高中生字彙鞏固策略之認知及使用之研究

High School Student Awareness and Use of Vocabulary Consolidation Strategies

by

蕭黃介　Huang-Chieh Hsiao

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

June 2008

中 華 民 國 九 十七 年 六 月

博碩士論文電子檔案上網授權書

（提供授權人裝訂於紙本論文書名頁之次頁用）

本授權書所授權之論文爲授權人在 東海大學 外國語文學系 英語教學組 96 學年度第 二 學期取得 碩士 學位之論文。

論文題目： 高中生字彙鞏固策略之認知及使用之研究

指導教授： 尤菊芳博士

茲同意將授權人擁有著作權之上列論文全文（含摘要），非專屬、無償授權國家圖書館及本人畢業學校圖書館，不限地域、時間與次數，以微縮、光碟或其他各種數位化方式將上列論文重製，並得將數位化之上列論文及論文電子檔以上載網路方式，提供讀者基於個人非營利性質之線上檢索、閱覽、下載或列印。

- 讀者基非營利性質之線上檢索、閱覽、下載或列印上列論文，應依著作權法相關規定辦理。

授權人： 蕭黃介

簽　名： 蕭黃介　　中華民國 97 年 07 月 30 日

東海大學碩士學位論文考試審定書

外國語文學系 碩士班

研究生 Mr. Huang-Chieh Hsiao (蕭黃介) 所撰之論文：

High School Student Awareness and Use of Vocabulary Consolidation Strategies

高中生字彙鞏固策略之認知及使用之研究

經本委員會審查，符合碩士學位論文標準。

學位考試委員會

指導教授 _____

考試委員 _____

_____

_____

系主任 _____

中華民國 九十七 年 六 月 二十五 日

ACKNOWLEDGEMENTS

I was fortunate to have many people around me who constantly supported me during the work process of this thesis. Without their assistance and encouragement, the completion of this thesis would not have been possible.

First and foremost, my grateful thanks go to my supervisor, Dr. Jyu-fang Yu, for her guidance, advice, encouragement and patience throughout my research for this work. She provided insight that ultimately led to the unique data analysis methods of this study, differing from the research methodologies of previous related studies, and which helped increase the reliability/validity of findings of this study. Moreover, without her contributions of time and diligent effort to discuss this research work repeatedly with me, I would not have been able to work towards my goal. For this I thank her.

I would also like to express my profound gratitude to my thesis committee members, Dr. Wei-Wei Shen in the Department of Foreign Languages and Literature at Feng Chia University, and Dr. Kathleen Seaton in the Department of Foreign Languages and Literature at Tunghai University. Their constructive suggestions helped me improve the content of the thesis and make it as

comprehensive as possible, and their warm encouragement was invaluable to me.

Special thanks extend to Dr. Jung-Han Chen for his kindness and enthusiasm in instructing me how to solve statistical problems. I wish to thank my friend, Michael Turton, for his efficient proofreading of the manuscript many times to help detect any typos or ungrammatical errors that the researcher had not noticed.

There are many friends and classmates to whom I also owe a debt of thanks. Vanessa Lin helped me in collecting the data; Bertha Lee assisted me in dealing with innumerable trifles; Catherine Liang and Jack Wang helped me set up facilities in my proposal and final thesis defense meetings. Thanks go to my classmates, Eva Chang, Samantha Tai, Michelle Cheng, Amanda Huang, Katie Lin, Fangle Chen, and Rita Nieh for their encouragement during the whole process.

Finally, I am deeply indebted to my family. Their support and blessings have kept me going and enabled me to complete this thesis.

