser (1969) conducted a study based on Ames' (1966) classification scheme, one of the earliest and one of the very

few generated through empirical procedures and later demonstrated to be of practical use In a review of the guessing from context literature, Nation (2001) argues that Ames' study is "the most careful and systematic" (p. 242) approach to developing categories of context clues.

While researchers (Arden-Close, 1993; Chern, 1993; Decarrico, 2001; Gu & Johnson, 1996; Haynes, 1993; Hunt & Beglar, 2005; Nation, 2001; Schmitt, 1997, 2000) have promoted the importance of inferring from context and suggested specific teaching of this strategy, the information of how learners use context clues to gain knowledge of words and to facilitate understanding in reading in L2 or FL context, especially in Taiwan, has been little researched. Studies related to using context clues to infer word meanings have either focused on technical college students (Li, 2004) or the types of context clues were partly selected (Arden-Close, 1993; Li, 2004). Further, the caution that the density of unknown words in text hinders successful inferring outcomes declared by Hu and Nation (2000) was not taken into consideration in related research (Li, 2004).

1.3 Purposes of the Study and the Research Questions

Since the ability to use context clues to infer unknown word meanings is beneficial to facilitating reading comprehension and vocabulary learning (Bengeleil & Paribakht, 2004; Dycus, 1997; Haynes, 1993; Herman et al., 1987; Nassji, 2004; Nation, 1990, 2001,

2004), how readers can recognize clues embedded in sentences is rather important in the FL context. Therefore this study has two purposes. First, it aims to investigate the frequency rank order of the context clues used by Taiwanese university students under the condition that at least 95% of the words are known to the readers; i.e. one nonsense word appearing in each group of 20 or more words. This study is unique by comparison with similar studies (Li, 2004; Rankin & Overholser, 1969) because the issues of 1) density of unknown words in text and 2) a complete classification scheme of context clues were taken into consideration.

This study explores 13 types of context clues (see section 2.4.1) confirmed by previous empirical research (Ames, 1966; Rankin & Overholser, 1969; Nation, 2001). Additionally, this study adopts a more precise way to approach the inferring outcomes by ruling out the problems that may be caused by insufficient vocabulary knowledge among the participants. Two levels of the Vocabulary Levels Test (VLT), 1,000- and 2,000-word level, were used as criteria to detect whether the participants have the word knowledge required to take the test of context clues. Hence, the second purpose is to learn how the participants perform on the vocabulary tests.

Based on the purposes of the study, the following research questions guide the exploring procedures:

1. How do the participants perform on the 1,000- and 2,000-word level VLT that

detect the knowledge of first 1,000 high frequency WFs?

2. How do the participants use context clues to infer unknown words when at least 95% of the words are known to them? Also, among all the 13 types of context clues adopted in the study, what type(s) of clues do the participants fail/succeed in recognizing?

1.4 Significance of the Study

Language instructors need to be aware of how sensitive their students are to context clues since the ability to use this strategy is critical to learning vocabulary and comprehending reading. This study provides information about what types of context clue the Chinese background participants are un/able to use, which is valuable for English teachers, EFL learners, and textbook writers. The difficulty rank order of context clues also can serve as guidelines for effective training of inferring from context clues. Furthermore, by conducting research on inferring from context under the condition that about 95% of the words in text are known, the finding provides guideline for selecting proper reading materials that have an acceptance ratio of density of unknown words in text, such as graded readers, for learners to practice the inferring strategy to elicit reading and word learning.

1.5 Definitions of Terms

1. Vocabulary size: the breadth of vocabulary (Qian, 1999), which refers to how many words a learner recognizes.
2. Vocabulary learning strategies: "a part of language learning strategies which in turn are a part of general learning strategies" (Nation, 2001, p. 217). They can be divided into two kinds of strategies based on different purposes: "strategies for the discovery of a new word's meaning, and strategies for consolidating a word once it has been encountered" (Schmitt, 2000, p. 134).
3. Context clues: information embedded in surrounding sentences or phrases where an unknown or unfamiliar word presents. Nation (2001) regards them as "various kinds of cue that a learner could draw on, including background knowledge and linguistic cues" (p. 220).
4. Inferring/guessing from context: a meaning discovery (Schmitt, 1997, 2000) or information finding (Nation, 2001) vocabulary learning strategy, which requires learners to use context clues to get the meanings of unknown or unfamiliar words in reading.
5. Word families (WFs): including inflected and derivative word forms (e.g., affixes) of a stem, a lemma, or a base word (Nation & Meara, 2002).

CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter begins with the bedrock concept that reading is important to language learning. Its importance is especially crucial in an L2 or FL context since reading is the primary input of the target language. Among the critical components that affect reading comprehension, vocabulary is undoubtedly the most important. The relationship between vocabulary and reading comprehension is thus unfolded in this chapter based on the aspects of vocabulary size, depth, and strategies.

2.1 The Importance of Reading in Second Language Learning

The importance of reading in second language (L2) learning has become generally understood as reading researchers have extended their interest from first language (L1) reading to second language (L2) reading in the past few decades. Because reading is the main exposure to the target language in a second or foreign language learning environment, its importance in language learning is even greater (Paribakht & Wesche, 1997, 1999; Pigada & Schmitt, 2006). In fact, the ability to read with general comprehension in English is the primary goal for many foreign language learners for a variety of reasons such as the need to read for information, or to expand knowledge (Celce-Murcia & Olshtain, 2000). Anderson (1999) states that "reading is an essential

skill for English as a second/foreign language (ESL/EFL) students; and for many, reading is the most important skill to master" (p. 1).

Comprehension is the key that keeps most learners engaged in reading. The view that comprehension is the act of readers constructing meaning from text is underlying theme of all the widely cited definitions of reading comprehension (Lehr & Osborn, 2005). Rubin and Thompson (1994) further identify comprehension as an "active information seeking process in which readers relate information in the text to what they already know" (p. 91).

The National Reading Panel (NRP, 2000) declares that "Comprehension is critically important to development of children's reading skills and therefore their ability to obtain an education" (p. 4). It is also the core of most reading activities in language learning and is viewed as the essence of reading (e.g., Durkin, 1993). According to Cohen (1990), language gain from reading relies heavily on the reader's comprehension of the texts. He states:

> ... reading allows for one more channel of communication and for an important source of input. As long as what is read is also understood, then reading can provide useful data in improving language skills. Skillful reading can accelerate language learning. Poor reading will simply frustrate you and discourage you from reading altogether (p. 73-74).

Increasingly, developments in reading are grounded in research. Researchers (Anderson, 1999; Carter & McCarthy, 1988; Coady, 1993; Krashen, 1993a, 2003) have long promoted reading in both L1 and L2 contexts as one of the main sources for learning English. Reading, regarded as an important source for vocabulary input, has been strongly recommended in the language learning field.

It seems the idea that people who read more know more words (West & Stanovich, 1991) has become more and more accepted. However, the enrichment effect brought about by reading requires readers to process the texts with at least a general understanding. A review demonstrating the power of reading by Elley (1991) concludes that "book flood" studies show that reading broadly benefits language learning, either in overall language skills or attitudes toward books. Grabe and Stoller (1997) attribute vocabulary learning and improved reading comprehension to the practice of extensive reading. That most vocabulary can be learned through reading is a concept established in first language research and is gaining more and more support in second and foreign language learning field (Horst, 2005; Horst, Cobb, & Meara, 1998; Nation & Waring, 2004; Pigada & Schmitt, 2006; Zahar, Cobb, & Spada, 2001). In L2 or FL contexts, however, language learning occurs mostly in the classroom through direct instruction from the teachers under the limits of class time. As a result, the vitality of reading in large quantities as both an in-and-out-of school activity becomes even more crucial to L2/FL

learners.

Researchers have strongly supported the positive effects of reading extensively, freely, and voluntarily (Krashen, 1993b, 2003; Nation, 2001; Renandya & Jacobs, 2002; Waring, 2002). Krashen (2003) asserts:

> there is overwhelming evidence for recreational reading as a means of increasing second-language competence. In fact, recreational reading has become one of the most thoroughly investigated and best-supported techniques we have in the field of second-language pedagogy (p. 26).

Yin (2005) investigated the impact of pleasure reading on 45 University EFL students' English reading attitudes and found it had a statistically significant effect. In her study reading was introduced under various light-hearted names:

> DEAR (Drop Everything and Read), DEER (Drop Everything Else- Read), DIRT (Daily Individual Reading Time), HSSR (Home Sustained Silent Reading), independent reading, leisure reading, light reading, OTTER (Our Time to Enjoy Reading), SQUIRT (Sustained Quiet Un-Interrupted Reading Time), and supplementary reading, recreational reading, and USSR (Uninterrupted Sustained Silent Reading) (p. 8).

These various reading activities were developed from the idea of Free Voluntary Reading (FVR) (Krashen, 1993b), Pleasure Reading (Mikulecky, 1990), and or Sustained

Silent Reading, which all represent the concept of wide or extensive reading. Renandya and Jacobs (2002) illustrate the range of advantages of reading extensively: "reading improved reading and writing skills, and also enhanced language learning in spelling, vocabulary, grammar, and text structure" (p. 298). The power of exposure to print was also reviewed in Kuhn and Stahl (2004). They report significant impacts on literacy brought by "book floods" (Elley, 2000) and on reading skills and fluency in Cunningham and Stanovich (1991). Beyond all of the positive effects reported in reading studies, reading is undoubtedly a good source of knowledge in language learning (Krashen, 2003; Waring & Takaki, 2003).

2.2 Relationship between Vocabulary and Reading

According to Rubin and Thompson (1994), "One cannot speak, understand, read, or write a foreign language without knowing a lot of words" (p. 79). They suggest that vocabulary learning is "at the heart of mastering a foreign language (p. 79)," an idea consistent with Zimmerman's (1997). Zimmerman views vocabulary learning as "central to language" (p. 5). Lehr, Osborn, and Hiebert (2004) further state "Of the many compelling reasons for providing students with instruction to build vocabulary, none is more important than the contribution of vocabulary knowledge to reading comprehension" (p. 3). Researchers have reached a consensus that knowledge of

vocabulary is an important and inseparable component of reading comprehension (Nation, 1990; Read, 2000). Laufer (1997) remarks that "no text comprehension is possible, either in one's native language or in a foreign language, without understanding the text's vocabulary" (p. 20). That reading comprehension "cannot be understood without examining the critical role of vocabulary learning and instruction and its development" is also advocated by NRP (2000, p. 4).

In Taiwan, Huang (2003) conducted a study of 347 twelfth graders' vocabulary knowledge, content knowledge, and reading comprehension, and found that vocabulary knowledge and content knowledge together explained almost half of the participant's reading comprehension scores. Vocabulary knowledge, particularly, contributed 37.21 % to the score of the reading comprehension test. He thus describes the vocabulary-reading comprehension relationship as "robust and positive" (p. 392).

Researchers in L1 and L2 have consistently established that one's vocabulary knowledge is strongly associated with his/her reading comprehension and overall academic performance in a positive way (Blachowicz, Fisher, & Watts-Taffe, 2005; Kameenui, Carnine, & Freschi, 1982; NRP, 2000; Qian, 1999). Morris and Cobb (2004) compared 122 TESL students' vocabulary profiles with their academic performance in two other courses and found significant correlations.

Qian (1999) used four tests to construct his study, VLT (Nation, 1990), a

standardized multiple-choice reading comprehension test taken from one form of the TOEFL, a depth of vocabulary knowledge test developed by Read (1993), and a morphological knowledge test. He found that scores on reading comprehension, vocabulary size, and depth of vocabulary knowledge tests are not only strongly but also positively correlated with one another. Qian (2002) established that all the three measures of vocabulary, VLT, a modified vocabulary depth test (Qian, 1999), and TOEFL Vocabulary Item Measure, are good predictors of academic success on the reading comprehension measure.

The relationship between vocabulary knowledge and reading comprehension is dynamic and reciprocal (Nagy, 2003). Lin (2003) suggests that vocabulary and reading are always nourishing each other. Schwanenflugel, Stahl, and McFalls (1997) reported that during the reading comprehension processes of elementary school children showed vocabulary growth for both partial known and unknown words. Early reading development relies greatly on vocabulary, and advanced reading ability enhances vocabulary learning (Grabe, 2006). That is, at the beginning level, learners have to learn new vocabulary items in order to read with comprehension. On the contrary, after achieving a certain level of vocabulary knowledge and acquiring reading skills, learners can learn both new words and different usages of known words through encounters in readings. In order to select proper reading materials for language learners, researchers

have come to an understanding of how unknown words affect reading comprehension.

2.2.1 The Density of Unknown Words and Reading Comprehension

Reading comprehension cannot be separated from the reader and the text as both are interrelated elements within the reading activity (Lehr & Osborn, 2005). The compilation of vocabulary research through corpus studies provides an enriched foundation for understanding what percentage of unknown words in texts may hinder a reader's comprehension (Hu & Nation, 2000; Nation & Waring, 1997). In addition, researcher shows that readers at varying levels of comprehension may process reading texts differently. Adopted from Nation (1990), the following two examples show how readers will process a passage differently if they know differing percentages of the words in them (p.242) (also cited in Cobb, 2006):

Text A:

If _____ planting rates are _____ with planting _____ satisfied in each _____ and the forests milled at the earliest opportunity, the _____ wood supplies could further increase to about 36 million _____ meters _____ in the period 2001-2015.

Text B:

If current planting rates are maintained with planting targets satisfied in each _____ and the forests milled at the earliest opportunity, the available wood

supplies could further _____ to about 36 million cubic meters annually in the period 2001-2015.

Text A is a passage perceived by readers with about 80% recognition of the running words (83.5% accurately), and in text B the recognition of the words that readers have is 95%. Clearly, an 80% understanding of the words is only enough for readers to get a blurry idea and is far from enough for readers to read fluently, let alone pleasurably. This leads to the conclusion of Hu and Nation (2000), which suggests that learners fail to comprehend the text when reading with 80% known words, meaning that there is an unknown word every five words (the relationship between density of unknown words and word recognition are specified by simple mathematics in Table 2.1). On the other hand, knowing 95% of the words ensures reasonable comprehension of the text during the reading process.

Table 2.1

Density of Unknown Words and Comprehension

% of known words in text	Ratio of unknown words to known words
99	1 in 100
98	1 in 50
95	1 in 20
90	1 in 10
80	1 in 5

Note. Adapted from Hu & Nation, 2000, p. 405.

Laufer (1989) proposes 95% understanding of the words in given text as the

threshold to basic reading comprehension, which means that only one unknown word can appear in 20 running words (Table 2.1), for a promise of reasonable reading comprehension. However, Hu and Nation (2000) regard the knowledge of 95% as a low-end figure, and argue that around 98% of the words have to be known to most of their participants to reach adequate comprehension in reading. According to their study, groups recognizing 90% of words and 95% of words, respectively, did not show steady and consistent comprehension of the reading passages. Only at the 98% level did most of the participants reveal sufficient understanding. They argue that "at 80% coverage [of known words in text] however, skills and background knowledge cannot usually make up for lack of vocabulary knowledge" (p. 419).

2.3 Dimensions in Vocabulary Learning and Reading Comprehension

The former section of this chapter discussed and reviewed the relationship between vocabulary and reading comprehension. This led to the conclusion that at least 95% of the words should be known to gain "reasonable" understanding of the text, while optimally 98% of the words should be recognized to achieve ideal comprehension for reading any given English text pleasurably, without considering factors such as deep knowledge of these words (e.g., collocations), or grammatical knowledge. Though research has provided methods for foreign language learners to obtain robust vocabulary, this section

first examines how many words the English language has and how many words native speakers usually know.

Nation (2001) observed that "if the proper names are eliminated, there are nearly 114,000 WFs, which consist of a base word, inflected forms, and transparent derivations words, in 1963's *Webster's International Dictionary"* (p. 6). Laufer and Yano (2001) also stated that there are "56,000, 50,000, and 63,000 headwords [base words in WFs] in *Longman Dictionary of Contemporary English*, *Cambridge International Dictionary of English*, and *Oxford Advanced Learners' Dictionary*" respectively (p. 549). As suggested by research, it is not only an impossible task for foreign language learners to know so many words (Grabe, 2002; Laufer & Yano, 2001; Nurweni & Read, 1998) but also "a learning goal far beyond the reach of most native speakers" (Nation & Waring, 1997, p. 7).

Researchers have found that native speakers of English have 4,000 to 5,000 WFs at the age of five, before beginning formal schooling (Nation & Waring, 1997), that they generally add 1,000 WFs every year (Nation, 2001), and that at age 22, native university/college graduates in English typically have approximately 20,000 WFs in their repertoire (Goulden, Nation & Read, 1990, as cited in Nation & Waring, 1997; Zechmeister et al., 1995, as cited in Nation, 2001). Therefore, the gap of the vocabulary size between native speakers in English and most EFL learners remains huge.

Studies on EFL learners' vocabulary size conclude with agreement that EFL learners are far behind native speakers in English vocabulary knowledge in spite of having studied English for many years (Arden-Close, 1999; Grabe, 2002; Huang, 2003). Many EFL learners cannot even acquire 5,000 WFs, as five-year-old native speakers do routinely. Nurweni and Read (1999) reported that Indonesian university EFL learners know the 1,226 most frequently used words on average. In Hong Kong, where English is more prevalent, about 91% of the first and second year university learners revealed mastery of the 3,000 word level on Nation's (1990) VLT (Cobb & Horst, 2000). Japanese college freshmen knew 2,304 words on average (Barrow, Nakanishi, & Ishino, 1999, cited in Huang, 2003). In Taiwan, Lin (2003) used VLT to study 219 freshmen from technical college, and found that while 67.4% of the participants attained the 1,000-word level, only 19.6 % reached 2,000-word level. Similarly, Li (2004) reported 71.5% and 24.4% of the freshmen (N=278) in the same technical college of science and technology as in Lin's study (2003) reached the 1,000-word level and 2,000-word level on the VLT, respectively. Although the gap between EFL learners and native speakers of English remains a huge one, researchers have presented "shortcuts" (Cobb & Horst, 2000) on what vocabulary to learn for EFL learners to achieve sufficient proficiency effectively, efficiently, and with less effort.

2.3.1 Vocabulary Size

Grabe (2002) states that "a large vocabulary is critical, not only for reading, but for all L2 language skills, for academic abilities, and for background knowledge" (p. 279). Vocabulary size has been widely studied because of its significant relationship to text comprehension. Researchers have discovered that there is a threshold vocabulary for basic reading comprehension (Laufer, 1989; Laufer & Sim, 1985; Nation, 1990; Nation & Waring, 1997). Most research suggests that recognizing of at least the 3,000 most common word families (WFs) (i.e. about 5,000 most frequently used words), known as the threshold vocabulary level, learners gain basic comprehension while reading authentic texts in English (Coady, 1997; Laufer, 1997; Qian, 2002; Read, 2000; Schmitt, Schmitt, & Clapham, 2001).

2.3.1.1 High frequency word families and word lists.

To provide language learners more effective and efficient ways to recognize a sufficient number of words in texts, the first step researchers took was to look into corpus analysis. As shown in Table 2.2, in order to achieve the 95% minimum requirement of vocabulary-known-in-text suggested by Laufer (1989, 1997) and Hu and Nation (2000), a learner had to acquire around 12,000 words. Table 2.2 shows the text coverage provided by the certain number of words based on a collection of 5 million running words in an

early study (Nation, 1990, 2001). According to Table 2.2, the ten most frequently used words cover 23.7% of average English texts, and 2,000 high frequency words appeared in about 80% of the texts in the corpus. Through corpus studies, researchers explored what vocabulary an English learner most urgently required, words that appear again and again in texts. Similar results were obtained by the *Brown Corpus*, indicating that the 2,000 high frequency base words can cover 79.7% of the running words in its collection of more than 2,000 American English texts, totaling more than one million words (Nation, 2001). That the 2,000 high frequency WFs provide about 80% text coverage is the consensus of the field (Nation, 2001; Nation & Waring, 1997; Cobb & Horst, 2000). These findings have been used to generate frequency-based word lists, which make learning to read in English much easier.

Table 2.2

Vocabulary Size and Text Coverage Percentage

Number of words	% of text coverage
86,741	100
43,831	99
12,448	95
5,000	89.4
3,000	85.2
2,000	81.3
1,000	74.1
10	23.7

Note. Source from Carroll, Davies, & Richman, 1971, cited in Nation, 2001, p. 15.

Frequency-based word lists are known to have a high coverage of words in reading

passages. The most influential word list in this field is arguably Michael West's General Service List (GSL) published in 1953. It consists of about 2,000 words based on analysis with frequency counts from a two to five million word corpus, and asserts that these 2,000 words cover 80% of the words in any written text (Carter & McCarthy, 1988, p. 7). Although the GSL is outdated, Nation and Hwang (1995) found that replacing some of the outdated words yielded only a 1% increase in text coverage of more recent texts. Another very useful word list was developed by Averil Coxhead in 1998. Coxhead's (2000) Academic Word List (AWL) consists of about 570 WFs outside of the first 1,000 and second 2,000 word lists in the GSL (Nation, 2001). Although the first 2,000 high frequency WFs offer around 80% of text coverage, it is not sufficient for the generally accepted minimum requirement of comprehension by researchers that 95% of the words in a text should be known (Read, 2000) and is insufficient for learners to use strategies or background knowledge to facilitate reading comprehension (Hu & Nation, 2000). However, it becomes invaluable if used together with the AWL and the first 1,000 and second 1,000 word lists. Together the three lists offer approximately 90% text coverage rate, the minimum requirement for learners to activate background knowledge and strategies (Hu & Nation, 2000).

Encouragingly, along with the advancing computer technology and corpus analysis studies, researchers (Nation, 2001; Nation & Waring, 1997) suggest that fewer words than

we usually thought were needed for language learners to go beyond the threshold of reading (see Table 2.3). By learning the 2,000 high frequency WFs, readers will recognize 90.3% of the vocabulary conversation textbooks, 87.4% in fictions, 80.3% in newspapers, and 78.1% in reading academic papers. By adding another 570 WFs in AWL, readers will have extra gains in understanding English, especially academic texts (8.5%), as shown in Table 2.3.

Table 2.3

Text Coverage Provided by the First and Second 1,000 High Frequency Words and Academic Word List (AWL) in Four Different Kinds of Texts

Word lists	Conversation	Fictions	Newspapers	Academic texts
1st 1000	84.3%	82.3%	75.6%	73.5%
2nd 1000	6.0%	5.1%	4.7%	4.6%
AWL	1.9%	1.7%	3.9%	8.5%
Other	7.8%	10.9%	15.7%	13.3%

Note. Adapted from Nation, 2001, p. 17.

In addition to the 2,570 WFs recommended previously, Nation (2001) further suggested 4,000 WFs as the minimum for recognition of 95% of the vocabulary in the texts. Waring and Nation (2004) proposed that for reading with ease and pleasure, as many as 5,000 WFs are required. In a recent study adapting the British National Corpus (BNC) in which more than 100 million words were collected and processed, not as WFs but as base words (e.g., go-goes-went-gone-going belong to the base word "go"), Chujo and Utiyama (2005) reported that the 4,000 base word level of high frequency vocabulary

covers 90.4% of texts, while 95.2% text coverage requires knowledge of the 9,000 word level. Their findings are close to those of earlier studies: 9,000 words are roughly equivalent to 5,400 WFs (i.e. a WF to number of words = 1:1.6) (Nation, 1983, cited in Li, 2004, p.22), the level proposed for reading university-level economics material (Nation & Waring, 1997).

Most research confirms that by recognizing at least the 5,000 high frequency words or 3,000 most frequently used WFs, learners can gain basic comprehension while reading authentic texts in English (Coady, 1997; Laufer, 1997; Read, 2000; Schmitt, Schmitt, & Clapham, 2001). This is generally known as the threshold vocabulary level. However, the "contemporary thinking" (Read, 2000, p. 83) of the threshold for learners to read independently is that 95% of the words in a text should be known, despite the fact that researchers disagree on the numbers of WFs because the numbers of WFs differ from the types of texts (Chujo & Utiyama, 2005; Read, 2000). As Schmitt (2000) concluded, "there is no magic vocabulary size threshold" that enables learners to read any authentic texts. Generally speaking, the consensus is between "3,000 to 5,000 WFs" (Schmitt, p. 143). Once the learners reach the threshold of the suggested word level, the vitality of vocabulary size that contributes to reading comprehension decreases drastically (Nation, 2001).

Researchers (Hunt & Beglar, 2002; Nation, 2001; Schmitt, 2000) agree that the

threshold vocabulary, the 3,000 high frequency WFs, should be taught explicitly. It of course should be the major responsibility of language instructors, as these words are the basis of reading comprehension. The remaining 2% to 5% of low frequency words vary broadly depending on the area and the subject of the texts to be read, and the learner will need to acquire them on their own. For example, to obtain 99% of text coverage in any given text, about 40,000 words should be recognized, yet the one percent left requires the reader to learn another 40,000 words. As Lewis (2002) points out, the complex concept of "minimum adequate vocabulary" (p. 102) is more than knowing these high frequency words. Nevertheless, researchers (Hunt & Beglar, 2005; Nation, 2001; Qian, 2002; Schmitt, 2000) realize that in addition to knowing the high frequency words provided from word lists, more in-depth vocabulary knowledge and vocabulary strategies should be introduced to equip learners to read with better comprehension.

2.3.1.2 Vocabulary Levels Test.

VLT ascertains the breadth of a participant's vocabulary knowledge by using word frequency level. Nation (1990) constructed the VLT to estimate the passive or receptive vocabulary size of English learners. The original test contained five subsets, namely 2,000-, 3,000-, 5,000-, 10,000-word and University Word levels. After Coxhead's (2000) Academic Word List (AWL) was assembled, Nation (2001) used it to replace the

University Word level in VLT because the AWL, which has higher text coverage rate in English academic texts than the University Word List, contains fewer words.

Recognizing the need to test EFL learners' vocabulary knowledge at the 1,000-word level, Huang (1999) followed Nation's procedure and developed a new 1,000-word level vocabulary test. Huang (1999) carried out a series of statistical procedures to establish the test's reliability (Cronbach's a = 0.82) and validity, making it probably the only validated instrument used in evaluating English learner's knowledge at the first 1,000-word level. Another word level VLT going through carefully designed statistical processes for validity and reliability, by both Beglar and Hunt (1999), and by Schmitt et al. (2001), was the 2000 word level test. After strong statistical affirmations, Schmitt et al. (2001) published two versions of the newest 30-item VLT, offering better reliability and validity for the 2,000, 3,000, 5,000, 10,000, and Academic word levels.

2.3.2 Vocabulary Depth

Knowledge of vocabulary size, usually known as the breadth of vocabulary, represents only the superficial knowledge of the words or the most frequently used definition of those words, which emphasizes the quantity of vocabulary knowledge. Vocabulary depth refers to "how well the leaner knows a word" or "the quality of lexical knowledge" (Nassaji, 2004, p. 112). Researchers (e.g., Qian, 1999, 20002; Read, 1993,

2000; Nassaji, 2004) regard knowledge of vocabulary depth as knowing the different aspects of a certain word, which included "pronunciation, spelling, meaning, register, frequency, and morphological, syntactic, and collocational properties" (Qian, 2002, p. 515) or "antonym, synonymy, and hyponymy" (Nassaji, 2004, p. 112), the knowledge of which, along with grammatical knowledge, are crucial factors affecting reading comprehension.

The importance of vocabulary depth for reading comprehension has not been empirically and experimentally acknowledged until recently. Qian (1999) found that both vocabulary breadth and depth are good predictors of reading comprehension. Furthermore, Qian (2002) found that vocabulary depth equates with vocabulary size in its importance of the contribution to the scores on academic reading. More recently, Qian and Schedl (2004) examined the depth of vocabulary knowledge and reading comprehension using a sample of 207 international students, and also found that the depth of vocabulary knowledge is a good predictor of reading comprehension scores, obtained from TOFEL vocabulary measures.

Words have various meanings and usages in different contexts. Cobb (1999), thus, suggests that combining concordances and database software with vocabulary learning can elicit the in-depth vocabulary knowledge of learners and solve the problem of superficial word knowledge caused by word-list learning.

2.3.3 Vocabulary Strategies

Vocabulary strategies are broadly known and generally defined as "vocabulary learning strategies," which are comprised of planning of what words to learn and how to learn them, finding information about unfamiliar words, or establishing the knowledge of words (Gu, 2003; Huckin & Bloch, 1993; Nation, 2001). Schmitt (1997) presented a taxonomy based on Oxford's system (1990) and his own "Discovery/Consolidation distinction" (p. 207). Schmitt (1997, 2000) divided the purposes of using these strategies into two major categories: "strategies for the discovery of a new word's meaning, and strategies for consolidating a word once it has been encountered (p. 134)," a distinction followed in this study.

Learners take advantage of different vocabulary discovery strategies (Schmitt, 1997, 2000) to find information about unfamiliar words (Nation, 2001). Using word parts, consulting dictionaries, and guessing from context are vocabulary discovery strategies often taught by language instructors and used by readers when dealing with unknown or unfamiliar words (Nation, 2001, 2004; Schmitt, 2000). However, arguably the most useful vocabulary strategy in reading is guessing or inferring unknown word meanings from context. This strategy involves focusing on words in the surrounding or wider context, and has the advantage of not interrupting the flow of reading (Bengeleil & Paribakht, 2004; Dycus, 1997; Nation & Coady, 1988). Thus, researchers have long

promoted the guessing strategy (Irvin, 2001; Nation, 2002).

In conclusion, learners seeking better reading comprehension in decoding English texts need to equip themselves with the knowledge of vocabulary breadth (size), more in-depth vocabulary knowledge (depth), and vocabulary learning strategies.

2.4. Inferring from Context and Previous Studies on Context Clues

Haynes (1993) analyzed seven reading textbooks published in the 1970s and 1980s and reported that the strategy of inferring vocabulary from context was consistently encouraged in all seven textbooks. Researchers (Gu, 2003; Nation & Coady, 1988) support the inferring strategy because it requires learner to have the ability to analyze surrounding text, make guesses and test the guesses, enabling learners to view reading as a multilevel whole, instead of seeing only the word level.

Inferring unknown or unfamiliar words by using surrounding clues in context is a generally proposed strategy for reading and vocabulary learning (Arden-Close, 1993; Bengeleil & Paribakht, 2004; Dubin & Olshtain, 1993; Dycus, 1997; Gu, 2003; Gu & Johnson, 1996; Hunt & Beglar, 2005; Irvin, 2001; Nagy, 1997; Nation, 1990, 2001, 2004; Nation & Coady, 1988; Waring, 2002). Successful inferencing is reported as highly correlated with reading comprehension and vocabulary knowledge (Bengeleil & Paribakht, 2004; Herman et al., 1987; Nassaji, 2004). Decarrico (2001) contends that the

inferring strategy is an important skill in coping with low-frequency vocabulary in reading authentic texts.

The inferring strategy often results in incidental learning of vocabulary knowledge; consequently, sometimes it is viewed as a word learning strategy because of its by-product, vocabulary learning (Chin, 1999; Hulstijn, 1992; Modria, 2003; Nagy, Herman, & Anderson, 1985). According to Schmitt (1997), the inferring strategy belongs to "strategies for the discovery of a new word's meaning" (p. 208), an important way to enhance reading comprehension. However, some studies (Hulstijn, Hollander, & Greidanus, 1996; Knight, 1994; Mondria, 2003) emphasize the inferring strategy in terms of an incidental word learning approach and suggest that inferring from context did not result in better vocabulary gains or better word retention than intentional and direct learning. Mondria (2003), for example, examined the learning effect of inferences as word-learning method. The learners in one group first inferred the meaning of unknown words, then verified their guesses with word lists and finally memorized them, the result of which was compared with the group given translations. Mondria found that the translation-given method resulted in a slightly higher (3%) word learning effect.

Researchers (Hunt & Beglar, 2005; Nation, 2001) have continued to promote the importance of inferring from context and suggest specific teaching of the strategy because first, it does not stop the flow in reading as strategy of consulting dictionary does,

and second, it does not limit the attention of readers solely to certain words as with the strategy of using word parts. However, it is important to note that researchers are increasingly warning that even the inferring strategy leads to incidental word knowledge gains. The purposes of the inferring strategy, to learn new words through context clues and to enhance subsequent retention, should be clearly defined (Irvin, 2001; Lawson & Hogben, 1996; Nation, 2001; Soria, 2001). In this study, inferring from context is defined as working out the meaning of unknown or unfamiliar words from context.

2.4.1 Studies on Context Clues

Nagy (1997) recognized the needs for second language learners to master context clues strategies because second language learners often encounter unfamiliar words in reading. Decarrico (2001) indicates that to master the inferring strategy, learners need to learn to recognize and use differing types of clues.

Studies on categorizing context clues have been ongoing since the 1940s. Rankin and Overholser (1969) analyzed the research "authorities" in classifying context clues and suggested two lists based on the empirical studies of McCullough (1945) and Ames (1966). McCullough (1945) conducted interviews and found seven types of clues: (1) definition, (2) experiential background, (3) comparison and contrast, (4) synonym, (5) familiar expression or language experience, (6) summary, and (7) reflection of mood or

situation (cited in Rankin & Overholser, 1969). The subjects of Ames' study (1966) were post-graduate students who were asked to think aloud while making lexical inferencing with nonsense words in reading passages. Ames replaced the content words in texts with nonsense words at an interval of every 50 words. Based on the successful inferring outcomes in student responses (*N*=334), Ames came out with a classification scheme of 14 kinds of contextual aids or context clues. Rankin and Overholser regarded Ames' study as the most "thorough and significant empirical investigation of context clues" (p. 51). Nation (2001) supports this opinion and suggests that among studies using empirical methods in categorizing context clues, Ames' classification is "the most careful and systematic" (p. 242). Adapting Ames' classification scheme, Rankin and Overholser used an objective test, unlike Ames' subjective think-aloud protocol and interviews. Rankin and Overholser's test contained ten items for each clue, all of which contained only a "pure" example (p.56) of that clue. Thus, the category used in Ames' study, "Clues Provided by Tone, Setting, and Mood," was deleted because Rankin and Overholser declared that they could not find pure examples that did not overlap with other kinds of clues.

The 13 types of context clues are listed below with Ames' (1966) definitions and examples (all extracted from Ames, pp.67-80):

1. Clues provided through words connected or in series: An unknown word was

part of a series of words, phrases, or ideas, or was connected by “and” to another word, phrase, or idea.

2. Clues utilizing modifying phrases or clauses: The distinguishing feature of this class of contextual aids was the use by readers of phrases that modified unknown words or modified a phrase in which an unknown word was contained.
3. Clues derived from language experience and familiar expression: The common element present in this category of contextual aids was the recognition by a reader of a writer’s use of a common phrase or idiomatic expression.
4. Clues derived from cause and effect pattern: Sentences that contained a type of cause and effect relationship, where understanding this relationship served as an aid in determining the meanings of words used in the sentence.
5. Association clues: Clues aroused association in readers’ minds. Two main sub-types of the association class of contextual aids were identified. One of these was where a noun and a verb were associated. A specific noun was used by the writer and this called to mind a particular verb for the reader, or vice-versa. Another type involved adjectives and nouns. A particular noun was used by a writer and an unknown word modified this noun. The noun itself aroused certain associations which, in turn, aided the reader in determining the meaning of a simulated word.

6. Referral clues: The unknown words were modified by the demonstrative adjective “these,” and this modifier referred the readers to what had been previously stated in the context. What had been stated earlier then served as aids in determining the meanings of unknown words. In another example, the signal word was “same” which again referred the reader to what had been stated earlier.
7. Synonym clues: Synonyms served as contextual aids in determining meanings for the simulated words. The word “too” was an indicator to the reader that a synonym for what had been said previously was present. Also, words in parenthetical phrase or a series of connected ideas showed the use of synonyms.
8. Clues utilizing definition or description: An unknown word was described or defined somewhere in the context. In some situations, unknown words were directly defined in the context, while, in other situations, the definition was more indirect (i.e. some involved unknown words being part of the subject of a clause, and the predicate part of the clause described or contained information concerning the unknown word).
9. Preposition clues: Unknown words were used as objects of prepositions, and the readers used the prepositions as clues in determining the meanings of the unknown words.

10. Clues provided through the question-and–answer pattern of paragraph organization: The meaning of a simulated word which was used in either the question or the answer was then determined through the recognition of the writer' s development of an idea in this particular paragraph organization pattern.
11. Comparison or contrast clues: An unknown word was either compared or contrasted with a known word, or an unknown word was part of a phrase, clause, or idea that was compared or contrasted with another.
12. Clues derived from the main idea and supporting details pattern of paragraph organization: The simulated words appeared in either the sentence expressing the main idea or in those sentences that offered support or substantiation for the main idea.
13. Non-restrictive clauses: An unknown word was used in either a non-restrictive clause of an appositive phrase within a sentence.

Rankin and Overholser (1969) carried between groups comparisons of the context clue test results from those L1 participants (*N*=208) of elementary grade levels four, five, and six, and differing reading levels (high, mid, and low), and found significant correlation between participant grade level, reading level, and successful inferring outcomes (all above .90). The successful inferring results from Rankin and Overholser, based on Ames' classification scheme, is presented in Table 2.4. Unsurprisingly, the rank

order of difficulty of each clue was highly consistent with grade level and reading level. Student reading level was an especially good predictor of the ability to infer accurately from each of the 13 clues and vice versa. Furthermore, the rank order of difficulty among clues provided by Rankin and Overholser showed that four clues had less than 50% accuracy. However, for the high reading level group in their design, only the *clues utilizing non-restrictive clauses or appositive phrases* scored lower than 50% in successful guessing, which means that all of the students could use the context clues to infer correctly at least 50% of the time, except for one clue.

Table 2.4

Ames' Categories of Context Clues with Rankin and Overholser's Rankings of Effectiveness in Providing Correct Responses

Ames' category	Numbers of items in Ames' study (*N*=334)	% of correct answers in Rankin and Overholser
Words connected in series	31	69
Modifying phrases	31	62
Language experience or familiar expressions	26	61
Cause and effect	10	59
Association	19	59
Referral	13	55
Synonym	36	52
Definition or description	22	51
Preposition	20	50
Question-and-answer pattern	9	43
Comparison or Contrast	37	39
Main idea and supporting details	17	30
Non-restrictive clauses or appositive phrases	9	26
Tone, setting, and mood	29	---

Note. Adapted and modified from Nation (2001, p. 244).

In addition to the studies mentioned above, Askov and Kamm (1976) chose three types of clues—direct description, contrast, and cause-effect—as a classification system and taught L1 grade 3-5 children (*N*=57) to apply the guessing strategy during reading. The results of the pre- and post-tests show that the three context clue categories are valuable reading skills. More recently, studies have provided evidence on the effectiveness of using context clues to obtain the meaning of unknown words. Haynes (1993) used two passages each containing two nonsense words, and examined the

guessing ability of ESL/EFL students who were native language speakers of Japanese, Spanish, French, and Arabic. Two kinds of information are provided in the passages, locally and globally embedded clues, to test student guessing preferences. The results showed that these students arrived at better guessing outcomes in using clues surrounding the unknown words when such clues were locally presented. The average rate of successful guessing was above 70%. Kuhn and Stahl (1998) reviewed 14 studies on teaching native English speaking children to learn word meanings from context and discovered that most studies reported the effectiveness of inferring from context, although whether the improvement of inferring skill was from the specific strategy training procedures or from the practice effect is unclear. Fraser (1999) reported on the frequency of student lexical processing strategy when encountering unfamiliar words. Among the three lexical processing strategies—consult, ignore, and infer—the strategy to infer is the most frequently used strategy by students (44%). Within the inferring strategy, 52% and 20% of the inferring outcomes resulted in full comprehension and partial comprehension, respectively. Both Kuhn and Stahl (1998) and Fraser (1999) suggest that the inferring strategy can be used more successfully after proper instruction or practice. The maintenance of the strategy instruction was also reported in the delayed test in Fraser (1999).

Dycus (1997), who debates the phenomena of the growing body of research

literature that questions the value of guessing from context, argues that the key factor affecting the guessing outcomes of L2 readers is vocabulary knowledge. Dycus's opinion is supported by Hu and Nation's (2000) study reporting that knowing 80% of the words in a text was not enough for learners to infer correctly. Thus, researchers (e.g., Hu & Nation, 2000) suggest that successful inferring requires learners to recognize at least 90%, 95%, or even of the running words in reading passages. Without this level of vocabulary knowledge, the vocabulary learning strategies and background knowledge of learners have only the most limited application.

According to the abundant literature mentioned above, teaching learners how to use context clues to infer as a strategy of finding word meaning is a thing worth doing. If language instructors understand what types of clues can or cannot be recognized and used by learners, it will be easier for them to reinforce the strategy instruction and find materials suitable for practice.

2.4.2 The Use of Context Clues among Chinese Speakers

Researchers (Ames, 1966; Askov & Kamm, 1976; Li, 2004) categorized context clues in different ways, either generally or specifically. In China, Yu (2001) defined 12 types of context clues based on teaching experience and literature and promoted learning these clues to facilitate reading comprehension. The clues Yu defined are as following: (1)

morphology, (2) reference words, (3) collocational cohesion, (4) synonyms and antonyms, (5) hyponyms, (6) definitions, (7) alternatives, (8) restatement, (9) example, (10) summary, (11) comparison and contrast, and (12) punctuation. Yu proposes inferring from context clues for both learning new words and enhancing reading comprehension. However, Yu's (2001) conclusion was mainly drawn from personal experience. Information of experimental outcomes of how students use the clues has not provided. Furthermore, her categorization was not derived from an empirical method.

More recently, Li (2004) studied Taiwanese students at a technical college, examining the context clues they used and their awareness of strategy selection. She defined context clues as "clues embedded in the context of sentence or paragraph level for inferring meanings of unfamiliar words" (p. 9), and employed six types of clues based on expert analysis to design a test with context clues embedded in sentences for students to work out the meanings of blanks in each test item. Examples from Li's test (2004), along with the type of clue, are given below:

(1) Synonym: *We need to _____ the date of the party. Once the date is set, the invitation will be sent to every quest*.
(A) *prepare* (B) *receive* (C) ***determine*** (D) *collect*
使用的策略： *( ) (1)* ***同義字、詞*** *(2)* ***補充說明*** *(3)* ***舉例*** *(4)* ***因果***

(2) Antonym: *Don't forget to _____ the books that you borrow from the library*.
(A) *make* (B) *put* (C) ***return*** (D) *judge*
使用的策略： *( ) (1)* ***同義字、詞*** *(2)* ***反義字*** *(3)* ***舉例*** *(4)* ***因果***

(3) Restatement: *The weather was quite _____. It was rainy and chilly. I had to take an umbrella with me all the time, and I was continuously shaking with cold*.
(A) *mild* (B) *pleasant* (C) ***terrible*** (D) *changeable*

使用的策略： *( ) (1)* ***同義字、詞*** *(2)* ***補充說明*** *(3)* ***對比*** *(4)* ***因果***

(4) Exemplification: *People in the old times used simple _____, like stones and sticks, to fight against their enemies*.

(A) *toys* (B) *machines* (C) ***weapons*** (D) *hammers*

使用的策略： *( ) (1)* ***反義字*** *(2)* ***補充說明*** *(3)* ***舉例*** *(4)* ***因果***

(5) Contrast relationship: *The thief begged the police officer for _____, but the police officer still took him to the police station.*

(A) ***sympathy*** (B) *warning* (C) *comfort* (D) *health*

使用的策略： *( ) (1)* ***同義字、詞*** *(2)* ***對比*** *(3)* ***舉例*** *(4)* ***因果***

(6) Cause-effect relationship: *The yearly picnic of the department was _____ because of the heavy rain.*

(A) *raised* (B) ***ruined*** (C) *arranged* (D) *associated*

使用的策略： *( ) (1)* ***同義字、詞*** *(2)* ***對比*** *(3)* ***舉例*** *(4)* ***因果***

Li's (2004) Vocabulary Test of Context Clues (VTCC) has 30 items. Both of the context and words tested were chosen from two word frequency lists: 15 items from the first 1,000 high frequency word list, and the other 15 items from the 2,000 word list. Two hundred and seventy-eight freshman at a local technological university took four levels of Nation's (1990) VLT, the 18-item 2,000-, 3,000-, 5,000- and academic-level, along with Huang's (1999) 1,000-word-level test. Then the VTCC was administered, and at the same time the students were asked to determine which context clues they used to infer the meaning of the blank. The result showed that students were not clearly aware of what kinds of clues help them successfully figure out meanings of unknown words. As shown in Table 2.5, the 1,000 word level for example, the students successfully answered 66% (9.84 out of 15) the VTCC items, while they correctly identified only 39% (5.85 out of 15) the types of clues they used.

Table 2.5

Means of VTCC and Strategy Selection

Word Levels	Test Types	Mean	SD
1,000-word	Inferring from Context Clues	9.84	3.11
(Item 1-15)	Awareness of Strategy Selection	5.85	2.99
2,000-word	Inferring from Context Clues	9.04	2.80
(Item 16-30)	Awareness of Strategy Selection	5.99	2.91

Note. The maximum mean score was 15 for all types of tests (cited and modified from Li, 2004, p. 72).