CHINESE ABSTRACT

高中生字彙鞏固策略之認知及使用之研究

研究生：蕭黃介
指導教授：尤菊芳博士

摘要

近年來在 ESL/EFL 相關研究中，字彙學習策略受到越來越多的關注。研究指出：語言教師對詞彙記憶方式的了解，可能幫助他們協助學生擴展字彙能力。然而，審閱過去字彙鞏固策略文獻中的研究方法，不禁讓人質疑這些研究所提出的教學建議，是否都有充分的依據？譬如：有些被認為是有效的字彙鞏固策略是由很少使用或甚至從未使用該策略的學習者所評估的。因此重新檢視字彙鞏固策的成效有其必要性，而將之應用於教學上的建議也應更審慎以對。

有鑒與此，本研究設計了一套問卷來蒐集高中生 a）對字彙鞏固策略的認知、b）策略的使用狀況、c）策略的有效性評估、d）及學生在課堂內外策略的使用情形。在分析資料的過程中，研究對象不知道的策略，一律被當作不曾使用。如果研究對象不曾使用、或極少使用某一個策略，他們對該策略的成效評估則被移除。如此一來，可大大增加本研究對字彙策略成效評估的可信度。

本研究結果顯示：整體而言，研究對象的高中生對於字彙鞏固策略有中等的認知。在使用頻率上，雖然他們偶爾也會使用不同策略，但最常使用的仍舊是利用字音、字型來背單字的「記憶策略」與「認知策略」。根據他們的經驗，使用這些策略的效果相當不錯。分析策略使用的情境發現：大多數的策略都會同時被應用在課堂內、外的情境中。此外，與過去文獻報告的比較亦發現不少在策略使同及成效評估上的相似及相異之處。最後，本研究的不足之處、根據本研究結果所延伸出的教學應用與未來研究方向的建議，均將在本論文之結論中逐一闡述。

關鍵字： 字彙學習策略、 字彙鞏固策略、 字彙記憶

High School Student Awareness and Use of Vocabulary Consolidation Strategies

Huang-Chieh Hsiao
Advisor: Dr. Jyu-fang Yu

ABSTRACT

Recent years have seen increased attention given to vocabulary learning strategies in ESL/EFL research on the grounds that understanding how learners approach vocabulary retention is of great importance for language teachers in fostering lexical development. However, examination of previous studies has led the researcher to question whether the empirical foundation of this body of research is creditable enough to support the pedagogical suggestions derived from it. Certain strategies reported as effective are infrequently or even never used by participants; yet these findings serve as the basis for pedagogical recommendations. The ratings of the efficacy of these vocabulary consolidation strategies have to be reevaluated, and recommendations for their application must be made with caution.

With the limitation of previous studies in mind, the researcher developed a questionnaire wherein the participants (EFL high school students) needed to respond to four questions in the following order: (a) how much knowledge of

vocabulary consolidation strategies they had, (b) how often certain strategies were used, (c) how effective the strategies were perceived to be, and (d) in what spatial contexts (in-class/outsides-class) the strategies were used. It is important to note that those respondents who were unaware of the strategies were treated as having indicated *rarely/never* use the strategies. Ratings of low frequency were removed to increase the validity/reliability of the research results. In addition, comparisons were made to demonstrate the dis/similarities between the current study and previous research.

The results of this study revealed that high school students' strategy awareness, on the whole, reached a moderate level. Overall, they were moderate users of the strategies but inclined to use frequently certain memory and cognitive strategies, especially focusing on the phonological/orthographical forms of the new words, which were rated as very effective as well. In general, the majority of the learners used the strategies without differentiating spatial contexts. In addition, similarities and dissimilarities are discussed through comparison of the findings of this study with those of earlier studies. On the basis of the research results, some pedagogical implications and suggestions for future research are drawn to close this study.

Key words: vocabulary learning strategies, vocabulary consolidation strategies, word retention

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

According to a report released by the Language Training and Testing Center (1999), the agency that administers the General English Proficiency Test (GEPT), Taiwanese high school learners have problems reading English, and this underachievement in GEPT intermediate reading tests is primarily attributed to test takers' insufficient vocabulary size. Huang (2003) reported that breadth of vocabulary of 347 third-year high school students from different parts of Taiwan fell between 1,000 and 2,000 word families[1]. In contrast with a vocabulary threshold of around 5,000 words suggested for readers to reach a minimal fluent level of English reading comprehension (Laufer, 1997; Nation & Waring, 1997), the overall vocabulary abilities of Taiwan's high school graduates is far from satisfactory. Thus, the incorporation of vocabulary learning strategies, especially consolidation strategies (i.e., the strategies aimed at facilitating word retention), into language teaching has been suggested by language educators to improve the