Though Li designed two sets of context clues tests according to the vocabulary level used in the test, she did not avoid the distortion effect caused by students' insufficient vocabulary knowledge when using the inferring strategy. Thus, her results of the VTCC may arouse confusion. For example, she did not remove the students who did not pass VLT when interpreting the results of VTCC. As a result, students who got the VTCC items wrong either did not have enough vocabulary or did not know how to use the guessing strategy.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presents the methodology implemented in this research. First, the background of the participants in this study is introduced. Second, the development of the major instrument, the Context Clues Test (CCT), used to investigate participant ability to use various context clues is demonstrated. In addition, the two different Vocabulary Levels Tests (VLT) that assist in obtaining precise results for the CCT are illustrated. Third, the reliability, item analysis, and validity of the CCT are delineated based on the pilot study. Last, the procedures of data collection and data analysis, including scoring rubrics of the instruments, statistical procedures of analyses, and the preliminary results of the pilot study are discussed in detail.

3.1 Participants

The participants were 101 freshmen English majors, 13 males and 88 females, at Tunghai University. They had just begun their college education in mid September, 2006. Before entering Tunghai University, all the participants had studied English for at least six years, since English is required in junior and senior high school education in Taiwan. The CCT and VLT tests were given to the participants in the first week of the first semester, before their formal tertiary instruction began.

3.2 Instruments

The major instrument used in this study was the Context Clues Test (CCT). The other instruments employed in this research were two levels of the Vocabulary Levels Test (VLT) (Schmitt, Schmitt, & Clapham, 2001) and an online program, Web Vocabulary Profilers (Cobb, 2006). The Web Vocabulary Profilers (VP) was chosen to ensure the vocabulary level of the CCT items were within the limit of the most frequently used 1,000 WFs, while the two research-validated VLTs (a 1000-word-level test and a 2000-word-level test) were used to assess subject vocabulary knowledge.

3.2.1 The Context Clues Test (CCT)

The purpose of constructing a new CCT was to assess the test-takers' ability to infer the meanings of unknown words, and above all, to control the vocabulary used in the CCT items at 1,000 vocabulary level. The design was based on several rationales, mainly drawn from conclusions of previous studies in the vocabulary field, including known/unknown words ratio in reading passages and the categories of various context clues, as presented subsequently. After that, how the online instrument was used to classify vocabulary frequencies was introduced. Finally, the researcher reported the process of making the CCT in detail.

3.2.1.1 Known words and unknown words ratio.

Hu and Nation (2000) suggest that guessing from context successfully may not occur when the percentage of words readers can recognize is at or below the 80% level, one unknown word in every five words. According to their study, 90% is the minimum requirement to infer successfully (one unknown word in every ten words), and the correct inferences are more likely to happen when vocabulary coverage in a given text exceeds 95%. Although Hu and Nation propose that optimally 98% (one unknown word in every 50 words) of the words should be known to the readers in order to use the guessing from context strategy successfully, it is difficult to construct 50-word test-items with only one clue type embedded. In addition, reading with general knowledge of 98% of any given English text requires knowing at least 5,000 WFs plus major academic and technical WFs (Waring & Nation, 2004), a level that ordinary EFL learners are seldom able to achieve. Consequently, the researcher decided to construct the CCT at the 95% coverage level to examine whether the participants can infer successfully the meanings of unknown words when various types of context clues were provided. Each item in the CCT contains an unknown word (a simulated word) embedded in a context of more than 20 words. Participants must infer the meaning of the simulated words from a context that has been strictly chosen from the first 1,000 high frequency word list (Bauman, 2007; Cobb, 2007; West, 1953).

Many researchers (Hu & Nation, 2000; Read, 2000; Sternberg & Powell, 1983) have proposed that the density of unknown words crucially affects the rate of successful word inference. Thus, the design of the CCT was based on the concept that when 95% of the text words are known to the reader, the reader can use background knowledge and vocabulary strategies to facilitate reading comprehension, (also see section 2.2.1 for details). Unlike other context clues studies (Ames, 1966; Haynes, 1993; Nassaji, 2004; Rankin & Overholser, 1969), the vocabulary level of this research instrument was strictly controlled within the 1,000 high frequency WFs to minimize distortion effects (low successful guessing rate) caused by a deficiency of vocabulary knowledge among the subjects. The CCT thus allows the researcher to see the genuine ability of the participant to use context clues to infer the meanings of unknown words.

3.2.1.2 Categories of the context clues.

Unlike many previous studies, the current research investigated *all* 13 context clue uses confirmed in the literature (Ames, 1966; Rankin & Overholser, 1969; Nation, 2001; Read, 2000). The 13 context clues were first proposed by Ames (1966) in an empirical study. Ames asked the subjects (twenty Ph.D. students) to think aloud while inferring nonsense words from context. Analyzing what the subjects replied, Ames then categorized context clue types participants used to infer meanings from the unknown

words. Finally he generated a classification scheme of context clues drawn from the syntactic and discourse levels (see Section 2.4.1 for the 13 types of clues with Ames' examples).

Adapting Ames' 13 types of context clues, the researcher constructed the current research questionnaire – the CCT – consisted of 78 questions that tested the participants' use of 13 kinds of context clues (six test items for each type of clue). The clues in the CCT were checked by two university professors to ensure that they naturally and often existed in English texts. The test items were constructed based on the characteristics of the 13 types of clues, and the words used for the participants to guess were either crucial in meaning, or played an important role in the texts.

3.2.1.3 Web Vocabulary Profilers.

Based on Laufer and Nation's Lexical Frequency Profiler (n.d.) and Heatley and Nation's (1994) computer software Range (cited from Cobb's website, The Compleat Lexical Tutor, 2006), the English Vocabulary Profilers (VP or Vocabprofile in some cases), was adapted for online use by Tom Cobb (2006). The online program recommended by TESL-EJ (Sevier, 2004) can be accessed from Tom Cobb's (2006) webpage: The Compleat Lexical Tutor, and utilized in different research studies (Laufer & Nation, 1995; Meara, 1993; Meara, Lightbown, & Halter, 1997; Morris & Cobb, 2004). This online tool

divides input texts into four color-coded categories according to their frequency levels:

a) the 1,000 most frequently used WFs – based on John Bauman and Brent Culligan's (1995) revision of West's (1953) General Service List (GSL), coded in blue,

b) the 2,000 most frequently WFs – based on John Bauman and Brent Culligan's (1995) revision of West's (1953) GSL, coded in green,

c) the 570 academic WFs – based on Coxhead's AWL released in 2000, coded in yellow, and

d) off-list words – words excluded from the 1,000- and 2,000-word lists and AWL, coded in red.

Because some words in the GSL had become outdated, Bauman and Culligan (1995) adapted the work of Bauer and Nation (1995) to group WFs. Bauman and Culligan also used Frances and Kucera's (1982) frequency counts of the Brown Corpus of Standard American English (1964), known as Brown Corpus, to revise the classic GSL (cited from Bauman, 2006). The newly revised GSL includes 2,284 headwords of WFs. While the paper version of the GSL published in 1953 is out of print, the latest GSL can be accessed easily online (http://jbauman.com/aboutgsl.html). Figure 3.1 gives a demonstration of how to upload a page into the VP. Any text can be copied and pasted onto the white area. After "submit_window" at the bottom is clicked, the software will start analyzing the text.

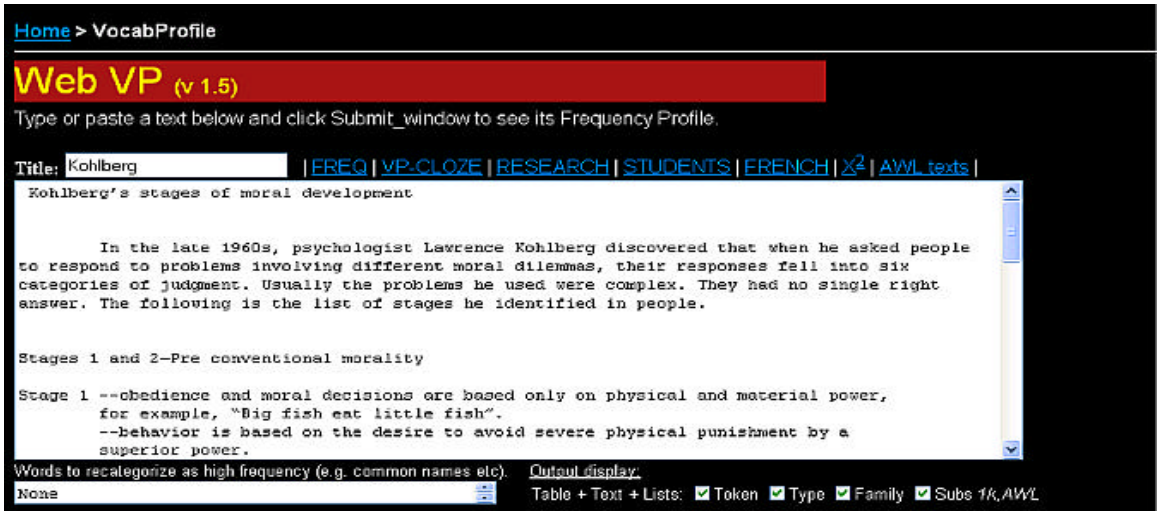

Figure 3.1. The VP demonstration page.

Figure 3.2 shows the results of the text analysis. As can be seen, all the words of the uploaded text were categorized according to the color-coded frequency word level, the 1,000- and the 2,000-word level, the 570 academic word level, and off-list words.

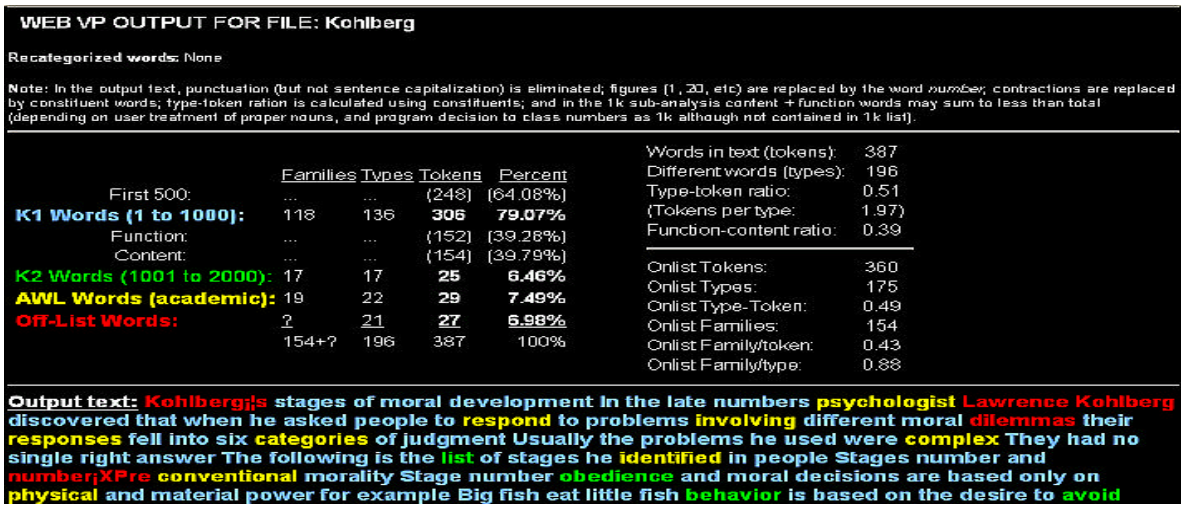

Figure 3.2. Results screen on the VP.

The researcher of the current study uploaded the CCT item by item to the English VP in order to confirm that every word used in the self-made CCT was in the list of the

first 1,000 high frequency WFs. This excludes proper nouns, numbers, and the nonsense words.

3.2.1.4 The process of making the CCT.

The CCT was constructed based on the following rationales. First, the test used an underlined unknown word embedded in every 20 or more words, which provides learners with a 95% recognizable text. Second, all the words used to construct the CCT were selected from the first 1,000 high frequency word list and were checked by the online VP program. Owing to the restrained choices of words, the question formation process is rather challenging and time consuming. For example, many common nouns such as *apple*, *baby*, *brown*, *cat*, *desk*, *hospital*, *park*, *rain*, *yellow*, *zero* and etc. must be excluded because they belong to the second 1,000 high frequency word list. Similarly, lots of verbs and adjectives were excluded under the same condition. All these factors made the wording of some of the CCT items less than perfect.

Third, each question contained only one type of clue offering information for the participants to use and test guesses of the unknown word meaning. The 13 types of clues and their sequence of appearing in the CCT are presented in Table 3.1.

Table 3.1

Item Numbers for Each Type of Clues

Clue type	Items					
C1: Words connected or in series	A1	A14	A27	B1	B14	B27
C2: Modifying phrases	A2	A15	A28	B2	B15	B28
C3: Familiar expression	A3	A16	A29	B3	B16	B29
C4: Cause and effect	A4	A17	A30	B4	B17	B30
C5: Association	A5	A18	A31	B5	B18	B31
C6: Referral	A6	A19	A32	B6	B19	B32
C7: Synonym	A7	A20	A33	B7	B20	B33
C8: Definition/description	A8	A21	A34	B8	B21	B34
C9: Preposition	A9	A22	A35	B9	B22	B35
C10: Q/A	A10	A23	A36	B10	B23	B36
C11: Comparison/contrast	A11	A24	A37	B11	B24	B37
C12: Main idea/supporting details	A12	A25	A38	B12	B25	B38
C13: Non-restrictive	A13	A26	A39	B13	B26	B39

Note. There are six items for each clue. Version A and Version B tests each include three items of each type of clues.

Each clue type had 6 items to ensure that the participants experienced sufficient opportunities to demonstrate their ability to use different vocabulary guessing strategies. Since 78 items were considered too many for a single test, the CCT was divided into two versions, version A and B. Moreover, dividing the test into two sets allowed the researcher to distribute the tests in different order to avoid order effects, which might result in poor test performance due to fatigue.

The CCT did not use a think-aloud protocol because a multiple-choice format is a more efficient way to survey a large number of participants. Each question of the CCT contained four choices and all the distractors were content words (no function words).

The unknown word was indispensable for comprehending the context surrounding it and facilitated the use of the particular type of clue. For example, in Item 30 of version A (Item A30, hereafter):

> *Before reaching eighteen years old, Henry was the remblest boy in school; therefore, he tried to eat much less food.*
> *a) richest b) heaviest c) shortest d) smallest*

The meaning of the word *remblest* (heaviest) was crucial to the context and the test-taker needed to identify the cause-effect clue "therefore" from the context to get the meaning of *remblest* (see Appendix C for the Test A).

In the process of constructing the individual CCT items, the researcher began with eight to ten questions for each context clue. The draft of the test was checked and edited by an English native professor with a Ph.D. degree in Communications. Then, the six best items were selected for each clue type, in order to give the participants multiple opportunities to demonstrate their familiarity with the context clue types. Furthermore, cross-clue checking was conducted with great caution to ensure each test item presents only one type of clue. For example, two types of clues are embedded in the following item:

> *Sometimes body language speaks more than words. Further, expressions from the face usually tell people things beyond words. Next time, watch your friends' eyes or nurry when you talk to them.*

Readers can gain information of the simulated word in the last sentence by means of *main idea and supporting details* from the first sentence or get hint from the conjunction word

or connecting a known word and the simulated word (*words connected in series*). As a result, this item was omitted despite the fact that it met the other criterion, within the 1,000 word level.

After the CCT was double checked by a Taiwanese professor with a Ph.D. degree in TESL for additional advice, which served as expert opinions and established content validity of the CCT, a native speaking American high school senior student and a Taiwanese young man with high proficiency of English, who was just admitted to the MATESOL program of the University of Pennsylvania, were invited to try out the CCT. The American obtained a full score of 78 points on the CCT, while the Chinese high proficiency English learner scored 75 points on the test. They both offered useful opinions about the test, resulting in a few more modifications to the test. Next, the CCT was given to another native speaking American high school student and another Taiwanese young man with high proficiency of English, who was pursuing the TESL Masters degree. This time, they were asked to think aloud while answering the test and the process was tape recorded. The native speaker of English obtained a full score and the high proficient Taiwanese scored 73 points. Their answers revealed that the context clues identified by them in each question were indeed those that the CCT had intended to be used. For instance, when answering item A1:

> *Back in the 1960s, black people and white people did not go to the same school, the same public <u>damiry</u>, or the same church.*

The high-proficiency nonnative speaker said: "*damiry* should be a place because it's a series of places here, school, *damiry*, and church." Based on the judgment, he chose "library," the only name of a place among the four choices. Also, when answering Item A3:

> *I do not want to join the race because if I lose I will lose tabe in front of my friends. They will laugh at me for sure*.

The native speaker stated that "lose face" is a frequent expression so she chose it correctly. After the second clue-checking process more modifications were made and the finalized CCT was ready for pilot study implementation.

3.2.2 Vocabulary Levels Test (VLT)

The purpose of using VLT in this study is to make sure that the participants know most of the first 1,000 high frequency WFs used to construct the CCT. Since a lack of vocabulary knowledge would hinder participant performance when using the strategy of inferring from context, qualified participants needed to pass the 1,000-VLT. In other words, CCT information obtained from big qualified participants were removed from data for analysis. In sum, the purpose of using the VLT is to ensure all the participants have demonstrated knowledge of the first 1,000 words used to compile the CCT. This would guarantee the coverage rate of the subjects' known vocabulary in the reading text at roughly the 95% level (one unknown word in at least 20 words).

The researcher implemented Huang's (1999) 1,000-word level VLT to check the participants' knowledge of the first 1,000 words. Although this is quite enough, Nation (2002) suggested that since the 2,000-word level VLT was mainly written using the 1,000-word list, participants should take the 2,000-word level test and obtain a score of at least 50% to be regarded as having unshakable knowledge of the 1,000-word level. As a result, the researcher chose a new version of the 2,000 word level VLT (Schmitt et al., 2001) just to obtain an extra insight of the participants' requisite vocabulary size, while the major instrument for detecting the first 1,000 high frequency words knowledge is still Huang's (1999) test.

3.3 Pilot Study: Reliability, Item Analysis, and Validity

The pilot study served several purposes, including the most important mission, running statistical analyses for the self-made CCT. First, the CCT had to be reliable. Cronbach's a was used to provide internal consistency of the test. Second, the data were used to run the item-checking procedures, using the "classical" (Bachman, 2004, p.120) item difficulty indices. Moreover, item discrimination was examined via the item-total correlation (Bachman, 2004, p.129) obtained from English SPSS for Windows v. 11.0.

3.3.1 Scoring Rubrics

The CCT and the 1,000- and 2,000-word level VLTs distributed to the participants contained 78 items, 18 items and 30 items respectively. For all three tests, the scoring rubric was one point for each correct item and zero points for any wrong answer. Therefore, the maximum score of the CCT is 78, the 1,000 word-level VLT, 18, and the 2,000 word-level VLT, 30.

For the VLT passing score, Nation (1983) once contended that 13 or higher out of 18 questions was sufficient (cited in Huang, 2003; Qian, 2002). However, Read (2000) posited that a VLT test taker has to score at least 16 out of 18 on a VLT to be considered to reach the relevant frequency level while other researchers varied in their perceptions. Table 3.2 shows the criteria that the previous researchers adopted.

Table 3.2
Criterion of Studies Used VLT

Studies (year)	% Correct for pass	Correct answers /total questions
Nation (1983)	72%	13/18
Read (2000)	88%	16/18
Cobb & Horst (2000)	72%	13/18
Qian (2002)	72%	13/18
Huang (2003)	72%	13/18
Li (2004)	72%	13/18
Cobb (on-line test) (n.d.)	83%	15/18

After Schmitt et al.'s (2001) new 30-item VLT was released, Nation (2002) suggests

that if a learner obtains a 90% score (27 out of 30) at the target word level and a 50% score (15 out of 30) on the level above the target level, s/he is considered to have mastered the target level vocabulary. This statement is made for the five 30-item sets of the VLT starting with the 2,000-word to 10,000-word level. The current problem is the only statistically reliable 1,000-word level test existing in this field is Huang's (1999) 18-item test. It was inappropriate to apply the criteria set for 30-item test to the 18-item test. The researcher, therefore, adopted Read's (2000) criterion for the study and set the passing grade of the 1,000-word level VLT as 16 out of 18, which was also the most stringent requirement for the 18-item VLT (see Table 3.2). The 2,000-word level VLT (Schmitt et al., 2001) was implemented by the researcher just to provide extra evidence of participant vocabulary knowledge. The results from the CCT would not be analyzed only when the participants failed the first 1,000 VLT. By setting a high standard, the researcher could prevent insufficient vocabulary knowledge from distorting the overall CCT performance analysis.

3.3.2 Statistical Procedures

According to Seliger and Shohamy (1989), descriptive study is to "describe naturally occurring phenomena without experimental manipulation, often quantitative, and provide measures of frequency" (p. 124). The current study fits the definition that it is

descriptive with quantitative data collection procedures, and treatment was not a concern in this study. First the score frequencies of the two VLTs were counted. This showed the participants' level of vocabulary knowledge at the level of first 1,000 high frequency WFs. When analyzing the CCT results, participants who did not pass the 1,000 VLT were eliminated, owing to their lack of sufficient vocabulary knowledge to use the strategy of inferring from context clues.

As for the CCT, the frequencies and descriptive statistics including means, standard deviations, maximum and minimum scores of each item and each clue type were calculated to show how the participants performed on using different context clues to infer the meanings of unknown words, which also offered the difficulty rank order of the 13 types of context clues. In addition, frequencies of overall scores of the CCT were presented. English SPSS for Windows v. 11.0 was used to calculate all the statistical procedures.

3.3.3 Preliminary Results from the Pilot Study

Two groups of students participated in the pilot study. Since the thesis study was targeted at the incoming English-major freshmen in September, 2006, the first group was two classes of university English-major freshmen (N=101) who had almost finished their first year of education in the Department of Foreign Languages and Literature. The other

was a class of senior students (*N*=29) from the Public Administration Department taking a general English course in spring, 2006, was chosen as the non-English major group for two reasons: 1) the researcher wanted to know if the CCT discriminates high achievers (English majors) and low achievers (non English majors), and 2) the researchers wanted to use a larger sample body with high achievers and low achievers included to analyze the CCT.

When the CCT results were compared, it is interesting to note that the top three easiest clues were the same, though in different order: *clues provided from words connected in series, main idea and supporting details pattern*, and *referral* (i.e. *this, these*…etc.), and the most difficult clue for both groups was *clues derived from idioms and familiar expression.*

It is important to note that when representing the statistical data of the CCT's reliability and validity, the test results of all 130 participant were included, and when interpreting the VLT and CCT results of the pilot study, only the results from the 101 English majors are discussed since the targeted participants are English majors.

First, the mean scores of the 2 VLTs from the 101 English-major freshmen were 17.3 for the 18-item 1,000-word level test (maximum possible score of 18) and 29.4 for the 30-item 2,000-word level test (maximum possible score of 30). VLT results showed that in general the participants reached the required vocabulary level. The criterion of

passing were 16 out of 18 for the 1,000 word level. As Table 3.3 shows, only five students did not reach the 1,000-word level threshold, falling one or two points short, and almost all of the students (except for three) even achieved 90% or above of the 2,000 word test.

It is worth mentioning that the five students who failed the 1,000 VLT all passed 2,000 VLT above 90% (i.e. 28, 29, 30, 30, and 30), an indication that these the English vocabulary level of these students is higher than 1,000 high frequency WFs. Therefore, the five students were not excluded as outliers and all the answers on the CCT of the 101 participants were regarded as valid and analyzed by English SPSS for Windows v. 11.0.

Table 3.3
Results of the Vocabulary Levels Test

Word level			
1,000		2,000	
Score	Frequency	Score	Frequency
18	51	30	60
17	31	29	29
16	14	28	5
15	4	27	4
14	1	26	2
--	-	25	0
--	-	24	1

Note. *N*=101

Figure 3.3 reports the overall performance of these university students in using context clues to infer unknown word meanings. The reason why the researcher categorized the scores using a range of four points is that the participants who scored 63

on the CCT got about 80% of the items correct, while 67 roughly equals 85%, 71 equals 90%, and 75 equals 95%. As revealed in the figure, about 93 out of the 101 participants scored 90% above of the CCT, showing that the participants had adequate competence at the inferring strategy when unknown words were presented with context clues.

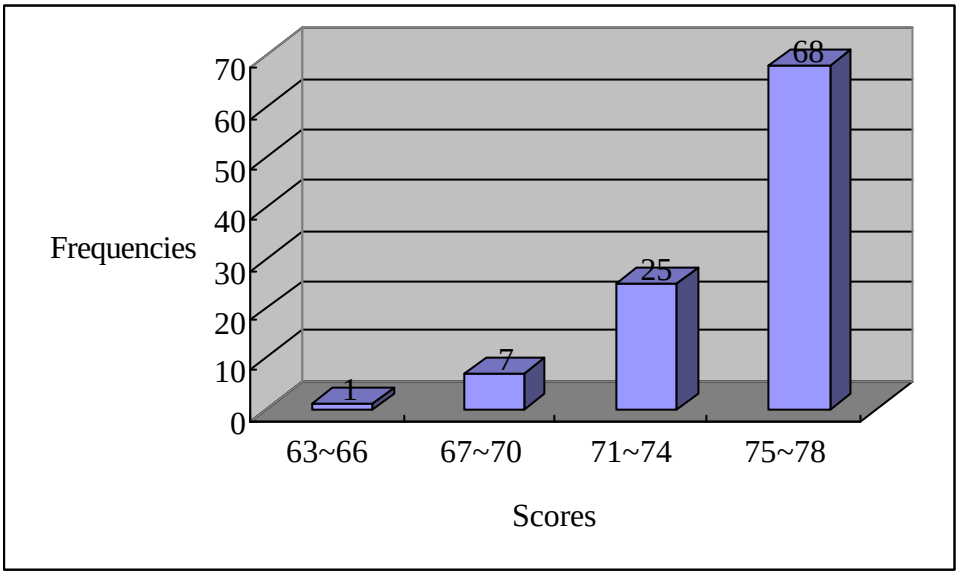

Figure 3.3. Frequencies of the CCT in the pilot study (*N*=101).

As shown by the descriptive statistics (Table 3.4), the mean score of the CCT was 75 (out of 78) with the standard error of mean, 2.70, showing a negatively skewed distribution, −1.3, of the test scores. In other words, most of the participants scored high in the CCT and revealed their success in guessing based on the context clues offered in the test.

Table 3.4

Descriptive Statistics of the CCT

Statistics	Value
Mean	75.1
Std. error of mean	0.3
Std. deviation	2.7
Skewness	−1.3
Std. error of skewness	0.24
Range	13
Min. score	65
Max. score	78

While the means of the clues revealed that most of the participants could recognize the clues and thus infer the unknown word meaning successfully, Table 3.5 reports the variation of the mean of each clue type.

Table 3.5

Descriptive Statistics of the 13 Types of Context Clues

Clue type	Min.	Max.	Mean	SD
C1: Words connected or in series	3	6	5.90	0.39
C2: Modifying phrases	3	6	5.77	0.55
C3: Familiar expression	3	6	5.34	0.80
C4: Cause and effect	3	6	5.60	0.63
C5: Association	5	6	5.84	0.37
C6: Referral	5	6	5.94	0.24
C7: Synonym	4	6	5.73	0.53
C8: Definition/description	5	6	5.87	0.34
C9: Preposition	4	6	5.60	0.63
C10: Q/A	4	6	5.87	0.37
C11: Comparison/contrast	4	6	5.84	0.39
C12: Main idea/supporting details	5	6	5.91	0.29
C13: Non-restrictive	5	6	5.85	0.36

Note. The maximum score for each clue is six (*N*=101).

The average of the clue type means is 5.77, equaling 96%'s correctly answering of the participants on the CCT. When the mean scores were arranged in high-to-low order, the difficulty rank order of the 13 categories of context clues emerged. Table 3.6 shows which clues were more challenging to the participants.

Table 3.6

Difficulty Rank Order of the 13 types of Clues

Clue type	Min.	Max.	Mean	SD
C6: Referral	5	6	5.94	0.24
C12: Main idea/supporting details	5	6	5.91	0.29
C1: Words connected or in series	3	6	5.90	0.39
C8: Definition/description	5	6	5.87	0.34
C10: Q/A	4	6	5.87	0.37
C13: Non-restrictive	5	6	5.85	0.36
C5: Association	5	6	5.84	0.37
C11: Comparison/contrast	4	6	5.84	0.39
C2: Modifying phrases	3	6	5.77	0.55
C7: Synonym	4	6	5.73	0.53
C9: Preposition	4	6	5.60	0.63
C4: Cause and effect	3	6	5.60	0.63
C3: Familiar expression	3	6	5.34	0.80

Note. The maximumscore for each clue is six (*N*=101).

The CCT results provided some preliminary evidence, offering the researcher a general understanding of how the Chinese-speaking college participants used context clues to infer meanings of unknown words. All of the results from the pilot study served as the basic guidelines for the researcher to conduct the thesis study.

First, the difficulty rank order of the 13 types of context clues for Chinese-speaking

EFL learners was constructed, which may provide teachers a reference in determining which type of context clues should be taught or emphasized in the classroom. Second, the high success rate of guessing under the condition that 95% of the text words could be recognized showed that Chinese-speaking EFL learners could draw on such clues to facilitate reading at 95% vocabulary coverage.

3.3.3.1 The reliability of the self-made CCT.

All of the 130 valid questionnaires (101 English-major freshmen and 29 Public Administration senior students) were used in the reliability checking process. To present the instrument's reliability, the data were analyzed by using English SPSS for Windows v. 11.0. The result of Cronbach's a of the CCT was .84 (*N*=130), which established good internal consistency for the CCT.

To provide an in-depth look at the internal consistency of the six items of the 13 clues, the researcher ran Cronbach's a on SPSS for each type of clue. The statistics given in Table 3.7 show that the alpha for each category of context clue was not high enough. The major reason was that on a six-item test, 130 participants were far too small a population, which tends to lower Cronbach's a. In addition, tests with skewed outcomes tend to decrease Cronbach's a. Table 3.7 presents all of the Cronbach's a of the 13 types of context clues.

Table 3.7

Clue Alpha of the 13 types of Context Clues

Clue type	Alpha of the pilot study (*N*=130)
C1: Words connected or in series	.28
C2: Modifying phrases	.43
C3: Familiar expression	.43
C4: Cause and effect	.34
C5: Association	−.05
C6: Referral	.12
C7: Synonym	.24
C8: Definition/description	.19
C9: Preposition	.35
C10: Q/A	.26
C11: Comparison/contrast	.20
C12: Main idea/supporting details	−.05
C13: Non-restrictive	.46

Two alpha values out of 13 were negative, C5 and C12, which indicates that the two types of clues may have some problems with reliability; therefore, the researcher further examined the items of C5 and C12 and discussed the possible reasons in next section, item analysis.

3.3.3.2 Item analysis of the self-made CCT.

Item analysis in this chapter includes item difficulty and item discrimination procedures. The researcher selected the upper 27% and lower 27% of the scores for the examination of the item difficulty level. The item difficulty from the pilot study appears to be rather high (average .94) and implies this test is too easy for the participants. The

most difficult item has a value of .66, while most of the items have values of .80 to 1.00 (see Table 3.8). This statistical outcome was expected because the analysis excluded disqualified participants, who failed to reach the criterion set for the 1,000 word level. With enough word knowledge and the help of context clue in every item, the participants did quite well on the CCT, as they were supposed to. Item difficulties are not proper indicators to judge good or bad items for the items of the CCT. The researcher re-checked the item difficulty indices, and decided to retain all the items.

Table 3.8

Range and Frequency of Item Difficulty

Range	Frequency
0.60~0.69	1
0.70~0.79	3
0.80~0.89	8
0.90~0.99	56
1.00	10

Note. *N* of Items = 78

N of Cases = 130

As for the item discrimination index, the researcher administered the data to English SPSS for Windows v. 11.0 and found that 75 items out of the 78 show positive discrimination ability in item-total score correlation (See Appendix E for Item-total Statistics). According to Varma (2007), the low values of corrected item-total correlations indicate that some participants who scored high on the whole test got the item wrong,

while some participants who scored low on the overall test got the item right. Only item A12, B5, B19 have negative values, −.01, −.08, and −.1. It is important to note that all the three items were among the easiest ones, with difficulty levels at 1.0, .98, and .99. Any one participant carelessly missed an item would result in negative alpha. Although the reliability coefficient of Cronbach's a would rise slightly from .84 to .85 if the three items were deleted, all the items were retained. The researcher checked and deemed that there were no problems in the three items.

In addition, since C5 and C12 had negative Cronbach's alpha, the researcher examined the items of both clues closely. The item analysis results obtained from the corrected item-total correlations (see Appendix E) show that C5 has three items having zero correlations (Item A18, B18, and B31) and one item having negative correlation (Item B5), while C12 has a negative correlation (Item A12), which result in lower alpha for the two clue types. However, this led no problem of this study as elaborated earlier. Table 3.9 shows the corrected item-total correlation range of the 13 types of clues.

Table 3.9

Range of Corrected Item Total Correlation

Clue Type	Range
C1	0.00~0.29
C2	0.10~0.51
C3	0.10~0.60
C4	0.00~0.45
C5	−0.08~0.39
C6	0.04~0.59
C7	0.04~0.59
C8	0.00~0.45
C9	0.12~0.34
C10	0.02~0.45
C11	0.08~0.44
C12	−0.01~0.27
C13	0.06~0.45

In addition, the researcher examined the frequencies of every choice in each item. Each choice, correct answers and distractors included, had at least one student chose. This meant that all the distractors were useful. In conclusion, the CCT designed by the researcher was well constructed.

3.3.3.3 Examination of the validity and items of the CCT.

The CCT is designed to test participant ability of using context clues in sentences to infer meanings of the nonsense words. The four choices require the participants to see the clue in local context to obtain the right answer. According to the answers from think-aloud data, the CCT did test what it set out to measure, namely, the ability of using

context clues to infer; therefore, it has face validity. Content validity was established by the expert assessment of the two Professors at Tunghai University. In addition, correlations between clues, as presented in the Table 3.10, provide divergent evidence for the 13 types of clues that yield construct validity for the test design.

Table 3.10

Correlations between Clues (N=130)

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
C1	1												
C2	0.19	1											
C3	0.17	0.36**	1										
C4	0.03	0.42**	0.22	1									
C5	0.24**	0.26**	0.26**	0.19	1								
C6	0.13	0.18	0.23**	0.16	0.20	1							
C7	0.17	0.38**	0.51**	0.43**	0.32**	0.22	1						
C8	0.12	0.51**	0.44**	0.39**	0.20	0.27**	0.41**	1					
C9	0.24**	0.31**	0.43**	0.22	0.30**	0.13	0.26**	0.28**	1				
C10	0.23**	0.29**	0.39**	0.34**	0.32**	0.31**	0.43**	0.26**	0.31**	1			
C11	0.02	0.35**	0.32**	0.49**	0.24**	0.13	0.46**	0.34**	0.42**	0.40**	1		
C12	0.25**	0.31**	0.31**	0.13	0.20	0.37**	0.38**	0.33**	0.28**	0.20	0.23**	1	
C13	0.03	0.51**	0.35**	0.32**	0.23**	0.31**	0.31**	0.59**	0.41**	0.22	0.33**	0.40**	1

Note. **.Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficients among the 13 CCT subtests are close to each other because they all have to do with the participants' general English proficiency of reading. However, as shown in Table 3.10, the highest correlations is .59, not close to .7, which means merely half (r^2 = .72 < 50%) of the variance is common to the variables (Bachman, 2004). Although two third of the correlation coefficients are statistically

significant, ranging from .23 to .59, they are all small or moderate values of correlation. As for the correlation coefficients smaller than .23, they are statistically insignificant (Table 3.11).

The highest correlation coefficient .59 between C8: *Clues from Definition and Description* and C13: *Clues from Non-restrictive Clause* may be owing to the fact that the two types of clues are similar, since an explanation precedes or is followed by the pseudo word. Nevertheless, the proportion of shared variance of C8 and C13 is merely .35 (r^2). The small to moderate correlation coefficiency suggest that the 13-clue-type tests measure dissimilar construct, ability to use different context clues in the study. In other words, the 13 subsets of the CCT are testing different ability.

Table 3.11
Distributions of Correlation Coefficients

Range	Frequency
0.02~ 0.22 (insignificant values)	22
0.23~ 0.59 (significant values)	56

3.4 Data Collection Procedure

In the first week of the Fall Semester, 2006, the CCT was given to the two classes of English majors, a total of 101 freshmen, including 13 males and 88 females. These

students had just come to Tunghai University and had not received any formal tertiary education. After taking the CCT version A and B in different order in the first period of class, the two classes of participants both took the 1,000 VLT and the 2,000 VLT in the second period of the class on the same day (Table 3.12).

Table 3.12
Data Collection Procedures

Class Name	First period of test	Second period of test
Class 1	CCT Version A and B	VLT 1,000 and 2,000
Class 2	CCT Version B and A	VLT 1,000 and 2,000

3.5 Data Analysis

English SPSS for Windows v. 11.0 was used to perform the statistical procedures. The scoring rubrics of the instruments (section 3.3.1) and the statistical procedures of the analyses (section 3.3.2) were the same as the pilot study stated in the earlier section. To conclude briefly, first, the score frequencies of the two VLTs were presented and the disqualified participants were removed. Then, the frequencies and descriptive statistics including means, standard deviations, maximum and minimum scores of each item, type of clue, and the entire test were calculated for the CCT.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter presents the results and discussions of the thesis study separately. It first provides the results of the data analysis. The results from the descriptive statistics of the thesis study are divided into two parts: the results of the VLT and the results of the CCT. The score frequencies of the two sets of the VLT and the results of the descriptive statistics, including means, standard deviations, maximum scores, and minimum scores of the CCT are introduced first at the whole test level, at the clue type level, and then at the item level. The descriptive statistics of clues and the difficulty rank order of the context clues are also exhibited.

After reporting the results, the researcher discusses study findings based on the results and the relevant literature. By the sequence of presenting the findings, the discussions form the second section of this chapter.

4.1 Results of the Study

This section provides the results of thesis study using the 101 incoming English-major freshmen as participants. Since participant prior knowledge of the first 1,000 high frequency words was a prerequisite for interpretation of CCT, the scores of the two sets of the VLT served as criteria to exclude data of the CCT and thus are presented

first. After reporting the VLT results, the researcher displayed the findings from the CCT at the entire test level, clue type, and the individual test items of each clue.

4.1.1 Results of the Two Levels of the VLT

To answer the first research question regarding participant knowledge of the first 1,000 high frequency vocabulary words, a total of 101 college freshmen majoring in English took the two sets of the 1,000- and 2,000-word level test. All of the questionnaires were analyzed. The results of the descriptive statistics are presented in Table 4.1. Both of the means of the two VLTs were very high, which revealed that the participants performed very well on the two vocabulary size tests. The results from Table 4.2 show that only twelve participants might have reached the criterion set for this test, which is 16 correct out of 18.

Table 4.1

Frequencies and Descriptive Statistics of the Two the VLTs

		VLT 1,000	VLT 2,000
N	Valid	101	101
Missing		0	0
Mean		16.80	28.42
SD		1.05	2.02
Min.		13	16
Max.		18	30

Note. The maximum score of the the VLT 1,000 and the VLT 2,000 is 18 and 30 respectively.

Table 4.2

Frequency of the VLT 1,000

	Score	Score = %	Frequency	Cumulative percentage
Valid	13	72%	1	1.0
	14	78%	1	2.0
	15	83%	10	11.9
	16	89%	21	32.7
	17	94%	40	72.3
	18	100%	28	100.0
	Total	--	101	100.0

Note. The criterion to pass this level is 16.

Table 4.3 presents the score distribution of the VLT 2,000. It appears that most of the participants also did very well. Only nine participants scored lower than 90%. It is worth mentioning that those who scored below 16 (out of 18) on the VLT 1,000, scored quite high in the VLT 2,000 except for one, student number XXX033 (see Table 4.4). One of the possible reasons why some participants scored higher in the VLT 2,000 than in the VLT 1,000 was that the participants thought the test was so easy that they became careless.

Table 4.3

Frequency of the VLT 2,000

	Score	Score = %	Frequency	Cumulative percentage
Valid	16	53%	1	1.0
	22	73%	1	2.0
	23	77%	2	4.0
	26	87%	5	8.9
	27	90%	13	21.8
	28	93%	21	42.6
	29	97%	23	65.3
	30	100%	35	100.0
	Total	--	101	100.0

Note. The criterion set for this test is 15.

Table 4.4

Scores of the VLT Outliers

Student Number	VLT 1,000	VLT 2,000
XXX039	13	26
XXX021	14	26
XXX033	15	16
XXX013	15	27
XXX211	15	28
XXX232	15	28
XXX052	15	29
XXX018	15	30
XXX215	15	30
XXX230	15	30

Although the researcher believed the 12 outliers of VLT 1,000 (Table 4.2) to have acquired the first 1,000 high frequency WFs, they were removed from data analysis to ensure that the participants were qualified.

4.1.2 Results of the CCT

In the beginning of the CCT results section, the descriptive statistics of the CCT are first reported at the entire test level, at the clue level and then at the individual item level. In addition to the descriptive statistics of each clue, the difficulty rank order is also displayed.

4.1.2.1 Overall scores of the CCT.

To present the sores of the 89 CCT participants, the researcher used a histogram. Figure 4.1 below reports how these university students performed when using context clues to infer unknown word meanings. The reason why the researcher categorized the scores using a range of four points is that the participants who scored 63 on the CCT got about 80% of the items correct, while 67 roughly equals 85%, 71 equals 90%, and 75 equals 95%. As can be seen in the figure, about 90% (79 out of 89) of the participants successfully answered 90% of the CCT items.

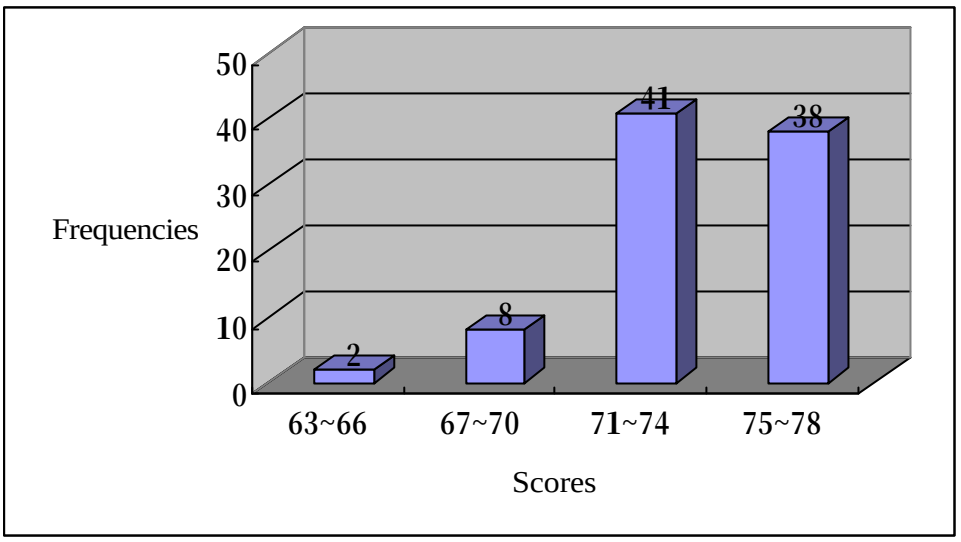

Figure 4.1. CCT score frequencies.

Table 4.5 reports the mean score of the CCT, 73.5 out of 78 (*SD* = 2.80). Conversion of the mean score into a percentage of successful inferring gives 94%, meaning that participants had successfully inferred at a 94% rate. The distribution of the scores on the CCT was negatively skewed (−1.00). In other words, low scores have small frequencies and high scores have high frequencies. This reveals that most of the participants did very well in recognizing and drawing proper inference.

Table 4.5

Descriptive Statistics of the CCT

Statistics	Value
Mean	73.51
Std. error of mean	0.30
Std. deviation	2.80
Skewness	−1.00
Std. error of skewness	0.26
Range	15
Min. score	63
Max. score	78

4.1.2.2 Item analysis and reliability of the CCT.

The item statistics from the corrected item-total correlation on SPSS showed that 19 items out of the total of 78 items (i.e. Items 3, 12, 22, 25, 28, 32, 38 in version A, and Items 1, 5, 9, 11, 14, 19, 22, 25, 30, 35, 36, 38 in version B) had negative values which implied poor item discrimination ability (See Appendix F for detailed Item Statistics of Reliability). The reliability coefficient of Cronbach's a obtained from the 89 participants dropped to .52, as compared to the pilot study of the 130 participants in which Cronbach's a was .84. In addition, as shown in Table 4.6, the reliability coefficients of Cronbach's a of each type of clues were generally lower than before. The reasons are elaborated in the discussion section.

Table 4.6

Clue Alpha of the 13 types of Context Clues

Clue type	a of the pilot study (*N*=130)	a of the thesis study (*N*=89)
C1: Words connected or in series	.28	.01
C2: Modifying phrases	.43	.34
C3: Familiar expression	.43	.17
C4: Cause and effect	.34	.05
C5: Association	−.05	.12
C6: Referral	.12	−.19
C7: Synonym	.24	−.02
C8: Definition/description	.19	.17
C9: Preposition	.35	.00
C10: Q/A	.26	.22
C11: Comparison/contrast	.20	−.04
C12: Main idea/supporting details	−.05	.07
C13: Non-restrictive	.46	.22

4.1.2.3 Results of the CCT at clue type level.

The descriptive statistics of the CCT at the clue level suggest that these university freshmen participants generally have the ability to use context clues to infer meanings of unknown words when 95% of the vocabulary in the reading texts was known to them. The averages of the 13 types of clues all exceed 5.0 (out of 6) as presented in Table 4.7. The finding indicates that before entering college these students had acquired an adequate ability to use the strategy of inferring from context.