[1] A word family refers to a based word consisting of its inflected and derived forms (Read, 2000; Schmitt & McCarthy, 1997). An example can be seen in the word *analyze,* with its inflections *analyzes, analyzed* and *analyzing* as well as its derivatives *analysis, analytical, analyst,* or *analyzable*. To converse word families to the lexical items, Nation (1983, as cited in Huang, 2000) proposed a conversion formula: *numbers of word family* × *1.6* (e.g., 1000 word families are around 1600 words).

effectiveness of vocabulary memorization by students to expand student vocabulary size (Fan, 2003; Nation, 2001, 2004; Nation & Meara, 2002; Kojic-Sabo & Lightbown, 1999; Schmitt, 2000; Shen, 2004; Tsuchida, 2002).

The growing interest in the study of vocabulary development has led to further understanding of vocabulary learning strategies and their applications. Some studies have examined the relationship between language proficiency and use of strategies (Fan, 2003; Gu, 1994; Gu & Johnson, 1996; Kojic-Sabo & Lightbown, 1999; Kudo, 1999; Sahbazian, 2004), the relationship between vocabulary size and learning strategies (Kojic-Sabo & Lightbown, 1999), strategy use and perceived usefulness of vocabulary learning strategies (Fan, 2003; Schmitt, 1997) and the gender differences in the vocabulary learning strategy use (Catalán 2003). In Taiwan, scholars have also investigated related topics, including the relationship between junior/senior high school learners' language proficiency and their use of vocabulary learning strategies (Jiang, 2001; Shih, 2004; Wang, 2004), elementary school student vocabulary learning strategy use (Kung, 2004), college students' preference for use of vocabulary learning strategies and their evaluation of the effectiveness of the strategies (Chen, 1998; Shen, 2004), and learner (combination of college and junior/senior high school students) pattern of the

usage of vocabulary learning strategies and learner perception of the usefulness of the strategies (Chen, 1998; Wu, 2005). Although much research has been devoted to vocabulary learning strategies of learners, little direct research has examined learner awareness of vocabulary consolidation strategies.

1.1 Statement of the Problems

EFL learners typically regard vocabulary retention as the largest obstruction to English proficiency progress (Folse, 2004; Gu, 1994; Oxford, 1990; Yu, 1998). For example, more than one third of the second-year high school students (N=262) in Yu's study (1998) indicated that vocabulary consolidations posed the greatest challenge to their English learning achievement. Given that English teachers typically do not devote much class time facilitating student vocabulary retention, language educators have claimed that raising awareness of diversified approaches to vocabulary acquisition is essential for students to foster their lexical development and become independent learners (Kojic-Sabo & Lightbown, 1999; Shen, 2004). Before implementing strategy awareness-raising instructions for vocabulary development, it is necessary to examine closely what consolidation strategies learners use to commit the words to memory.

A review of the literature on strategies for vocabulary learning has shown that some studies have attempted to explore the overall use of vocabulary learning strategies by Taiwanese students and students from different countries and their beliefs about the helpfulness of these strategies (Chen, 1998; Wu, 2005). However, examination of these studies has driven the researcher to question whether the empirical foundation of this body of research is sufficient to support the pedagogical suggestions that it is used to support. Participant opinions are used as the basis for developing research findings when certain strategies rated as helpful have infrequently, or even *never*, been used by participants. Consequently, the validity and reliability of such research results on the efficiency evaluation of the strategies are questionable. The ratings of the effectiveness of vocabulary consolidation strategies thus have room to be reevaluated.

Moreover, the contexts in which the learners use these strategies need to be uncovered. Some students may use certain strategies more frequently in one spatial context than in the other. Kudo (1999) suggests that "home context" be distinguished from "school context" in the questionnaire (p.31), which has not been a common practice in research design for learner strategy study. Little research has attempted to clarify this spatial contextual difference so far.