Table 4.7

Descriptive Statistics and Alpha of the 13 Types of Clues

Clue type	Min.	Max.	Mean	SD
C1:Words connected or in series	4	6	5.82	0.41
C2:Modifying phrases	2	6	5.44	0.84
C3:Familiar expression	2	6	5.00	0.90
C4:Cause and effect	3	6	5.66	0.56
C5:Association	3	6	5.73	0.52
C6:Referral	5	6	5.79	0.41
C7:Synonym	3	6	5.43	0.67
C8:Definition/description	4	6	5.90	0.34
C9:Preposition	4	6	5.76	0.48
C10:Q/A	4	6	5.66	0.62
C11:Comparison/contrast	4	6	5.64	0.55
C12:Main idea/supporting details	4	6	5.87	0.38
C13:Non-restrictive	4	6	5.81	0.47

Rearranging the clue order from high mean scores to low mean scores, the researcher presents the difficulty rank order of the 13 categories of context clues emerged in Table 4.8. In addition to the descriptive statistics of each type of clue, two numbers were also introduced in Table 4.7 – the percentage of successful inferences and the percentage of all six items answered correctly. The first percentage shows that participants can successfully use twelve out of the thirteen types of clues with at least a 90% chance of success. However, the second number, the percentage of how many the participants answered all six items correctly, clearly shows that there are great differences in difficulty between the clues, since the range is from 33% to 92%. The differences are shown in Figure 4.2.

Table 4.8

Difficulty Rank Order of the 13 Types of Clues

Clue type	Min.	Max.	Mean	SD	% of correct inferring	% of all correct
C8: Definition/description	4	6	5.90	0.34	0.98	0.92
C12: Main idea/Supporting details	4	6	5.87	0.38	0.98	0.87
C1: Words connected or in series	4	6	5.82	0.41	0.97	0.84
C13: Non-restrictive	4	6	5.81	0.47	0.97	0.87
C6: Referral	5	6	5.79	0.41	0.96	0.77
C9: Preposition	4	6	5.76	0.48	0.96	0.78
C5: Association	3	6	5.73	0.52	0.96	0.75
C4: Cause and effect	3	6	5.66	0.56	0.94	0.69
C10: Q/A	4	6	5.66	0.62	0.94	0.75
C11: Comparison/contrast	4	6	5.64	0.55	0.94	0.69
C2: Modifying phrases	2	6	5.44	0.84	0.91	0.59
C7: Synonym	3	6	5.43	0.67	0.90	0.51
C3: Familiar expression	2	6	5.00	0.90	0.83	0.33

Note. The maximum score for each clue is six (*N*=89).

Figure 4.2 provides greater insight into how participants performed on the CCT and revealed more in-depth information on participant knowledge of the clues. Both Table 4.8 and Figure 4.2 show not only how successfully the participants used different types of context clues to infer the meanings of unknown words in the 78 short passages, but also the percentage of perfect scores for each type of context clue. For example, two-thirds of the participants missed at least one of the six questions of using context clues provided from *language experience and familiar expression*. The difficulty rank order presented above reveals that clues derived from *modifying phrases, synonyms,* and *familiar expressions* such as idioms are the most challenging types to the participants, and require

special attention when teaching. The reasons why these clues are particularly difficult for Chinese-speaking learners will be explored in the discussion section of this chapter.

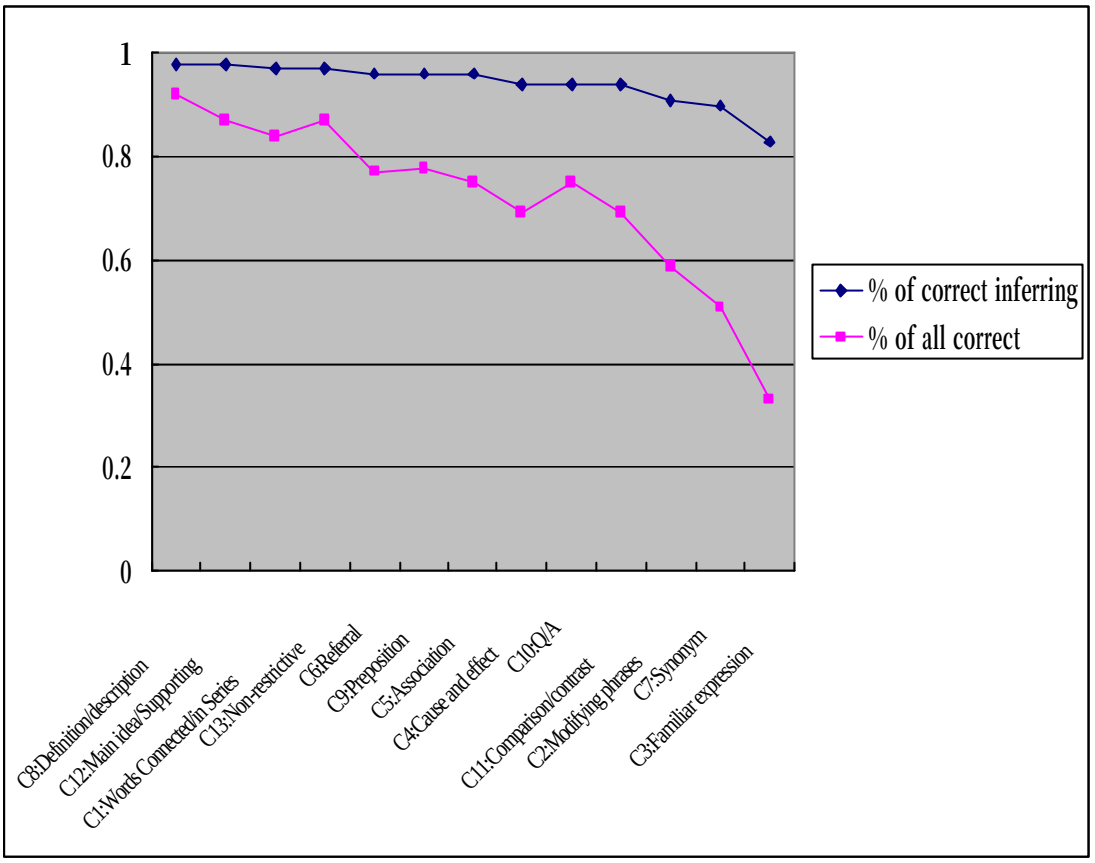

Figure 4.2. Comparison of percentage correct inferring and percentage all correct.

4.1.2.4 Descriptive results of the CCT at item level.

The research questions about how the participants use context clues to infer unknown words and the difficulty rank order are reported in this section. With the 12 disqualified participants excluded, the CCT results of the 89 English-major freshmen were presented below, which consist of descriptive statistics at the item level and the

frequencies of choice for each item, categorized according to clue type.

Thirteen tables were developed manifest the descriptive statistics. Table 4.9 is an example of the 13 tables, which introduces the minimum, maximum, mean scores and standard deviations of the six items in Clue 1. All the 13 tables that display the same descriptive statistics of each clue type are given in Appendix G.

Table 4.9

Descriptive Statistics of C1: Words Connected or in Series

Item No.	Minimum	Maximum	Mean	SD
A1	0	1	0.91	0.29
A14	1	1	1.00	0.00
A27	0	1	0.97	0.18
B1	0	1	0.99	0.11
B14	0	1	0.99	0.11
B27	0	1	0.97	0.18

Table 4.10 details the frequencies of each choice in the item. All the 13 tables that demonstrate the frequencies of choices of the 13 clue types are given in Appendix H. Both of the two tables are elaborated in the discussion section, which with then give insights and explanations of why some items are difficult to the participants with Chinese-speaking background.

Table 4.10

Frequencies of Choices: Words Connected or in Series

Item No.	a	b	c	d	x
A1	3	2	81*	3	0
A14	89*	0	0	0	0
A27	2	86*	1	0	0
B1	0	88*	0	1	0
B14	88*	1	0	0	0
B27	2	1	0	86*	0

Note. The correct answers were marked with an asterisk (*N*=89).

4.2 Discussion on Findings

The discussion section is organized in the same order as the research results presented in section 4.1. First, participant performance on the vocabulary knowledge test is discussed in the context of similar work by other researchers. Second, the researcher went through the same reliability checking and item analysis process as that of the pilot. Last, the CCT results were discussed by the sequence of the entire test level, clue type, and item levels.

4.2.1 Discussion of the VLT Results

The main reason to implement the two subsets of the VLT is to ensure participant knowledge of the first 1,000 high frequency WFs. About 88% of the participants passed the criterion of the VLT 1,000. Moreover, 91.1% of the participants scored 90% higher on the VLT 2,000. The results are different from those reported by earlier researchers (Huang,

2000; Li, 2004; Lin, 2003).

Setting the passing score at 13 out of 18, Li's (2004) study reported that 71.5% of the subjects (*N*=278) passed the 1,000-word level VLT while Lin's (2003) study produced 67.4%. Such scores arouse a caution that college students of Technological and Vocational Education System (TVES) students in Taiwan may not have sufficient word knowledge required to perform proficient English reading (Huang, 2000).

It is important to note that if the current study had adopted the same passing criterion (13 out of 18) as previous researchers did (Li, 2004; Lin, 2003; Huang, 2000), the passing rate of the 1,000-word level VLT would have become 100%. The reason for such discrepancies in the test result was that the participants of the current study were incoming English majors, whose English had to be good enough to get admitted. It is premature to conclude whether Taiwanese college-level students have enough knowledge of high frequency words. Thus, further study is needed in similar context of this field.

4.2.2 Discussion of the Overall Performance on the CCT

With an overall mean of 5.7 out of 6 (95%), the test result was negatively skewed and the difficulty level of the CCT appeared to be too high for any conventional tests. However, these results were anticipated by the researcher. The participants were expected to successfully infer the meanings of the unknown words because more than 95% of the

running words in text were recognizable to them and the context clues were offered.

Rankin and Overholser (1969) disclose the percentage of successful inferences to provide an idea of how well participants can do when unknown words with clues are presented. In this study, the percentage of correct inferring ranged from 98% for the easiest type of clue to 84% for the most difficult. This was not only due to the control of vocabulary frequency, but also to the control of the density of unknown words (95% of the words were known to the test takers). Though Nation and Hu (2000) proposed that at least 98% of the words should be known (one unknown word in every fifty known words) to the readers for pleasure reading or for incidental word learning based on the guessing from context strategy, this study suggests that about 95% recognition is sufficient, similar to the threshold of known words for adequate comprehension in a text (e.g., Laufer, 1989; Nation, 2001; Read, 2000). The finding that 95% of the words known with provision of context clues provided may be a useful criterion for training students in the strategy of using context clues to infer or selecting reading materials for practicing.

The average of correct answer percentage was about 66% in Li's (2004) study, but about 95% in this study. As mentioned in 2.4.2, although the two sets of context clues tests of Li (2004) were accorded to the vocabulary frequency level, she did not avoid the distortion effect that may influence the test results owing to students' insufficient vocabulary knowledge when using the inferring strategy. Further, the issue of the density

of unknown words was not taken into consideration in Li's study. As a result, guessing or inferring from context appeared to be more difficult for her subjects. In contrast, this study strictly excluded participants who did not pass the threshold of knowing the first 1,000 high frequency WFs by using the 1,000 VLT to filter out students with inadequate vocabulary knowledge. In addition, the known word versus unknown word ratio was carefully controlled to one unknown word every 20 or so known words. For these two reasons, the participants in this study had better chances to successfully draw information from context clues.

It is understandable why certain type of context clues, for example, *language experience and familiar expression*, posed the greatest challenges for EFL students from Chinese-speaking backgrounds. Clues derived from *language experience and familiar expressions* defined by Ames (1966) in an L1 context were mostly idiomatic usage or fixed expressions fostered in English long ago. Hence, students from a Chinese-speaking background did not naturally have these kinds of concepts in mind. Expressions familiar to native speakers such as *rain cats and dogs* or *don't cry over split milk* do not come to Chinese EFL learners instinctively. In addition to *familiar expressions*, information drawn from *synonym* clues also appeared to be difficult for the participants because only half of them correctly answered all six items that required the ability to recognize a synonym. Further, clues offered by *modifying phrases or clauses* appeared to bother the participants

very much.

Clues provided from *definitions or descriptions, main idea and supporting details patterns, non-restrictive clauses,* and *words connected in series* appeared to be very easy. These clues can be extracted easily from the surrounding sentences or words, and therefore, the participants appeared to be able to guess the unknown words embedded in these clues.

4.2.3 Discussion of Item Analysis and Reliability of the CCT

As presented in 4.1.2, 19 items out of the total of 78 items have negative values. This implies poor item discrimination ability. If the items found problematic are omitted, Cronbach's a of the thesis study will increase from .52 to .65. Although it is typically taken that low Cronbach's a value indicates poor item discrimination, this does not pose similar problems in the current study for the following reasons. First, the reliability of the CCT designed by the researcher was established in the pilot study, a = .84. Second, the lower alpha in the thesis study was expected because fewer test results were calculated, decreasing from 130 to 89. Third and most importantly, there was a lack of variety in the scores found in the thesis study relative to those found in the pilot study. To explain, the CCT range was much wider in the pilot study (55 to 78) than in the thesis study (63 to 78). The narrower range of values found in the thesis study contributed to its lower reliability.

Furthermore, 15% of the participants scored lower than 70 on the CCT in the pilot study while only 9% of the participants scored lower than 70 on the CCT in the thesis study. With respect to language ability, the thesis study group was more homogenous than the pilot study group thus contributing to the low alpha value found on the thesis study.

The researcher assumed that readers who know about 95% of the words found in the text they're reading may have a good chance of drawing information from context clues surrounding the unknown words therein. The test results of the CCT turned out to be negatively skewed (skewness = −1.00), i.e. the participants generally scored high on the CCT. This phenomenon was expected. The CCT results, thus, support the research hypothesis that when supported by context clues and 95% of the words in the text to be known by the readers, the readers may be able to draw information and guess the meanings of unknown words in the text. To be concluded, the reliability coefficient decreased in both the clue types and across the entire CCT due to the stricter range restriction, smaller population, and lack of variation in the sample population in the thesis study. The drop of Cronbach's a, therefore, does not affect the integrity and value of the study.

4.2.4 Discussion on the CCT at Clue Type and Item Level

This section examines each type of the 13 context clues and attempts to explain why certain types of clues appear to be more accessible to participants when they infer unknown words in sentences (see Appendix G and H for related data). Not only was the discussion focused on each type of clue specifically, but also on the items that illustrate why or why not certain type of clues are more difficult/easy to the Chinese-speaking participants.

4.2.4.1 C1: Clues provided through words connected or in series.

Words connected by conjunctions give the readers clues about the unknown words. This is the third easiest type of clue. The mean score of this clue type is 5.82 (out of 6).

Examples:

A1. *Back in the 1960s, black people and white people did not go to the same school, the same public <u>damiry</u>, or the same church.*
a) duty (3%) *b) enemy* (2%) *c)* ***library*** (91%) *d) opportunity* (3%)

B27. *She does not like to wear dresses of light blue, green, <u>etale</u>, or any other bright colors. Further, she does not have any.*
a) crown (2%) *b) black* (1%) *c) metal* (0%) *d)* ***red*** (97%)

In Item A1, for instance, the preposition *or* indicates that the unknown word *damiry* (library) is the name of a place because it is connected in a series of places, similar to the context of Item B27, where the unknown word is a color. The participants had little trouble guessing the meaning of the unknown word. However, the usefulness of this clue

type is limited in that although the readers could tell that the unknown word, along with other words in the series, belong to the same category (i.e. the name of a place in Item A1 and a color in Item B27) the participants could not guess what the word was if these choices had not been offered. The descriptive statistics of the six items and the frequencies of choices of each item categorized under this clue type are given in Tables G1 and H1 (see Appendixes G and H).

4.2.4.2 C2: Clues utilizing modifying phrases or clauses.

The key feature of this type of context clue is the presence of either a phrase or clause that modifies an unknown word or vice versa. With a mean of 5.44 (out of 6), this appears to be the third most difficult type of clue for the participants in the study. Although 91% of the participants successfully answered items using this type of clue, only 59% of the participants answered all the six items categorized under this clue type correctly. Those Chinese native participants may have failed to recognize postnominal modifiers, because prenominal modifiers are more common than postnominal modifiers in Chinese.

Examples:

A2. *He has the kind of <u>teruse</u> that makes you want to listen very carefully, because if you do not, it is difficult to follow.*
a) ***voice*** (88%) *b) picture* (1%) *c) scene* (6%) *d) sign* (6%)

B2. *Unlike today, people in the ancient times had to <u>trull</u> with swords, which were made of iron or steel. At that time, young boys were trained to use swords.*
a) ***fight*** (84%) *b) trade* (10%) *c) pull* (4%) *d) leave* (1%)

Items A2 and B2 is more difficult than the other items of this type. In Item A2, the pseudo word *teruse* (voice) is modified by the clause after it. The word *listen* in the modifying clause signals readers that *teruse* (voice) may have to do with voice and sound, and in this case, only the choice *voice* fits. The pseudo-word *trull* (fight) is modified by the phrase *with swords*. About 10% of the participants chose *trade*, possibly a frequent collocation of *trade* and *with.* Since this category of clues appeared to be more challengeable to the Chinese-speaking participants, it should be more intensively taught to English learners.

4.2.4.3 C3: Clues derived from language experience and familiar expression.

Information provided by this kind of clue can be extracted from the surrounding sentences only if the readers are familiar with the idiomatic expression referenced in the clue. This is obviously the most difficult category of context clues for the participants in this study (M = 5.0); only 33% of the participants got all six items of this type correct, which indicates that the participants should read more extensively to compile this type of knowledge.

Characterized by Ames (1966) in L1 context, the clue type *language experience and familiar expression* was easy for native speakers of English (Rankin & Overholser, 1969)

exposed to English in daily life. However, this was the most challenging type of context clue for the Chinese-speaking participants. Familiar common expressions for native speakers are alien to nonnative speakers. Expressions such as *as strong as a horse* or *talks big* do not come instinctively to Chinese EFL learners.

Examples:

A16. *Believe it or not. Mike can carry all the boxes alone. He once moved all the tables outside by himself. He is as strong as a(n) greeb.*
a) ***horse*** (58%) *b) mountain* (19%) *c) car* (1%) *d) iron* (21%)

B3. *Once upon a(n) romb, a queen was turned into a stone by a bad spirit. None of the soldiers who went to save her came back.*
a) year (8%) *b) while* (11%) *c)* ***time*** (69%) *d) past* (12%)

In A16, 42% of the participants apparently did not realize that the idiomatic expression *as strong as a horse* is used to describe how strong someone is. About one-fifth of the participants chose *mountain* (19%) and similar number of the participants chose *iron* (21%). The choices that the participants made here may have involved cultural orientation. In Taiwan, a famous song, *High Green Mountain* (**高山青**), describes the aboriginals living on Mt. Ali are as strong as a *mountain*. In addition, another Chinese idiom, ***穩如泰山***, also uses a mountain to describe somebody who is very strong. As for the choice of *iron*, people usually compare the hardness of the metal iron to the strength of a person. For example, "iron man" is always titled on triathletes racing series. Apparently participants who selected the three alternatives were unable to recall the fixed expression, *as strong as a horse,* in English.

Item B3 offered another example revealing that participants were unfamiliar with common fixed expressions or certain language usages that they should be familiar with. Whoever has read English story books a few times must have encountered the expression *once upon a time* since this kind of language usage is used ubiquitously. However, about 30% of the participants, upon seeing the context clue, did not choose accordingly.

4.2.4.4 C4: Clues given from cause and effect relationship.

Words functioning as signals of cause-effect relationships include *because, therefore, since, due to, so that*, and so on. The mean of this clue type is 5.66, indicating the participants performed generally well in the part of the test pertaining to CCT. Only two items, A17 (M = 0.88) and B17 (M = 0.85), seemed to be a little difficult for some test-takers (see Table G4). Thus, they are discussed here.

Examples:

A17. *I still remember that when I was eight, I <u>teeded</u> so much that my father said to me "nobody will ever trust you."*
a) moved (3%) *b) gave* (0%) *c)* ***lied*** (88%) *d) cried* (9%)

B17. *My father's old car had been left here all the winter; thus, no matter how hard I tried, it just won't <u>slead</u>.*
a) rise (6%) *b)* ***start*** (85%) *c) carry* (4%) *d) save* (4%)

In Item A17, the pseudo word *teeded* (lied) is the cause inferred from the result as described in the clause *nobody will ever trust you*. Some of the participants chose *moved* (3%) or *cried* (9%), which did not logically specify the reason, apparently because they

did not see the cause-and-effect relationship marked by *so … that*…. As for B17, the pseudo word *slead* (start) represents the idea of the effect, with the cause clearly stated in the beginning, …*old car had been left here all the winter*. The readers were expected to tell what would happen to the car. About 14% of the participants chose the wrong answers owing to the fact that most of them are too young to have enough driving experience to know that it is hard to start an old car in cold weather. The lack of background knowledge is a major cause that usually leads to unsuccessful guessing for people with different cultures. Frequencies of the choices of other items can be found in the Table H4 in Appendix H.

4.2.4.5 C5: Association clues.

This type of clue is brought about by verb-noun or adjective-noun associations. The mean of this category is 5.73.

Examples:

A5. *When Peter was <u>roddling</u> the wall outside, the wind was so strong; therefore, I asked him to drop everything and come in at once.*
a) attacking (3%) *b) blowing* (1%) *c) moving* (11%) *d)* ***painting*** (84%)

B31. *When I was a child, I used to ask my mother to <u>ronk</u> stories to me every night before I went to bed.*
a) ***read*** (100%) *b) pay* (0%) *c) shoot* (0%) *d) promise* (0%)

Item A5 (the mean score is 0.84) is a model of verb and noun association. The verb *roddling* (painting) in past continuous form is something you usually do with the noun

wall. Hence, the association of *painting the wall* is supposed to be triggered in the mind of readers. Only about 11% of the participants chose *moving*, the reason might be that they do not see people paint walls as frequently as those in the western countries. This might be another case of lack of real world knowledge, i.e. "background knowledge."

Item B31 provides the same association of verb and noun. The association of *read* to *story* was easily recognized by the participants. Table G5 and H5 show the details of the results of items related to this type of clue.

4.2.4.6 C6: Referral clues.

Referral clues were indicated by the phrase *the same* or determiners such as *this*, *that*, *these*, and *those*. The mean of this clue is 5.79 out of 6, showing that the participants successfully used this type of clue to learn a new word's meaning.

Examples:

A32. *Since I was a child, whenever my father has a free time, he would take me to go fishing and sailing. All these <u>mudicies</u> are related to my father's love of the sea.*
a) ***activities*** (96%) *b) business* (0%) *c) influences* (4%) *d) groups* (0%)

B6. *First, it is really dark outside. Second, the bridge is very old. Third, you are alone. So, for all these <u>sliquries</u>, you should not leave today.*
a) ***reasons*** (100%) *b) dates* (0%) *c) amounts* (0%) *d) doubts* (0%)

Both Items A32 and B6 present examples of how the information is offered by the determiners. The participants were expected to synthesize the information provided

before to locate the correct word followed by the determiner *these*. The descriptive statistics are presented in Table G6. Table H6 also offers details of how the participants answered this set of questions.

4.2.4.7 C7: Synonym clues.

This context clue involves the knowledge of different words sharing the same or similar meaning. The synonym of the unknown word can be found someplace in the surrounding sentences. It is important to note that this is the second most difficult clue type (mean = 5.43). Only 51% of the participants got all the six items of this clue type correct, suggesting that the participants need to deepen their word knowledge by learning a large number of synonyms for the words they already know.

Examples:

A33. *Housing is so expensive, and the prices will <u>neige</u> in the future. If the house prices keep rising, I will have to work twice as hard to get a house.*
a) represent (1%) *b) spread* (6%) *c) supply* (2%) *d)* ***increase*** (91%)

B33. *Alex needs to <u>blod</u> the changes in this experiment closely. If he fails to observe carefully, the results will disappear in a few seconds.*
a) associate (6%) *b)* ***watch*** (69%) *c) break* (4%) *d) gain* (21%)

In A33, for instance, the unknown word *neige* (increase) was mentioned again with its synonym, *rise*, in the following sentence. The participants actually performed well in recognizing the synonym clues (five items out of six) as presented in Table G7.

The most difficult item among the six of this category is Item B33, of which the

mean is only 0.69; that is, about 31% of the participants chose the wrong answers (the most popular distractor was *gain*). The reason may be that the participants expected to *gain* something after the *experiment*. The meaning of the simulated word *blod* (watch) was pointed out in the second sentence, i.e., in the phrase *If he fails to observe carefully*. If the participants did not recognize the clue provided by the synonym *observe*, they could not select the correct choice. As for the other four items, participants showed an adequate ability to use the synonym clues (see Table H7).

4.2.4.8 C8: Clues utilizing definition or description.

The unknown word in this type of clue is defined or described within the sentence or paragraph, which is the most recognizable context clue to the participants in this study. The mean of this clue type is 5.9; in other words, the participants scored as high as 98% on this test set. Even 92% of the participants correctly answered all the six items within this clue type.

Examples:

A34. *A mother and her two little girls walked down the road. A man in black moved along behind them. I wondered why he <u>roumbled</u> them.*
a) remained (0%) *b) destroyed* (0%) *c) extended* (0%) *d)* ***followed*** (100%)

B34. *Jason never told anyone the truth that he had broken the window at school. He even said that he saw Ben break it. He is a big <u>reper</u>.*
a) player (1%) *b)* ***liar*** (99%) *c) enemy* (0%) *d) receiver* (0%)

In Item A34, the pseudo word *roumbled* (followed) is defined by its preceding

sentence. The word meaning of *reper* (liar) could be guessed by means of the descriptions from the preceding sentences. This type of clue is common in daily reading. Unsurprisingly, the participants could easily recognize the information about the unknown word that was defined or described in surrounding sentences. Table G8 (Appendix G) reports on the means of these items. Details of frequencies of the choices are presented in Table H8 (Appendix H).

4.2.4.9 C9: Preposition clues.

Information on the unknown word embedded in the surrounding sentences is given through prepositions in this type of clue. Ames (1966) explained that "unknown words were used as objects of prepositions, and the readers used the prepositions as clues in determining the meanings of the unknown words" (p.77-79). Generally speaking, the participants could draw on this type of context clue to infer the meanings of unknown words as revealed in the mean score of this clue type, 5.76.

Examples:

A9. *As he walked home along the breef under the moonlight, he saw a man run out of the church and disappear into the dark.*
a) ***street*** (93%) *b) mile* (1%) *c) shadow* (6%) *d) glass* (0%)

B22. *Several months ago, after hearing a wonderful experience of living on boat, my wife and I decided to spend the summer sailing across the peast.*
a) ***sea*** (96%) *b) ship* (3%) *c) mile* (0%) *d) ground* (1%)

In Item A9, the pseudo word *breef* (street) can be guessed from the preposition

along. Normally people *walk along* a road or a street. However, a few participants chose *shadow*, which might be due to the phrase *under the moonlight*. In Item B22, the phrase *sailing across* gives the meaning of *peast* (sea) away since the unknown word is the object of the preposition *across*. Therefore, when using context clues to help understand unknown or unfamiliar word's meaning, the readers should have the ability to see the whole picture and discern the correct information from others.

4.2.4.10 C10: Clues drawn from question and answer pattern.

In this clue type, paragraph organization pattern released semantic information either in the question portion if the pseudo word is in the answer portion or vice versa. Readers need to search information that leads to the meaning of the unknown word based on the question-and-answer paragraph organization pattern. The mean score of this clue type is 5.66.

Examples:

A36. *Are you willing to <u>reak</u> the silver ring? That ring has been traded by my mother thirty years ago, and I will buy it regardless the price.*
a) ***sell*** (90%) *b) move* (4%) *c) wear* (6%) *d) place* (0%)

B36. *Do you know the <u>buetion</u> of the book? About two hundred years ago, Victor, the most famous writer at that time, wrote it as a present for his lover.*
a) rule (0%) *b) language* (2%) *c) page* (0%) *d)* ***history*** (98%)

In Item A36, the meaning of the pseudo word *reak* (sell) in the question can be guessed from the answer portion (i.e., *I will buy it*…). About ten percent of the

participants chose the wrong answers. Some participants failed to gather information from the answer portion resulting in their choices of the irrelevant verbs *move* and *wear*.

Item B36 demonstrated how the participants successfully inferred the meaning of the simulated word from the answer portion, in which the meaning of the simulated word *buetion* was expressed. Most of the items were easy to answer by the participants as reported in Table G10. See Table H10 for frequencies of the choices made in the six items.

4.2.4.11 C11: Comparison or contrast clues.

This category of context clues is based on information from "comparison or contrast of words, phrases, clauses, or ideas present in the context" (Ames, 1966, p.21). The comparison or contrast ideas are usually raised by words such as *but*, *although*, and *however*. Generally speaking, this category of context clues was well recognized by the Chinese-speaking participants with a mean of 5.64 out of 6 and a 94% success rate in answering correctly.

Examples:

B37. *When I was small, I used to think that the blue part of fire is cold. However, after I touched it, I realized it is <u>luthy</u>.*
a) round (0%) *b) poor* (0%) *c)* ***hot*** (100%) *d) air* (0%)

A37. *Though your son was a short little boy when I last saw him ten years ago, he is a(n) <u>raotic</u> man now.*

a) wealthy (8%) *b) small* (1%) *c) ordinary* (11%) *d)* ***big*** (79%)

Participants needed to recognize the shift of the ideas stated in the sentence or paragraph to infer successfully. In Item B37, for example, participants appeared to understand the transfer of the concept pertaining to fire. The word *however* indicates a change in the quality of the blue part of the fire, and 100% of the participants detected this successfully (Table G11).

Successful inference using comparison or contrast clues occurred in most of the other items, with the exception of Item A37. The mean score of Item A37, the most difficult item in this category of clue, was 0.79. Nearly 20% of the participants did not recognize the main proposition in Item A37. The idea is that the boy was originally short and little, but ten years later he became *raotic* (big). The main proposition between before, *short little boy*, and now, *a raotic* (big) *man*, pertains to the boy's build; therefore, big is most likely the meaning of the pseudo word, not *wealthy* or *ordinary*.

4.2.4.12 C12: Clues derived from the main idea and supporting details

The meanings of simulated words either in the sentence of the main idea or the sentences of supporting details can be learned from the related sentences. This type of clue is also apparently accessible to the participants, which turned out to be the second easiest clue with a mean score 5.87.

Examples:

A12. *The plan to break into the house is too montronus. We may get into big trouble. Further, we may get caught or even get shot.*
a) wonderful (0%) *b)* ***dangerous*** (99%) *c) general* (0%) *d) official* (1%)

B12. *My friend, Robert, was from a(n) sapur family. He said he had never had any good food and he had to help support his family on weekends.*
a) small (0%) *b) happy* (0%) *c) ordinary* (0%) *d)* ***poor*** (100%)

Descriptive statistics show that almost all the items have a mean score close to one. In items A12 and B12, for example, the participants were apparently able to infer the meanings of the pseudo words, *montronus* (dangerous) or *spaur* (poor), by the following sentences that provided details to support the semantic content of the pseudo words.

4.2.4.13 C13: Clues drawn from non-restrictive clauses

A clue is given in a non-restrictive clause, presented as an appositive phrase, within a sentence. This type of clue appears to be straightforward to the participants (M = 5.81) because the information that can be used to infer the meaning of the pseudo that directly follows it.

Examples:

A39. *My family toles, acceptable in the price and easy to drive, are both made in Japan and famous all over the world.*
a) accounts (1%) *b) work* (3%) *c)* ***cars*** (94%) *d) spots* (1%)

B39. *The problem is that the fire from the woods is getting closer, and the old bridge, which hasn't been porrowed, is the only way to leave the village.*
a) sold (0%) *b) left* (3%) *c)* ***fixed*** (92%) *d) painted* (3%)

In Item A39, the non-word *toles* (cars) was described in the non-restrictive clause,

acceptable in the price and easy to drive. Because of the word *drive*, the test takers could locate the correct answer *cars* without much trouble. Item B39 was more complicated. To find the right meaning of the word *porrowed* (fixed), the participants needed to draw information from the words/phrases *problem*, *the old bridge*, and *the only way to leave the village* to come up with the meaning *fixed*. The mean scores provided in Table G13 reveal how successful the participants could infer the meanings of unknown words by using this type of clue. Only few frequencies of alternative choices are presented (Table H13).

CHAPTER FIVE

CONCLUSION

This study explored how college students with Chinese-speaking backgrounds in Taiwan handled unknown or unfamiliar words when the information was provided by context clues embedded in surrounding sentences. Participants in the pilot and thesis study together consisted of 230 college students of Tunghai University in central Taiwan.

A comparison of vocabulary size assessment of this thesis study and similar work of Li (2004) offers insight. First, the researcher found that it is worthwhile to study the vocabulary size of students from both public and private, technological or non-technological, colleges and universities, since the vocabulary size of high frequency words varies enormously between students from different college-level organizations. Second, the two sets of Vocabulary Levels Test revealed that for English major students in Tunghai, generally (about 88%) have the knowledge of the first thousand and second thousand high frequency WFs of English which are regarded as the basis of English reading skills at the beginning of their freshmen year.

The test of context clues (CCT) indicated that overall, college participants with a Chinese-speaking background have good knowledge of the use of various context clues when encountering unknown words in a text when roughly 95% of the running words are known to them. In addition, the current study supports the findings of Hu and Nation

(2000) that if learners know more than 95% of the running words of the reading, they are more likely to use context clue strategies, although Hu and Nation (2000) insist that 98% is optimal. They found that if learner vocabulary knowledge exceeded the 80% level, the likelihood of using context clues to correctly guess the meanings of the unknown words in reading passages was impossible, but possible to some participants at 90%, and a greater proportion of participants at 95% level.

Taking their findings into consideration, this research controlled the density of unknown words in text and attempted to maintain a vocabulary level in which at least 95% of the words (but not as high as 98%, 1 unknown word in every 50 known words) were known to the test-takers. The high success rate of guessing at the 95% level showed that Chinese-speaking EFL learners could draw on clues to facilitate reading when at least 95% of the words were known to them. This suggests that language instructors choose suitable materials for the students when asking them to practice the strategy of guessing or inferring from context. Despite the fact that Nation and Hu (2000) have argued that 98% of the words should be known (i.e. one unknown word in every fifty known words) to the readers for pleasure reading or for incidental word learning based on the guessing from context strategy, this study found that about 95% of the words should be recognized in order to infer meanings from context, a finding similar to the threshold of known words (95% of the text words to be known) for adequate comprehension, as suggested by other

researchers (e.g., Laufer, 1989; Nation, 2001; Read, 2000).

In addition, the difficulty rank order of the 13 types of context clues from Chinese-speaking EFL learners in Taiwan was revealed, which provides teachers insight into which type of context clues should be taught to their students. For instance, a few categories of clues were of low effectiveness: clues derived from synonyms, modifying clauses or phrases, and idiomatic expressions in English (see Table 4.7 in Section 4.1.2.3 for the difficulty rank order of clues). Such clues can be and might be emphasized in vocabulary instruction.

Researchers (Fraser, 1999; Kuhn & Stahl, 1998; Nation, 2001) suggest that the inferring strategy can be used more successfully after proper instruction or practice. The maintenance of this strategy was also reported in a delayed test in Fraser (1999). As a result, the researcher proposes the strategy of inferring to be taught or learned since the use of context clues to generate word meanings in text not only maintains the flow in reading but also requires learners to analyze the surrounding text, and make and test the assumptions they have about the unknown words, which together allow learners to interact with the reading, making the reading process more meaningful (Nation & Coady, 1988).

5.1 Implications for English Learners, Instructors, and Textbook Writers

Using context clues is a strategy that should be taught to learners because it facilitates reading and word meaning learning. Hu and Nation (2000) concluded "reading involves much more than vocabulary knowledge, although vocabulary knowledge is very important" (p.419). The strategy of inferring from context is considered both a reading and a vocabulary learning strategy (Anderson, 1999; Nation, 2001). Thus, for English learners, learning to use clues embedded from context benefits both enhancement of reading comprehension and vocabulary learning. For learners who use the inferring from context strategy, to prevent wrong inferences from resulting in erroneous learning outcomes, it is recommended that learners verify their inferences afterwards. Therefore, the use of dictionaries should be encouraged when the inferring tasks in reading are done (Nation, 2001).

For language instructors, since good vocabulary strategies should be taught to learners of English (Gu & Johnson, 1996; Nation, 2001; Yu, 1998, 1999, 2003), the strategy of inferring from various context clues is especially worth investment in instructional time and effort. The difficulty rank order of the 13 types of context clues presented in this study offers insight into some of the particularly confused types of context clues for English learners from Chinese language backgrounds. In addition, language instructors can detect what types of clues their learners may have trouble with,

prior to strategy instruction and training. Further, as researchers recommended (Hunt & Beglar, 2002; Nation, 2001), not only should high frequency WFs be taught to language learners, how to use vocabulary strategies to learn the remaining low frequency words is a requirement as well, so that learners can continue to learn on their own. The inferring strategy, with its use of enhancing vocabulary knowledge either in learning the meanings of new word or in deepening known word knowledge from different contexts of a given word's usage, needs to be emphasized in curriculum.

Many textbooks in the English learning field also provide practice of the inferring strategy (e.g., Blanchard & Root, 2005, Smith, 2005; Zukowshi, Johnston, & Templin, 2002), showing that the importance of the inferring from context strategy is well recognized. For textbook writers, the 13 categories of context clues deserve different notice, for learners from different backgrounds have levels of knowledge and strengths and weaknesses when attempting to use the clues.

5.2 Limitations of the Study and Suggestions for Future Research

This study investigated a total of 230 private college students (i.e. 129 and 101 participants in the pilot study and thesis study respectively) in central Taiwan. Therefore, the difficulty rank order of the context clues and vocabulary size of high frequency words for different participants at various academic levels or grades can also be examined.

Context clue tests should be designed with different frequency levels of words. Because few studies have looked into the density of unknown words in a text and how that affects the guessing performance, more investigation of the effects of different known vocabulary control levels—80%, 90%, 95%, or 98%—should be carried out (Hu and Nation, 2000).

Another way of conducting similar research is not to offer choices but to ask the test-takers to give the answer to the pseudo words. The researcher found in the validating process that the participants were able to discover meanings of unknown words in test questions according to the context clues embedded in surrounding sentences based on a think-aloud protocol. This kind of data collection method can bring the results of inferring even closer to real reading conditions since there will be no choices for the readers to rely on in guessing when encountering unknown words in reading (e.g., Ames, 1966; Soria, 2001). However, the drawback of this method of gathering data is the limitation of the number of participants, since the think-aloud protocol consumes a large amount of time. As a result, the 78-item test may pose difficulties to a researcher handling a large number of participants.

If future research adopts the CCT test developed by the researcher, investigation of the test takers' ability to use context clues should include a larger number of participants and a greater variety of academic levels. Since all of the words used in the instrument are strictly limited to the first 1,000 high frequency word list, there may be few

strange-looking or awkward sentences because of the limitations of word selection. Through similar research, researchers can invent new instruments based on the categories of context clues or the CCT in this study. Studies can also be done by analyzing different age groups, since the CCT test appears to be somewhat easy for the English major freshmen.

APPENDIX A

The 1,000 Word Level VLT by Huang (1999)

姓名：　　學號：　　系級：

※請把最適合題目字義的選項填入空格

This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning.

	a) do		a) sing
1. _____a metal of great value	b) far	10. _____not controlled by others	b) sure
2. _____smallest or youngest	c) gold	11. _____something that can help	c) prove
3. _____to make	d) clear	12. _____without doubt	d) college
	e) human		e) advantage
	f) least		f) independent
	a) me		a) dry
4. _____at no time	b) or	13. _____to take husband or wife	b) gas
5. _____can be done; can happen	c) run	14. _____to say something	c) corn
	d) never		d) marry
6. _____not big; little	e) small	15. _____not wet	e) remark
	f) possible		f) personal
	a) add		a) wise
7. _____ a number of people or things	b) than	16. _____a window is made of this	b) glass
	c) tree		c) defeat
8. _____a tall plant with leaves; wood comes from this	d) group	17. _____understanding	d) operate
	e) concern	18. _____a country without a king where people vote	e) republic
9. _____ to increase the number	f) whether		f) statement

APPENDIX B

The 2,000 Word Level VLT by Schmitt et al. (2001)

	a) copy		a) blame
1. _____ end of highest point	b) event	16. _____ make	b) elect
2. _____ this moves a car	c) motor	17. _____ choose by voting	c) jump
3. _____ things made to be like another	d) pity	18. _____ become like water	d) threaten
	e) profit		e) melt
	f) tip		f) manufacture
	a) accident		a) dozen
4. _____ loud deep sound	b) debt	19. _____ chance	b) empire
5. _____ something you must pay	c) fortune	20. _____ twelve	c) gift
6._____ having a high opinion of yourself	d) pride	21. _____ money paid to the government	d) tax
	e) roar		e) relief
	f) thread		f) opportunity
	a) coffee		a) ancient
7. _____ money for work	b) disease	22. _____ not easy	b) curious
8. _____ a piece of clothing	c) justice	23. _____ very old	c) difficult
9. _____ using the law in the right way	d) skirt	24. _____ related to God	d) entire
	e) stage		e) holy
	f) wage		f) social
	a) arrange		a) admire
10. _____ grow	b) develop	25. _____ make wider or longer	b) explain
11. _____ put in order	c) lean	26. _____ bring in for the first time	c) fix
12. _____ like more than something else	d) owe	27. _____ have a high opinion of someone	d) hire
	e) prefer		e) introduce
	f) seize		f) stretch
	a) clerk		a) slight
13. _____ a drink	b) frame	28. _____ beautiful	b) bitter
14. _____ office worker	c) noise	29. _____ small	c) lovely
15. _____ unwanted sound	d) respect	30. _____ liked by many people	d) merry
	e) theater		e) popular
	f) wine		f) independent

APPENDIX C

Context Clues Test: Version A

學號（student number**）：**

這是一份關於使用語境線索的測驗，每一題的題目中皆提供線索來推敲字義，請根據上下文選出最符合有標示底線的字的選項。

This is a context clues test. Each question provides a type of context clue for you to guess the meaning of the underlined word. You must choose the meaning of the underlined word according to the context clue.

1. Back in the 1960s, Black people and White people did not go to the same school, the same public damiry, or the same church.
a) duty b) enemy
c) library d) opportunity

2. He has the kind of teruse that makes you want to listen very carefully, because if you do not, it is difficult to follow.
a) voice b) picture
c) scene d) sign

3. I do not want to join the race because if I lose I will lose tabe in front of my friends. They will laugh at me for sure.
a) chance b) face
c) name d) dream

4. Since Jane's father left home when she was only one year old, Jane does not veragence her father at all now.
a) change b) allow
c) know d) gain

5. When Peter was roddling the wall outside, the wind was so strong; therefore, I asked him to drop everything and come in at once.
a) attacking b) blowing
c) moving d) painting

6. The whole school took the test, but only Jack, Tina, and Josh passed it. These lasheries were the most outstanding ones in the whole school history.
a) students b) beginners
c) armies d) enemies

7. He will not allow himself to be lubstered. He believes that there is no chance for him to lose because he has spent all his free time training.
a) changed b) defeated
c) carried d) raised

8. Everyone knows that Tom and Ben are very good to each other. They always help each other no matter what happens; this is true stanatice.
a) character b) wealth
c) voice d) friendship

9. As he walked home along the breef under the moonlight, he saw a man run out of the church and disappear into the dark.
a) street b) mile
c) shadow d) glass

10. What is his ponddling problem now? He almost always looks sleepy in the morning and cannot organize his work properly.
a) sleeping b) walking
c) writing d) laughing

11. Learning English is a must nowadays. Some of my friends think it is hard to learn English, but I think it is quite itachy.
a) strange b) important
c) different d) easy

12. The plan to break into the house is too montronus. We may get into big trouble. Further, we may get caught or even get shot.
a) wonderful b) dangerous
c) general d) official

13. In front of our school gate, I saw Bill Clinton, the former blestor of the United States, in person in his last visit to China a few years ago.
a) player b) actor
c) president d) reporter

14. Our hope for equality, justice, peace, and yuggy for all people in the world is more important today than ever.
a) freedom b) degree
c) fear d) suffering

15. Can anyone tell me why the teacher uses the restanans that none of us can answer in the short class time?
a) industries b) questions
c) levels d) newspapers

16. Believe it or not. Mike can carry all the boxes alone. He once moved all the tables in the room outside by himself. He is as strong as a(n) greeb.
a) horse b) mountain
c) car d) iron

17. I still remember that when I was eight, I teeded so much that my father said to me "nobody would ever trust you."
a) moved b) gave
c) lied d) cried

18. Although James used to eat solly food when he was a child, he is not able to eat it now.
a) spirit b) sweet
c) official d) private

19. Your wife thought that you had not told her the truth and your friend thought you had lied about the affair. In this case, these people have the same dorrat.
a) quarter b) address
c) event d) opinion

20. In front of the officer, Jean kept trying to make herself clear but it was hard for her to lausify where she was last night.
a) expect b) demand
c) concern d) explain

21. These two girls were my tremonders before we moved here two years ago. Their house was next to ours and we often visited each other in the evening.
a) fortunes b) armies
c) neighbors d) chiefs

22. He drove all the way to his father's place without stopping, thus he could come back to school within one reet.
a) body b) day
c) product d) union

23. Have you ever felt very high or low because of a song? Then you must know that plints can have a strong effect on your feelings.
a) writing b) music
c) exercise d) food

24. Although the questions were very rumerous, the boy got all the answers right easily in a few minutes. That surprised everyone in the class.
a) standard b) plain
c) difficult d) unimportant

25. Mothers can help their children be praonal in school by supporting them. They can support them by buying them books to help them learn or by spending time reading to them.
a) beautiful b) worthy
c) popular d) successful

26. Last year, my brother and I went to America on our own. We enjoyed our short stay in New York– the largest sklid on the east coast of the U.S.A.
a) bank b) river
c) city d) war

27. My younger brother and I always spend the whole summer on the farm planting mests, cotton, and flowers on our own.
a) circles b) corn
c) committees d) dollars

28. The nert on the stage held the golden box in one hand and said that he would never give up the box to his enemies.
a) actor b) doctor
c) driver d) motor

29. No one will believe that you refused Rebecca's suggestion. She is the most popular girl at school. Anyway, I think you are out of your rhymol.
a) account b) business
c) mind d) manner

30. Before reaching eighteen years old, Henry was the remblest boy in school; therefore, he tried to eat much less food.
a) richest b) heaviest
c) shortest d) smallest

31. An old game of mine has been left in the box for a long time. It has to be fixed for Mary to vert again.
a) draw b) play
c) dry d) tear

32. Since I was a child, whenever my father has a free time, he would take me to go fishing and sailing. All these munities are related to my father's love of the sea.
a) activities b) business
c) influences d) groups

33. Housing is so expensive, and we suppose that prices will neige in the future. If the house prices keep rising, I will have to work twice as hard to get a house.
a) represent b) spread
c) supply d) increase

34. A mother and her two little girls walked down the road. A man in black moved along behind them. I wondered why he roumbled them.
a) remained b) destroyed
c) extended d) followed

35. While I read the newspaper in the middle of the room, a wind blew through the sinole, blowing the pages from one end of the room and out the other.

a) ground b) sky

c) window d) night

36. Are you willing to reak the silver ring? That ring has been traded by my mother thirty years ago, and I have been looking for it since then. I will buy it regardless the price.

a) sell b) move

c) wear d) place

37. Though your son was a short little boy when I last saw him ten years ago, he is a(n) raotic man now.

a) wealthy b) small

c) ordinary d) big

38. Harry, who lived only thirty years, was the most popular cretor in our country. Within his short life, he had made more than one hundred songs famous.

a) reporter b) singer

c) lover d) trader

39. My family toles, acceptable in the price and easy to drive, are both made in Japan and famous all over the world.

a) accounts b) work

c) cars d) spots

APPENDIX D

Context Clues Test: Version B

學號（student number**）：**

這是一份關於使用語境線索的測驗，每一題的題目中皆提供線索來推敲字義，請根據上下文選出最符合有標示底線的字的選項。

This is a context clues test. Each question provides a type of context clue for you to guess the meaning of the underlined word. You must choose the meaning of the underlined word according to the context clue.