1.2 Purpose of the Study and Research Questions

With the above caution in mind, the purposes of the present study were fourfold: (a) to understand high school students' awareness of consolidation strategies, (b) to explore their repertoire of strategies for vocabulary retention, (c) to examine their evaluation of the strategy efficacy, and (d) to identify their use of the strategies based on the spatial contexts of in-class and outside-class. In view of the preceding research objectives, the following research questions were posed:

1. How much do high school students know about consolidation strategies?
2. What consolidation strategies are used most and least frequently by high school students?
3. What are high school student evaluations of the effectiveness of these consolidation strategies?
4. What are the most used consolidation strategies by high school students in specific spatial contexts (in-class and outside-class)?

1.3 Definition of Terms

To avoid confusion of the terms used in this study, the following definitions

are presented and used in the study.

1. Strategies: procedures undertaken to achieve a goal (Richards & Schmidt, 2002). In this study, *strategies* is used interchangeably with *approaches* and *methods*.
2. Learning strategies: specific actions taken by individuals to facilitate their learning (Oxford, 1990).
3. Vocabulary learning strategies: approaches which learners use to help accomplish two aspects of vocabulary learning: first, to obtain meanings of the new words; and second, to make the words stay in the memory. On the basis of these two goals for vocabulary learning, vocabulary learning strategies can further be divided into *discovery* and *consolidation strategies*:
   (1) Discovery strategies: strategies aimed at discovering the meaning of a word (Schmitt, 1997).
   (2) Consolidation strategies: strategies aimed at assisting learners in word retention (Schmitt, 1997).
4. Student awareness of consolidation strategies: measured by the percentage of students who indicate that they are aware of the strategies as presented in a questionnaire. The students respond to a yes-no question, “Have you heard of

the following strategies", to determine whether they are aware of the strategies or not.

5. Student use of consolidation strategies: action measured by student response to questions on the frequency of use of the given strategies. Based on the learning situation, students rate the strategy statements listed in a questionnaire on a four point Likert scale from "Almost always" (4 points) to "Rarely/never" (1 point).

6. Student evaluation of the efficiency of consolidation strategies: measured by student responses to questions asking about the degree of effectiveness of the strategies presented in the questionnaire. Based on their experiences of strategy use, students rate each strategy in a questionnaire on a four point Likert scale from "Very effective" (4 points) to "Not effective at all" (1 point).

1.4 Significance of the Study

With the intention of promoting the lexical development of high school students via offering students appropriate strategy instruction, it is crucial that language educators first understand the actual repertoire of student vocabulary

consolidation strategies. Given this need, this study may contribute to a better overview of high school learners' learning situation in vocabulary retention. It is hoped that the research finding will be useful in clarifying student awareness of consolidation strategies, unveil student use of the strategies, and understand student evaluation of the efficiency of the strategies. In addition, this study may help promote the frequency and quality of vocabulary consolidation strategy instruction and foster instructor reflection on pedagogical practices. Furthermore, unlike many previous studies, participants unaware of a given strategy do not rate the frequency and efficacy of the strategies, and those who had *never* or *rarely* used the strategies rated were eliminated from the study before conducting the data analysis. In this way it was hoped that the research results would be more valid and reliable.

For the research objectives stated earlier to be achieved, this thesis is structured as follows. Chapter 2 provides a review of the past literature relevant to vocabulary learning strategies. This is followed by the methodology adopted in this study (Chapter 3). The research results are presented and discussed in Chapter 4. Finally, conclusions are drawn (Chapter 5).

CHAPTER TWO

REVIEW OF THE LITERATURE

By the beginning of the 1970s, researchers in the field of second language acquisition had come to understand that research into language teaching methods was not sufficient to explain learner differences in language proficiency and learning achievement. Research interest gradually shifted to learner characteristics and learner strategies for languages learning (Tamada, 1997). This period has seen increased attention given to the research field of *learning strategies* of language learners (Hsiao & Oxford, 2002; Schmitt, 1997); however, at the same time, relatively little attention was devoted to the area of vocabulary learning strategies (Schmitt, 1997). Not until the 1980s did vocabulary become an area to which increased attention was given in second language acquisition (Seal, 1991). Three developments in language teaching would account for this emergence of interest in vocabulary: First, the traditional instruction of syntax has been deemphasized; secondly, the emergence of the communicative approach has called for vocabulary knowledge; finally, teachers of English for Academic Purposes (EAP) have noticed that many nonnative students do not have sufficient vocabularies. “Thus, the de-emphasis on grammar, the newly placed emphasis on communication, and

the perceived needs of EAP students have had the effect of elevating the importance of vocabulary" (Seal, 1991, p.298). As the critical role of vocabulary in the process of language learning and the research gap between vocabulary learning and leaning strategies became apparent, researchers have become increasingly interested in vocabulary learning strategies in recent years (e.g., Catalán 2003; Chen, 1998; Fan, 2003; Gu, 1994; Gu & Johnson, 1996; Kojic-Sabo & Lightbown,1999; Kudo, 1999; Schmitt,1997; Wu, 2005).

The purpose of this chapter is to review the research conducted in the field of vocabulary learning strategies. Prior to the review of previous research, some background information is needed to contribute to a better overview of this research area. The first section thus examines the development of language learning strategies and vocabulary learning strategies. Next, an emphasis is placed on the taxonomies of vocabulary learning strategies, with a particular focus on the components of consolidation strategies. In the final section, the results reported by past studies on discovery strategies and consolidation strategies are reviewed.

2.1 Language Learning Strategies

Vocabulary learning strategies stems from the definition of *language*

learning strategies (Nation, 2001); for this reason, clarifying the term of learning strategies is a prerequisite to understanding vocabulary learning strategies. Various definitions of language learning strategies have been proposed over the course of decades of research (e.g., Chamot, 1998; Chamot, 2005; Cohen, 1998; Cohen & Dörnyei, 2002; Gu, 2003, 2005; O'Malley & Chamot, 1990; Oxford, 1990; Rubin, 1987). These conceptions of language learning strategies in the past literature fall into two main overlapping groups. In a broad sense, learning strategies are *thoughts* or *behaviors* that the learners use to enhance their comprehension of the target inputs and help govern their language learning (Chamot, 1998; Cohen & Dörnyei, 2002; O'Malley & Chamot, 1990). In a narrow sense, strategies involve a series of *procedures*, *actions*, or *steps* adopted by learners to make learning processes (such as the acquisition or application of information) easier and expedite achieving desired learning outcomes (Chamot, 2005; Cohen, 1998; Gu, 2005; Oxford, 1990; Rubin, 1987). This distinction between these two types of language learning strategy conceptions is summarized chronologically in Table 2.1 and Table 2.2. Despite the differences between these perspectives, language learning strategies are popularly considered to be able to facilitate individual language learning.

Table 2.1

Definitions of Language Learning Strategies—Broad Perspectives

Researchers	Definitions	Functions
O'Malley & Chamot (1990, p.1)	the special *thoughts* or *behaviors* that individuals use	to help them comprehend, learn, or retain new information.
Chamot (1998, p.4)	the *thoughts* that students have and *actions* that they can take	to assist their comprehension, recall, production, and management of their language learning
Cohen & Dörnyei (2002, p.178)	the conscious and semiconscious *thoughts* and *behaviors* used by learners	[to improve] their knowledge and understanding of a target language.

Note. Keywords are highlighted in italics.

Table 2.2

Definitions of Language Learning Strategies—Narrow Perspectives

Researchers	Definitions	Functions
Rubin (1987, p.19)	any set of *operations*, *steps*, *plans*, *routines* used by the learner	to facilitate the obtaining, storage, retrieval and use of information
Oxford (1990, p. 8)	*specific actions* taken by the learner	to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations
Cohen (1998, p.4)	those *processes* which are consciously selected by learners and which may result in *action* taken	to enhance the learning and use of a second of foreign language, through the storage, retention, recall, and application of information about that language
Chamot (2005, p.112)	*procedures*	[to] facilitate a learning task
Gu (2005, p.16)	a series of *actions* a learner takes	to facilitate the completion of a learning task

Note. Keywords are highlighted in italics.