Version B

1. All the children in our family were raised in a country house on a big farm, where we used to make friends with birds, dontries, and horses when we were little.
a) spirits b) dogs
c) armies d) fish

2. Unlike today, people in the ancient times had to trull with swords, which were made of iron or steel. At that time, boys were trained to use swords at very young age.
a) fight b) trade
c) pull d) leave

3. Once upon a(n) romb, a queen was turned into a stone by a bad spirit living in the dark woods. None the soldiers of the kingdom who went to save the queen came back.
a) year b) while
c) time d) past

4. Rick is a careless person. He always forgets to water his garden so that the plants and flowers always nunt in a few weeks.
a) break b) grow
c) meet d) die

5. Please take a look at the words I wrote on your ponk and feel free to call me, should you have any questions about it.
a) system b) paper
c) proof d) agent

6. First, it is really dark outside. Second, the bridge is very old. Third, you are alone. So, for all these sliquries, you should not leave today.
a) reasons b) dates
c) amounts d) doubts

7. After watching "Back to the Future," Henry believed that in the near future many companies will manufacture machines that can travel in time, and they will recuise such machines as easily as making a car.
a) recognize b) influence
c) shake d) produce

8. The library books are due on March 6. This means the library expects these books to be luest on or before that day.
a) bought b) paid
c) returned d) burnt

9. Jim loves to travel around by car. He is even the first person at our school that drove across the risbby.
a) sea b) country
c) room d) line

10. Do you think that Linda may not be the person who took the gold watch from the president's office? Nobody has any claft that she had been into the president's office after work.
a) opportunity b) proof
c) secret d) example

11. People in the new school are very runial to Micky and Rita; however, they still miss their old friends back at home very much.
a) kind b) social
c) public d) actual

12. My friend, Robert, was from a(n) sapur family. He said he had never had any good food and he had to help support his family on weekends.
a) small b) happy
c) ordinary d) poor

13. The library, the most ancient brack in the nation's history, was built seven hundred years ago by the best workers of that time. This shows that those people valued knowledge in the past.
a) organization b) group
c) city d) building

14. Tony said that he did not know what he wanted to be in the future because he had too many dreams. It was hard for him to choose from being an actor, mudger, singer, teacher, or judge.
a) scientist b) manner
c) neighbor d) family

15. The dounce in a beautiful white dress walked peacefully along the lake without noticing a man who came out of the forest and move closer and closer.
a) motor b) animal
c) queen d) shadow

16. Betty enjoyed traveling. However, after a few years living in foreign countries, she began to believe there was no place like burt.
a) memory b) bank
c) home d) church

17. My father's old car had been left here all the winter; thus, no matter how hard I tried, it just won't slead.
a) rise b) start
c) carry d) save

18. Everyone in the party stopped talking to watch the lady siching a black short dress walk beautifully into the room.
a) wearing b) taking
c) making d) burning

19. I was born in November, my younger sister was born in December, and our little brother was born in January. We were all born in the same tession.
a) season b) room
c) doctor d) year

20. When talking about writing, he always said that he was etunal. In other words, he was so joyful and pleased to talk about writing.
a) last b) full
c) numerous d) happy

21. I sullet having good friends more than being rich. In my opinion, having too much money is not as important as making friends.
a) produce b) live
c) value d) shine

22. Several months ago, after hearing a wonderful experience of living on boat, my wife and I decided to spend the summer sailing across the peast.
a) sea b) ship
c) mile d) ground

23. My friend asked, "Is there anything here ronderous to you?" Since I walked into the room, I noticed that the table has been moved and the paper has been torn.
a) general b) strange
c) limited d) serious

24. People said that the actor was nerial at first, but then after a few successful shows on the stage, he became rich.
a) common b) alone
c) clear d) poor

25. Receiving an F on my report was not an enjoyable experience. In order not to fail again, I decided to work harder on next week's sustendence.
a) moves b) commands
c) tests d) properties

26. My high school teacher once told us that Shakespeare, whose secerities are famous all over the world, was a very interesting person.
a) empires b) religions
c) flowers d) plays

27. She does not like to wear dresses of light blue, green, etale, or any other bright colors. Further, she does not have any.
a) crown b) black
c) metal d) red

28. The soldiers who came down from the hill used their hands to boose from the river, which was cold and fresh.
a) attack b) drink
c) direct d) rule

29. The book is so old and out of date, but the story is so great. You must never judge a book by its porry.
a) length b) cover
c) color d) press

30. She could never save enough money to buy her favorite game because every time she got some money, she would prode it all.
a) keep b) throw
c) spend d) refuse

31. When I was a child, I used to ask my mother to ronk stories to me every night before I went to bed.
a) read b) pay
c) shoot d) promise

32. When we were little, my younger sister and I used to paint pictures all the time. We had the same jonity.
a) race b) space
c) interest d) trouble

33. Alex needs to blod the changes in this experiment closely. If he fails to observe carefully, the results will disappear in a few seconds.
a) associate b) watch
c) break d) gain

34. Jason never told anyone the truth that he had broken the window at school. He even said that he saw Ben break it. He is a big reper.
a) player b) liar
c) enemy d) receiver

35. At the same selecet, she ran past the falling bridge and safely arrived at the other side of the valley.
a) time b) chance
c) district d) measure

36. Do you know the buetion of the book? About two hundred and ten years ago, Victor, the most famous writer at that time wrote this book as a present for his lover.
a) rule b) language
c) page d) history

37. When I was small, I used to think that the blue part of fire is cold. However, after I touched it, I realized it is luthy.
a) round b) poor
c) hot d) air

38. My dog is really a(n) unistive friend to me. Not only will he follow me when I walk on the street at night but he also keeps away strangers when I am not home.
a) political b) demanding
c) local d) faithful

39. The problem is that the fire from the woods is getting closer and closer, and the old bridge, which hasn't been porrowed, is the only way to leave the village.
a) sold b) left
c) fixed d) painted

APPENDIX E

Item-total Statistics of Reliability Analysis of the CCT of the Pilot Study

Table E

Item-total Statistics of Reliability Analysis

Item #	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Alpha if item deleted
A1	72.3154	24.5122	.1033	.8445
A2	72.3615	24.2326	.1590	.8442
A3	72.3154	24.5277	.0958	.8446
A4	72.2692	24.7719	.0000	.8444
A5	72.4308	23.2549	.3874	.8394
A6	72.2769	24.6359	.1474	.8438
A7	72.2923	24.6891	.0401	.8448
A8	72.2769	24.4964	.3085	.8428
A9	72.3692	23.8626	.2782	.8418
A10	72.3462	24.0886	.2330	.8426
A11	72.2923	24.5030	.1650	.8435
A12	72.2769	24.7754	−.0128	.8448
A13	72.3000	24.0256	.4215	.8405
A14	72.2692	24.7719	.0000	.8444
A15	72.3077	24.5247	.1098	.8443
A16	72.6077	23.0154	.3359	.8415
A17	72.3692	24.2192	.1559	.8444
A18	72.2692	24.7719	.0000	.8444
A19	72.3077	24.3232	.2161	.8429
A20	72.3154	24.6052	.0586	.8451
A21	72.2692	24.7719	.0000	.8444
A22	72.3769	23.6320	.3447	.8404
A23	72.2846	24.4532	.2483	.8429
A24	72.3077	24.4472	.1506	.8437
A25	72.2923	24.5030	.1650	.8435
A26	72.3231	24.3599	.1612	.8437
A27	72.3077	24.1837	.2902	.8419
A28	72.3538	23.9203	.2830	.8417

A29	72.4077	23.9643	.2025	.8438
A30	72.4615	23.5993	.2643	.8428
A31	72.3308	24.3316	.1606	.8438
A32	72.3231	24.1119	.2735	.8420
A33	72.3538	23.7188	.3583	.8403
A34	72.3154	23.9385	.3828	.8404
A35	72.2769	24.4964	.3085	.8428
A36	72.3231	23.8483	.3941	.8401
A37	72.3615	23.8760	.2857	.8417
A38	72.2846	24.4532	.2483	.8429
A39	72.3000	24.3047	.2558	.8424
B1	72.3000	24.5527	.1101	.8442
B2	72.3846	23.4633	.3881	.8395
B3	72.5462	23.1180	.3362	.8412
B4	72.2692	24.7719	.0000	.8444
B5	72.2769	24.8374	－.0838	.8452
B6	72.2923	24.3790	.2487	.8427
B7	72.2923	24.3480	.2697	.8424
B8	72.4538	22.9475	.4483	.8377
B9	72.3538	24.1219	.2084	.8432
B10	72.3077	23.8891	.4481	.8398
B11	72.3615	23.4419	.4427	.8385
B12	72.2769	24.5274	.2726	.8431
B13	72.3000	24.6457	.0558	.8448
B14	72.2692	24.7719	.0000	.8444
B15	72.2923	24.1930	.3751	.8413
B16	72.3000	24.3977	.2010	.8431
B17	72.4769	22.8561	.4494	.8376
B18	72.2692	24.7719	.0000	.8444
B19	72.2923	24.9061	－.1043	.8463
B20	72.3077	24.2302	.2654	.8422
B21	72.3231	24.2514	.2102	.8429
B22	72.3077	24.5092	.1179	.8442
B23	72.3077	24.6643	.0367	.8452
B24	72.2923	24.6271	.0816	.8444
B25	72.3154	24.4191	.1482	.8438
B26	72.3231	23.7398	.4442	.8393
B27	72.2769	24.7444	.0227	.8446

B28	72.3615	23.2559	.5108	.8371
B29	72.3615	23.0233	.5968	.8353
B30	72.3154	24.1556	.2763	.8420
B31	72.2692	24.7719	.0000	.8444
B32	72.2692	24.7719	.0000	.8444
B33	72.4462	22.8072	.4969	.8364
B34	72.2692	24.7719	.0000	.8444
B35	72.4923	23.3371	.3121	.8416
B36	72.2846	24.7323	.0198	.8448
B37	72.2769	24.5274	.2726	.8431
B38	72.3462	24.0265	.2569	.8422
B39	72.4462	22.9622	.4530	.8376

Note. N of Items = 78

N of Cases = 130

Alpha = .8443

APPENDIX F

Item-total Statistics of Reliability Analysis of the CCT of the Thesis Study

Table F

Item-total Statistics of Reliability Analysis

Item #	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Alpha if item deleted
A1	72.5446	8.3305	.2529	.5477
A2	72.5644	8.7283	.0022	.5708
A3	72.4851	8.9323	−.1283	.5731
A4	72.4851	8.5523	.2496	.5535
A5	72.6040	8.1616	.2650	.5437
A6	72.4653	8.7913	.0497	.5638
A7	72.4554	8.8305	.0000	.5647
A8	72.4554	8.8305	.0000	.5647
A9	72.5347	8.3113	.2847	.5456
A10	72.5347	8.3913	.2325	.5501
A11	72.4950	8.5925	.1737	.5568
A12	72.4653	8.8313	−.0181	.5658
A13	72.4851	8.4723	.3314	.5492
A14	72.4554	8.8305	.0000	.5647
A15	72.5347	8.6913	.0410	.5661
A16	72.8515	8.5077	.0283	.5764
A17	72.5644	8.7083	.0131	.5698
A18	72.5149	8.6723	.0727	.5631
A19	72.5743	8.5669	.0829	.5634
A20	72.5050	8.3725	.3254	.5459
A21	72.4554	8.8305	.0000	.5647
A22	72.4851	8.8723	−.0697	.5701
A23	72.4554	8.8305	.0000	.5647
A24	72.4851	8.4923	.3109	.5503
A25	72.4752	8.9319	−.1446	.5720
A26	72.4554	8.8305	.0000	.5647
A27	72.4851	8.7523	.0486	.5640
A28	72.5347	8.7713	−.0090	.5701

A29	72.6040	8.5816	.0579	.5667
A30	72.4950	8.5925	.1737	.5568
A31	72.4851	8.6723	.1285	.5599
A32	72.4950	8.8325	－.0347	.5692
A33	72.5545	8.4095	.1901	.5531
A34	72.4554	8.8305	.0000	.5647
A35	72.4851	8.3523	.4554	.5425
A36	72.5644	8.3483	.2123	.5506
A37	72.6733	8.4222	.0981	.5636
A38	72.4950	8.8125	－.0175	.5681
A39	72.5149	8.5923	.1305	.5589
B1	72.4653	8.8513	－.0518	.5668
B2	72.6040	8.2416	.2248	.5483
B3	72.7723	8.0376	.2166	.5480
B4	72.4653	8.6313	.3238	.5555
B5	72.4752	8.8119	－.0012	.5660
B6	72.4554	8.8305	.0000	.5647
B7	72.4851	8.5923	.2091	.5556
B8	72.4950	8.5725	.1913	.5557
B9	72.5149	8.7923	－.0129	.5692
B10	72.5545	8.3095	.2490	.5475
B11	72.4950	8.8125	－.0175	.5681
B12	72.4554	8.8305	.0000	.5647
B13	72.4950	8.3725	.3699	.5448
B14	72.4653	8.8913	－.1191	.5688
B15	72.4851	8.7723	.0288	.5650
B16	72.4554	8.8305	.0000	.5647
B17	72.5941	8.5036	.1019	.5618
B18	72.4554	8.8305	.0000	.5647
B19	72.4851	8.9323	－.1283	.5731
B20	72.5545	8.6295	.0629	.5648
B21	72.5149	8.4523	.2330	.5513
B22	72.4950	8.8725	－.0689	.5712
B23	72.4950	8.4325	.3159	.5481
B24	72.4752	8.7719	.0470	.5639
B25	72.4752	8.8319	－.0252	.5670
B26	72.4950	8.6925	.0862	.5620
B27	72.4950	8.5325	.2267	.5535

B28	72.5446	8.5705	.1062	.5607
B29	72.5644	8.2883	.2464	.5473
B30	72.4653	8.8513	−.0518	.5668
B31	72.4554	8.8305	.0000	.5647
B32	72.4554	8.8305	.0000	.5647
B33	72.7624	8.3030	.1171	.5624
B34	72.4653	8.7713	.0837	.5628
B35	72.4752	8.8519	−.0492	.5680
B36	72.4752	8.8119	−.0012	.5660
B37	72.4554	8.8305	.0000	.5647
B38	72.4950	8.8925	−.0859	.5722
B39	72.5545	8.6695	.0401	.5669

Note. N of Items = 78

N of Cases = 101

Alpha = .5646

APPENDIX G

Descriptive Statistics of the 13 Clues of the Thesis Study

Table G1

Descriptive Statistics of C1: Words Connected or in Series

Item No.	Minimum	Maximum	Mean	SD
A1	0	1	0.91	0.29
A14	1	1	1.00	0.00
A27	0	1	0.97	0.18
B1	0	1	0.99	0.11
B14	0	1	0.99	0.11
B27	0	1	0.97	0.18

Table G2

Descriptive Statistics of C2: Modifying Phrases

Item No.	Minimum	Maximum	Mean	SD
A2	0	1	0.88	0.33
A15	0	1	0.92	0.27
A28	0	1	0.93	0.25
B2	0	1	0.84	0.37
B15	0	1	0.97	0.18
B28	0	1	0.90	0.30

Table G3

Descriptive Statistics of C3: Familiar Expression

Item No.	Minimum	Maximum	Mean	SD
A3	0	1	0.97	0.18
A16	0	1	0.58	0.50
A29	0	1	0.85	0.36
B3	0	1	0.69	0.47
B16	1	1	1.00	0.00
B29	0	1	0.91	0.29

Table G4

Descriptive Statistics of C4: Cause and Effect

Item No.	Minimum	Maximum	Mean	SD
A4	0	1	0.98	0.15
A17	0	1	0.88	0.33
A30	0	1	0.98	0.15
B4	0	1	0.99	0.11
B17	0	1	0.85	0.36
B30	0	1	0.99	0.11

Table G5

Descriptive Statistics of C5: Association

Item No.	Minimum	Maximum	Mean	SD
A5	0	1	0.84	0.37
A18	0	1	0.93	0.25
A31	0	1	0.97	0.18
B5	0	1	0.99	0.11
B18	1	1	1.00	0.00
B31	1	1	1.00	0.00

Table G6

Descriptive Statistics of C6: Referral

Item No.	Minimum	Maximum	Mean	SD
A6	0	1	0.99	0.11
A19	0	1	0.88	0.33
A32	0	1	0.96	0.21
B6	1	1	1.00	0.00
B19	0	1	0.97	0.18
B32	1	1	1.00	0.00

Table G7

Descriptive Statistics of C7: Synonym

Item No.	Minimum	Maximum	Mean	SD
A7	1	1	1.00	0.00
A20	0	1	0.96	0.21
A33	0	1	0.91	0.29
B7	0	1	0.97	0.18
B20	0	1	0.91	0.29
B33	0	1	0.69	0.47

Table G8

Descriptive Statistics of C8: Definition/Description

Item No.	Minimum	Maximum	Mean	SD
A8	1	1	1.00	0.00
A21	1	1	1.00	0.00
A34	1	1	1.00	0.00
B8	0	1	0.96	0.21
B21	0	1	0.96	0.21
B34	0	1	0.99	0.11

Table G9

Descriptive Statistics of C9: Preposition

Item No.	Minimum	Maximum	Mean	SD
A9	0	1	0.93	0.25
A22	0	1	0.97	0.18
A35	0	1	0.99	0.11
B9	0	1	0.94	0.23
B22	0	1	0.96	0.21
B35	0	1	0.98	0.15

Table G10

Descriptive Statistics of C10: Q/A

Item No.	Minimum	Maximum	Mean	SD
A10	0	1	0.92	0.27
A23	1	1	1.00	0.00
A36	0	1	0.90	0.30
B10	0	1	0.91	0.29
B23	0	1	0.96	0.21
B36	0	1	0.98	0.15

Table G11

Descriptive Statistics of C11: Comparison/Contrast

Item No.	Minimum	Maximum	Mean	SD
A11	0	1	0.96	0.21
A24	0	1	0.97	0.18
A37	0	1	0.79	0.41
B11	0	1	0.96	0.21
B24	0	1	0.98	0.15
B37	1	1	1.00	0.00

Table G12

Descriptive Statistics of C12: Main Idea/Supporting Details

Item No.	Minimum	Maximum	Mean	SD
A12	0	1	0.99	0.11
A25	0	1	0.98	0.15
A38	0	1	0.96	0.21
B12	1	1	1.00	0.00
B25	0	1	0.98	0.15
B38	0	1	0.97	0.18

Table G13

Descriptive Statistics of C13: Non-restrictive

Item No.	Minimum	Maximum	Mean	SD
A13	0	1	0.98	0.15
A26	1	1	1.00	0.00
A39	0	1	0.94	0.23
B13	0	1	0.98	0.15
B26	0	1	0.99	0.11
B39	0	1	0.92	0.27

APPENDIX H

Frequencies of Choices of the 13 Clues of the Thesis Study

Table H1

Frequencies of Choices: Words Connected or in Series

Item No.	a	b	c	d	x
A1	3	2	81*	3	0
A14	89*	0	0	0	0
A27	2	86*	1	0	0
B1	0	88*	0	1	0
B14	88*	1	0	0	0
B27	2	1	0	86*	0

Note. All the correct answer was marked with an asterisk (*N*=89) in all the 13 tables.

Table H2

Frequencies of Choices: Modifying Phrases or Clauses

Item No.	a	b	c	d	x
A2	78*	1	5	5	0
A15	4	82*	3	0	0
A28	83*	0	0	6	0
B2	75*	9	4	1	0
B15	1	1	86*	1	0
B28	2	80*	6	1	0

Table H3

Frequencies of Choices: Language Experience and Familiar Expression

Item No.	a	b	c	d	x
A3	0	86*	3	0	0
A16	52*	17	1	19	0
A29	3	2	76*	8	0
B3	7	10	61*	11	0
B16	0	0	89*	0	0
B29	3	81*	4	1	0

Table H4

Frequencies of Choices: Cause and Effect

Item No.	a	b	c	d	x
A4	0	2	87*	0	0
A17	3	0	78*	8	0
A30	0	87*	2	0	0
B4	0	1	0	88*	0
B17	5	76*	4	4	0
B30	1	0	88*	0	0

Table H5

Frequencies of Choices: Association clues

Item No.	a	b	c	d	x
A5	3	1	10	75*	0
A18	2	83*	1	3	0
A31	2	86*	0	1	0
B5	0	88*	0	1	0
B18	89*	0	0	0	0
B31	89*	0	0	0	0

Table H6

Frequencies of Choices: Referral Clues

Item No.	a	b	c	d	x
A6	88*	0	1	0	0
A19	4	2	5	78*	0
A32	85*	0	4	0	0
B6	89*	0	0	0	0
B19	86*	0	0	3	0
B32	0	0	89*	0	0

Table H7

Frequencies of Choices: Synonym Clues

Item No.	a	b	c	d	x
A7	0	89*	0	0	0
A20	1	2	1	85*	0
A33	1	5	2	81*	0
B7	1	2	0	86*	0
B20	0	5	3	81*	0
B33	5	61*	4	19	0

Table H8

Frequencies of Choices: Definition or Description

Item No.	a	b	c	d	x
A8	0	0	0	89*	0
A21	0	0	89*	0	0
A34	0	0	0	89*	0
B8	1	2	85*	1	0
B21	0	3	85*	1	0
B34	1	88*	0	0	0

Table H9

Frequencies of Choices: Preposition Clues

Item No.	a	b	c	d	x
A9	83*	1	5	0	0
A22	1	86*	0	2	0
A35	0	1	88*	0	0
B9	0	84*	2	3	0
B22	85*	3	0	1	0
B35	87*	0	2	0	0

Table H10

Frequencies of Choices: Question and Answer Pattern

Item No.	a	b	c	d	x
A10	84*	1	4	0	0
A23	0	89*	0	0	0
A36	80*	4	5	0	0
B10	6	81*	1	1	0
B23	0	85*	2	2	0
B36	0	2	0	87*	0

Table H11

Frequencies of Choices: Comparison or Contrast

Item No.	a	b	c	d	x
A11	0	2	1	86*	0
A24	2	0	86*	1	0
A37	7	1	10	70*	1
B11	85*	3	1	0	0
B24	2	0	0	87*	0
B37	0	0	89*	0	0

Table H12

Frequencies of Choices: Main Idea and Supporting Details Pattern

Item No.	a	b	c	d	x
A12	0	88*	0	1	0
A25	0	0	2	87*	0
A38	3	85*	0	1	0
B12	0	0	0	89*	0
B25	0	2	87*	0	0
B38	1	2	0	86*	0

Table H13

Frequencies of Choices: Non-restrictive Clauses

Item No.	a	b	c	d	x
A13	0	2	87*	0	0
A26	0	0	89*	0	0
A39	1	3	84*	1	0
B13	2	0	0	87*	0
B26	0	1	0	88*	0
B39	0	3	82*	3	1

REFERENCES

Anderson, N. (1999). *Exploring second language reading: Issues and strategies.* Toronto, Canada: Heinle & Heinle.

Ames, W. S. (1966). The development of a classification scheme of contextual aids. *Reading Research Quarterly, 2*(1), 57-82.

Arden-Close, C. (1993). NNS readers' strategies for inferring the meanings of unknown words. *Reading in a Foreign Language, 9*, 867-893.

Arden-Close, C. (1999). Taiwan university freshmen's difficulties with reading in English. *Reading in a Foreign Language, 12*(2), 325-354.

Askov, E. N., & Kamm, K. (1976). Context clues: Should we teach a children to use a classification system in reading? *Journal of Educational Research, 69*, 341-344.

Bachman, L. F. (2004). *Statistical analyses for language assessment*. Cambridge: Cambridge University Press.

Bauman, J. (2006). About GSL. Retrieved December 29, 2005, from http://jbauman.com/aboutgsl.html

Beglar, D., & Hunt, A. (1999). Revising and validating the 2000 Word Level and University Word Level Vocabulary Tests. *Language Testing, 16*(2), 131-162.

Blanchard, K., & Root, C. (2005). *Ready to read now*. New York: Longman.

Bengeleil, N. F., & Paribakht, T. S. (2004). L2 reading proficiency and lexical inferencing

by university EFL learners. *Canadian Modern Language Review, 61*(2), 225-249.

Blachowicz, C., Fisher, P., & Watts-Taffe, S. (2005). *Integrated vocabulary instruction: Meeting the needs of diverse learners in grades K-5* (North Central Regional Educational Laboratory No. ED-01-CO-0011). Naperville, IL: Learning Point Associates.

Carter, R., & McCarthy, M. (1988). *Vocabulary and language teaching*. New York: Longman.

Chern, C. L. (1993). Chinese students' word-solving strategies in reading in English. In T. Huckin, M. Haynes & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 67-85). Norwood, NJ: Ablex.

Chin, C. (1999). The effects of three learning strategies on EFL vocabulary acquisition. *The Korea TESOL Journal, 2*(1), 1-12.

Chujo, K., & Utiyama, M. (2005). Understanding the role of text length, sample size and vocabulary size in determining text coverage. *Reading in a Foreign Language, 17*(1), 1-22.

Coady, J. (1993). Research on ESL/EFL vocabulary acquisition: Putting it in context. In T. Huckin, M. Haynes & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 3-23). Norwood, NJ: Ablex.

Coady, J., & Huckin, T. (1997). *Second language vocabulary acquisition: A rationale for*

pedagogy. Cambridge: Cambridge University Press.

Cobb, T. (n.d.). Why & how to use frequency lists to learn words. Retrieved August 26, 2005, from http://www.lextutor.ca/ResearchWeb/

Cobb, T. (1999). Breadth and depth of lexical acquisition with hands-on concordancing. *Computer Assisted Language Learning, 12*(4), 345-360.

Cobb, T. (2006). The Compleat Lexical Tutor (Version 4.5) [Computer software] Accessed April, 16, from http://www.lextutor.ca/

Cobb, T. (2006). Web Vocabprofile (Version 2.5) [Computer software] Accessed, April, 16, from http://www.lextutor.ca/vp/, an adaptation of Heatley & Nation's (1994) Range [Computer Software].

Cobb, T., & Horst, M. (2000). Vocabulary sizes of some city university students. *City University (HK) Journal of Language Studies, 1*, 59-68.

Cohen, A. D. (1990). *Language learning: Insights for learners, teachers, and researchers*. Boston, MA: Heinle & Heinle.

Coxhead, A (2000). A new academic word list. *TESOL Quarterly, 34*(2), 213-238.

Cunningham, A. E., & Stanovich, K. E. (1991). Tracking the unique effects of print exposure in children: Association of vocabulary, general knowledge, and spelling. *Journal of Educational Psychology, 83*, 264-274.

Decarrico, J. S. (2001). Vocabulary learning and teaching. In M. Celce-Murcia

(Ed.), *Teaching English as a second or foreign language* (3rd ed.) (pp.285-299). Boston, MA: Heinle & Heinle.

Dubin, F., & Olshtain, E. (1993). Predicting word meanings from contextual clues: Evidence from L1 readers. In T. Huckin, M. Haynes & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 181-202). Norwood, NJ: Ablex.

Durkin, D. (1993). *Teaching them to read* (6th ed.). Boston, MA: Allyn & Bacon.

Dycus, D. (1997). Guessing word meaning from context: Should we encourage it? [Electronic version]. *Literacy Across Cultures, 1*(2). Retrieved December 10, 2005, from http://www2.aasa.ac.jp/~dcdycus/LAC97/guessing.htm

Elley, W. B. (1991). Acquiring literacy in a second language: The effect of book-based programs. *Language Learning, 41*(3), 375-441.

Elley, W. B. (2000). The potential of book floods for raising literacy levels. *International Review of Education, 46*, 233-255.

Fraser, C. A. (1999). Lexical processing strategy use and vocabulary learning through reading. *SSLA, 21*, 225-241.

Grabe, W. (2002). Dilemmas for the development of second language reading ability. In J. C. Richards, & W. A. Renandya (Eds.), *Methodology in language teaching: An anthology of current practice* (pp. 276-286). New York: Cambridge University

Press.

Grabe, W. (2006). [Review of the book *Insights into second language reading*]. *Reading in a Foreign Language, 18*(1), 74-79.

Grabe, W., & Stoller, F. L. (1997). Reading and vocabulary development in a second language: A case study. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition: A rationale for pedagogy* (pp. 98-122). New York: Cambridge University Press.

Gu, Y. (1994, March). *Vocabulary learning strategies of good and poor Chinese EFL learners*. Paper presented at TESOL '94: The 28th Annual Convention and Exposition, Baltimore, MD.

Gu, Y. (2003). Vocabulary learning in a second language: Person, task, context and strategies. *TESL-EJ, 7*(2), 1-25. Retrieved December 12, 2005, from http://tesl-ej.org/ej26/a4.html

Gu, Y., & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language Learning, 46*(4), 643-679.

Haynes, M. (1993). Patterns and perils of guessing in second language reading. In T. Huckin, M. Haynes, & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 46-64). Norwood, NJ: Ablex.

Heatley, A., & Nation, P. (1994). *Range*. Victoria University of Wellington, NZ. [Computer program, available at http://www.vuw.ac.nz/lals/].

Herman, P. A., Anderson, R. C., Pearson, P. D., & Nagy, W. E. (1987). Incidental acquisition of word meaning from expositions with varied text features. *Reading Research Quarterly, 22*(3), 263-284.

Horst, M. (2005). Learning L2 vocabulary through extensive reading: A measurement study. *Canadian Modern Language Review, 61*(3), 355-382.

Horst, M., Cobb, T., & Meara, P. (1998). Beyond a Clockwork Orange: Acquiring second language vocabulary through reading. *Reading in a Foreign language, 11*(2), 207-223.

Hu, M., & Nation, P. (2000). Unknown vocabulary density and reading comprehension. *Reading in a Foreign Language, 13*(1), 403-430.

Huang, C. C. (1999). *The effects of vocabulary knowledge and prior knowledge on reading comprehension of EFL students in Taiwan*. Unpublished doctorial dissertation, Ohio University, Athens, OH.

Huang, C. C. (2000). A threshold for vocabulary knowledge on reading comprehension. *Proceedings of the Seventeenth Conference on English Teaching and Learning in the Republic of China* (pp. 132-144). Taipei, Taiwan: The Crane.

Huang, C. C. (2003). Senior high students' vocabulary knowledge, content knowledge,

and reading comprehension. In Y. Chen & Y. Leung (Eds.), *Selected Papers from the Twelfth International Symposium on English Teaching* (pp. 391-402). Taipei, Taiwan: The Crane.

Huang, C. C., Lin, S. J., & Su, S. C. (2004). The effects of phonological awareness training on technological university students' phonics and vocabulary knowledge. *Journal of National Taipei Teachers College, 17*(1), 59-90.

Huckin, T., & Bloch, J. (1993). Strategies for inferring word-meanings in context: A cognitive model. In T. Huckin, M. Haynes, & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 153-178). Norwood, NJ: Ablex.

Hulstijn, J.H (1992). Retention of inferred and given word meanings: Experiments in incidental vocabulary learning. In P. J. L Arnaud & H. Bejoint (Eds.), *Vocabulary and Applied Linguistics* (pp. 113-125), London: Macmillan.

Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses dictionary use, and reoccurrence of unknown words. *The Modern Language Journal, 80*(3), 327-339.

Hunt, A., & Beglar, D. (2002). Current research and practice in teaching vocabulary. In J. C. Richards & W. A. Renandya (Eds.), *Methodology in language teaching: An anthology of current practice* (pp. 258-265). New York: Cambridge University

Press.

Hunt, A, & Beglar, D. (2005). A framework for developing EFL reading vocabulary. *Reading in a Foreign Language, 17*(1), 23-59.

Irvin, J. L. (2001). Assisting struggling readers in building vocabulary and background knowledge. *Voices from the Middle, 8*(4), 37-43.

Kameenui, E. J., Carnine, D. W., & Freschi, R. (1982). Effects of text construction and instructional procedures for teaching word meanings on comprehension and recall. *Reading Research Quarterly, 17*, 367-388.

Knight, S. (1994). Dictionary use while reading: The effects on comprehension and vocabulary acquisition for students of different verbal abilities. *Modern Language Journal, 78*(3), 285-299.

Krashen, S. D. (1993a). *The power of reading: Insights from the research.* Englewood, CO: Libraries Unlimited.

Krashen, S. D. (1993b). The case for free, voluntary reading. *Canadian Modern Language Review, 50*(1), 72-82.

Krashen, S. D. (2003). *Explorations in language acquisition and use: The Taipei lectures.* Portsmouth, NH: Heinemann.

Kuhn, M. R., & Stahl, S. A. (1998). Teaching children to learn word meanings from context: A synthesis and some questions. *Journal of Literacy Research, 30*(1),

119-138.

Kuhn, M. R., & Stahl, S. A. (2004). Fluency: A review of developmental and remedial practices. In R. Ruddell, & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed.) (pp. 412-453). Newark, DE: International Reading Association.

Laufer, B. (1989). What percentage of text-lexis is essential for comprehension? In C. Lauren & M. Nordman (Eds.), *Special language: From human thinking to thinking machines* (pp. 316-323). Clevedon, UK: Multilingual Matters.

Laufer, B. (1997). The lexical plight in second language reading: Words you don't know, words you think you know, and words you can't guess. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition: A rationale for pedagogy* (pp. 20-34). New York: Cambridge University Press.

Laufer, B., & Nation, P. (1995). Vocabulary size & use: Lexical richness in L2 written productions. *Applied Linguistics, 16*(3), 307-322.

Laufer, B., & Sim, D. D. (1985). Measuring and explaining the reading threshold needed for English for academic purposes texts. *Foreign Language Annuals, 18*(5), 405-411.

Laufer, B., & Yano, Y. (2001). Understanding unfamiliar words in a text: Do L2 learners understand how much they don't understand? *Reading in a Foreign Language, 13*(2), 549-566.

Lawson, M. J., & Hogben, D. (1996). The vocabulary-learning strategies of foreign-language students. *Language Learning, 46*(1), 101-135.

Lehr, F., Osborn, J., & Hiebert, E.H. (2004). *Research-based practices in early reading series: A focus on vocabulary* (Regional Education Laboratory No. ED-01-CO-0014). Honolulu, HI: Pacific Resources for Education and Learning. Retrieved March 6, 2006, from Pacific Resources for Education and Learning Web site: http://www.prel.org/products/re_/ES0419bw.pdf

Lehr, F., & Osborn, J. (2005). *Research-based practices in early reading series: A focus on comprehension* (Regional Education Laboratory No. ED-01-CO-0014). Honolulu, HI: Pacific Resources for Education and Learning. Retrieved March 14, 2006, from Pacific Resources for Education and Learning Web site: http://www.prel.org/products/re_/re_focuscomp.pdf

Lewis, M. (2002). *The lexical approach: The state of ELT and a way forward*. Boston, MA: Heinle/Thomson.

Li, Y.-C. (2004). *A study of technological university freshmen's performances in decoding vocabulary and strategy selection*. Unpublished master's thesis, National Yunlin University of Science & Technology, Yunlin, Taiwan.

Lin, W.-T. (2003). *A study of TVES college students' vocabulary size and the vocabulary of their English-field specific textbooks.* Unpublished master's thesis, National

Yunlin University of Science & Technology, Yunlin, Taiwan.

Meara, P. (1993). Tintin and the world service: A look at lexical environments. *IATEFL: Annual Conference Report*, 32-37.

Meara, P., Lightbown, P. M., & Halter, R. (1997). Classrooms as lexical environments. *Language Teaching Research, 1*(1), 28-46.

Melka, F. (1997). Receptive vs. productive aspects of vocabulary. In N. Schmitt, & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 84-102). Cambridge: Cambridge University Press.

Mikulecky, B. S. (1990). *A short course in teaching reading skills*. New York: Addison-Wesley.

Mondria, J. (2003). The effects of inferring, verifying, and memorizing on the retention of L2 word meanings: An experimental comparison of the "meaning-inferred method" and the "meaning-given method." *SSLA, 25*, 473-499.

Morris, L., & Cobb, T. (2004). Vocabulary profiles as predictors of the academic performance of teaching English as a second language trainees. *System, 32*, 75-87.

Nagy, W. (1997). On the role of context in first- and second- language vocabulary learning. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 63-84). Cambridge: Cambridge University Press.

Nagy. W. (2003). *Complex casual links between vocabulary knowledge and reading*

comprehension: A rationale for a long-term, comprehensive approach to promoting vocabulary growth. Paper presented at the 2003 Focus on Vocabulary Forum, Dallas, TX.

Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly, 20*, 233-253.

Nassaji, H. (2004). The relationship between depth of vocabulary knowledge and L2 learners' lexical inferencing strategy use and success. *Canadian Modern Language Review, 61*(1), 107-134.

Nation, I. S. P. (1990). *Teaching and learning vocabulary*. Boston, MA: Heinle & Heinle.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.

Nation, P. (2002). *Managing vocabulary learning*. Paper presented at RELC Portfolio Series 2, RELC, Singapore.

Nation, P. (2004). Evaluating your vocabulary programme. In Y. Leung & Y. Chen (Eds.), *Selected Papers from the Thirteenth International Symposium on English Teaching* (pp. 91-97). Taipei, Taiwan: The Crane.

Nation, P., & Coady, J. (1988). Vocabulary and reading. In R. Carter & M. McCarthy (Eds.), *Vocabulary and language teaching* (pp. 98-110). New York: Longman.

Nation, P., & Hwang, K. (1995). Where would general service vocabulary stop and

special purposes vocabulary begin? *System, 23*, 35-41.

Nation, P., & Meara, P. (2002). Vocabulary. In N. Schmitt (Ed.), *An introduction to applied linguistics* (pp. 35-54). London: Arnold.

Nation, P., & Waring, R. (1997). Vocabulary size, text coverage and word lists. In N. Schmitt, & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 6-19). Cambridge: Cambridge University Press.

National Institute of Child Health and Human Development (NRP) (2000). *Report of the National Reading Panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups.* Washington, DC: National Institute of Child Health and Human Development Clearinghouse.

Nurweni, A., & Read, J. (1999). The English vocabulary knowledge of Indonesian university students. *English for Specific Purposes, 18*(2), 161-175.

Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. Boston, MA: Heinle & Heinle.

Paribakht, T. S., & Wesche, M. (1997). Vocabulary enhancement activities and reading for meaning in second language vocabulary acquisition. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition: A rationale for pedagogy* (pp. 174-200). New York: Cambridge University Press.

Paribakht, T. S., & Wesche, M. (1999). Reading and "incidental" L2 vocabulary acquisition: An introspective study of lexical inferencing. *Studies in Second Language Acquisition, 21*, 195-224.

Pigada, M., & Schmitt, N. (2006). Vocabulary acquisition from extensive reading: A case study. *Reading in a Foreign Language, 18*(1), 1-28.

Qian, D. D. (1999). Assessing the roles of depth and breadth of vocabulary knowledge in reading comprehension. *Canadian Modern Language Review, 56,* 282-308.

Qian, D. D. (2002). Investigating the relationship between vocabulary knowledge and academic reading performance: An assessment perspective. *Language Learning, 52*(3), 513-536.

Qian, D. D., & Schedl, M. (2004). Evaluation of an in-depth vocabulary knowledge measure for assessing reading performance. *Language Testing, 21*(1), 28-52.

Rankin, E. F., & Overholser, B. M. (1969). Reaction of intermediate grade children to contextual clues. *Journal of Reading Behavior, 1*, 50-73.

Read, J. (1993). The development of a new measure of L2 vocabulary knowledge. *Language Testing, 10*, 355-371.

Read, J. (2000). *Assessing vocabulary*. Cambridge: Cambridge University Press.

Rubin, J., & Thompson, I. (1994). *How to be a more successful language learner: Toward learner autonomy* (2nd ed.). Boston, MA: Heinle & Heinle.

Sanaoui, R. (1995). Adult learner's approaches to learning vocabulary in second languages. *The Modern Language Journal, 79*(1), 15-28.

Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 199-227). Cambridge: Cambridge University Press.

Schmitt, N. (2000). *Vocabulary in language teaching*. Cambridge: Cambridge University Press.

Schmitt, N., Schmitt, D., & Clapham, C. (2001). Developing and exploring the behaviour of two new versions of the VLT. *Language Testing, 18*(1), 55-88.

Schwanenflugel, P. J., Stahl, S. A., & McFalls, E. L. (1997). Partial word knowledge and vocabulary growth during reading comprehension. *Journal of Literacy Research, 29*(4), 531-553.

Seliger, H. W., & Shohamy, E. (1989). *Second language research methods*. New York: Oxford University Press.

Sevier, M. (2004). [Review of the media *The Compleat Lexical Tutor v.4*]. *TESL-EJ, 8*(3), M2.

Soria, J. (2001). A study of Ilokano learners' lexical inferencing procedures through think-aloud. *Second Language Studies, 19*(2), 77-110.

Sternberg, R. J., & Powell, J. S. (1983). Comprehending verbal comprehension. *American*

Psychologist, 38, 878-893.

Varma, S. (2007). *Preliminary item statistics using point-biserial correlation and p-values*. Retrieved March 21, 2007, from the Educational Data Systems.

Waring, R. (2002). Basic principles and practice in vocabulary instruction. *The Language Teacher, 26*(7), 11-13.

Waring, R., & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, *15*(2), 130-163.

Waring, R., & Nation, P. (2004). Second language reading and incidental vocabulary learning. *Angles on the English-Speaking World*, *4*, 11-23.

West, M. (1953). General service list, In J. Bauman & B. Culligan (1995), *About the GSL*. Retrieved March 14, 2006, from http://jbauman.com/gsl.html

Yin, M. T. (2005). *The impact of pleasure reading and university EFL students' English reading attitudes*. Unpublished master's thesis, Tunghai University, Taichung, Taiwan.

Yu, S. Y. (2001). Acquiring vocabulary through a context-based approach. *Forum*, *39*(1), 18-23.

Zahar, R., Cobb, T., & Spada, N. (2001). Acquiring vocabulary through reading: Effects of frequency and contextual richness. *Canadian Modern Language Review*, *57*(4),

541-572.

Zimmerman, C. B. (1997). Historical trends in second language vocabulary instruction. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition: A rationale for pedagogy* (pp. 5-19). New York: Cambridge University Press.

Zukowski, J., Johnston, S. S., & Templin, E. E. (2002). *In context: Developing academic reading skills* (3rd ed.). Boston, MA: Heinle & Heinle.

尤菊芳（1998**）。 淺談英文單字教學。 載於依筱雯（主編），國中英語教學面面觀（**33-38 **頁）。 台北：敦煌。**

尤菊芳（1999**）。三折式單字卡的妙用。敦煌英語教學雜誌**，25，40-44。

http://www.cavesbooks.com.tw/Webpage/New/BeginningWeb/index.htm