Gu (2005) further explains how learners utilize language learning strategies to help complete learning tasks in more detail:

> A strategy starts when the learner analyses the task, the situation, and what is available in his/her own repertoire. The learner then goes on to select, deploy, monitor, and evaluate the effectiveness of this action, and decides if s/he needs to revise the plan and action. (p.16)

Given that the characteristics of learning strategies involve the *learners' own choices* (Nation, 2001), researchers have emphasized that "consciousness" is an important distinguishing feature which separates learning strategies from other non-strategic learning processes (Chamot, 2005; Cohen, 1998; Cohen & Dörnyei 2002; Oxford, 1990).

2.2 Vocabulary Learning Strategies

Language learning strategies can be categorized by language skills, such as, reading, listening, speaking, writing, or vocabulary strategies (Cohen, 2007). With such understanding, it is clear that vocabulary strategies can be adopted by learners to enhance their effectiveness of vocabulary learning processes (Nation, 2001). To comprehend the notion of vocabulary learning strategies, it is necessary

to have knowledge of knowing a word and obtain an overview of vocabulary learning process of learners. This section first reviews the concept of knowing a word and two models created by Brown and Payne (1994, as cited in Hatch & Brown, 1995) and Shen (2003) for how learners approach learning vocabulary; then represents previous researchers' interpretations of what vocabulary learning strategies are (e.g., Catalán, 2003; Gu and Johnson, 1996; Schmitt, 1997) according to an order from general to specific fashion.

To have knowledge of a word, language learners need to be aware of forms, meanings and usages of the word at the most fundamental level (Nation, 2001). In addition, Nation (2001) clarified two main aspects of knowing a word: *receptive* and *productive* aspects. By definition, receptive vocabulary knowledge involves "perceiving the form of a word while listing or reading and retrieving its meaning;" whereas, productive vocabulary knowledge involves "wanting to express a meaning through speaking or writing and retrieving and producing the appropriate spoken or written word form." (pp.24-25) Nation (ibid.) further illustrated how both receptive and productive aspects relate to the form, meaning, and use of the word by proposing 18 questions (see Table 2.3).

Table 2.3

What Is Involved in Knowing a Word

Form	spoken	R P	What does the word sound like? How is the new word pronounced?	
	written	R P	What does the word look like? How is the word written and spelled?	
	word parts	R	What parts are recognizable in this word?	(e.g., recognizing that it [the word *underdeveloped*]is made up of the parts *under-*,*-develop-* and *-ed*)
		P	What word parts are needed to express the meaning?	(i.e, being able to construct it [the word]using the right word parts in their appropriate forms)
Meaning	form and meaning	R P	What meaning does this word form signal? What word form can be used to express this meaning?	
	concept and referents	R	What is included in the concept?	(i.e., knowing the concept behind the word which will allow understanding in a variety of contexts)
		P	What items can the concept refer to?	(i.e., being able to produce the word in different contexts to express the range of meanings of *underdeveloped*)
	associations	R	What other words does this make us think of?	(e.g., knowing [*undeveloped*] that there are related words like *overdeveloped, backward* and *challenged*.)
		P	What other words could we use instead of this one?	(e.g., being able to produce synonyms and opposites for *underdeveloped*)
Use	grammatical functions	R P	In what patterns does the word occur? In what patterns must we use this word?	
	collocations	R P	What words or types of words occur with this one? What words or types of words must we use with this one?	
	constraints on use (register, frequency…)	R P	Where, when, and how often would we expect to meet this word? Where, when, and how often can we use this word?	

Note.

This table is adapted from Nation (2001, pp.26-28). In column 3, R = receptive knowledge, P = productive knowledge

Further, after analyzing learners' vocabulary learning process, Brown and Payne (1994, as cited in Hatch & Brown, 1995) identify five essential steps taken by learners when learning vocabulary:

(a) having sources (i.e., books, newspapers, dictionaries, or multimedia) for exposure to new words,

(b) getting the word forms such as word spellings and pronunciations,

(c) learning the word meanings by learners themselves, by teacher scaffolding, etc.,

(d) making the forms and the meanings of the words stay in memory;

(e) practicing using the words.

These five sequential steps can be viewed as "a series of sieves" (see Figure 2.1). If the learner is able to use various vocabulary learning skills to keep as many words as possible falling from one "sieve" to the subsequent "sieve", the outcome will be more words learned and ready to be used (Hatch & Brown, 1995, p.373). In short, the use of all strategies for vocabulary learning is more or less related to this five-step procedure (Fan, 2003).

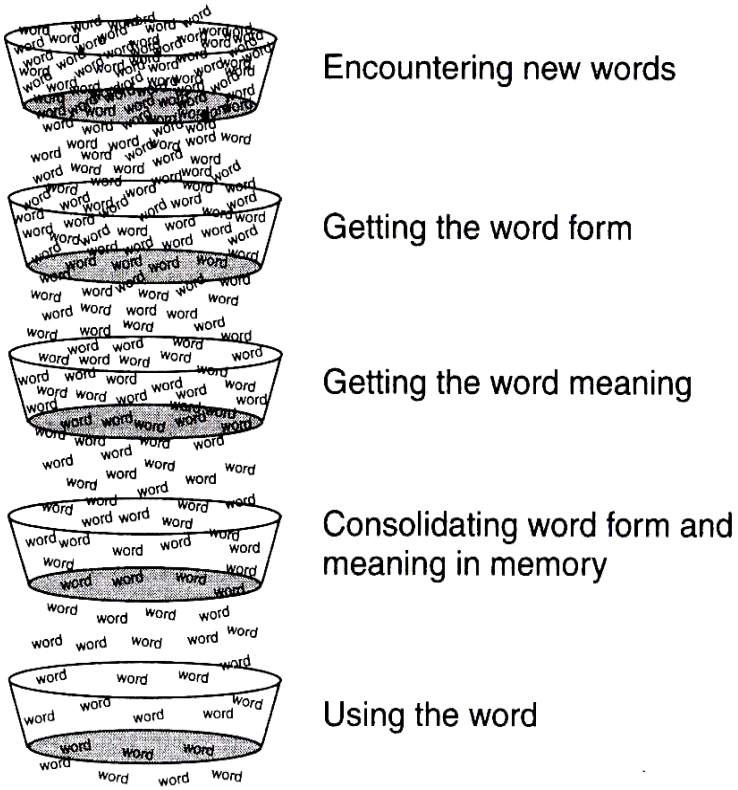


Figure 2.1. Five essential steps to learning new words (Hatch & Brown, 1995, p.374)

In contrast, Shen (2003) argues that it is more reasonable to view vocabulary learning as a circulatory process rather than the linear system suggested by Brown & Payne (1994, as cited in Hatch & Brown, 1995). On the basis of Brown and Payne's (ibid.) model, Shen (2003) proposes 5R vocabulary learning processes, *receiving*, *recognizing*, *retaining*, *retrieving*, and *recycling*, under which all vocabulary learning strategies can be grouped. The first three

steps (receiving, recognizing, and retaining) in Figure 2.2 show that learners first receive new words from various sources, and then recognize the word forms and meanings, and finally consolidate both forms and meanings of words in memory. Yet, it is especially noteworthy if the learners ignore some new words, either consciously or unconsciously, or encounter them infrequently; the following stages (retrieving words and recycling words in the four language skills) may not occur. Hence, the dotted line that separates Steps 1, 2, and 3 from Step 4 and 5 functions as a division between learners' receptive knowledge and productive knowledge. This division is unstable given that learners may encounter the words (Step 1) and then engage actively in the use of the words (directly leaping to Step 5). This 5R model reflects the process of vocabulary learning where learners not only move forwards and backwards in the stages but use variant vocabulary learning techniques to help reach the goal prescribed in each stage.

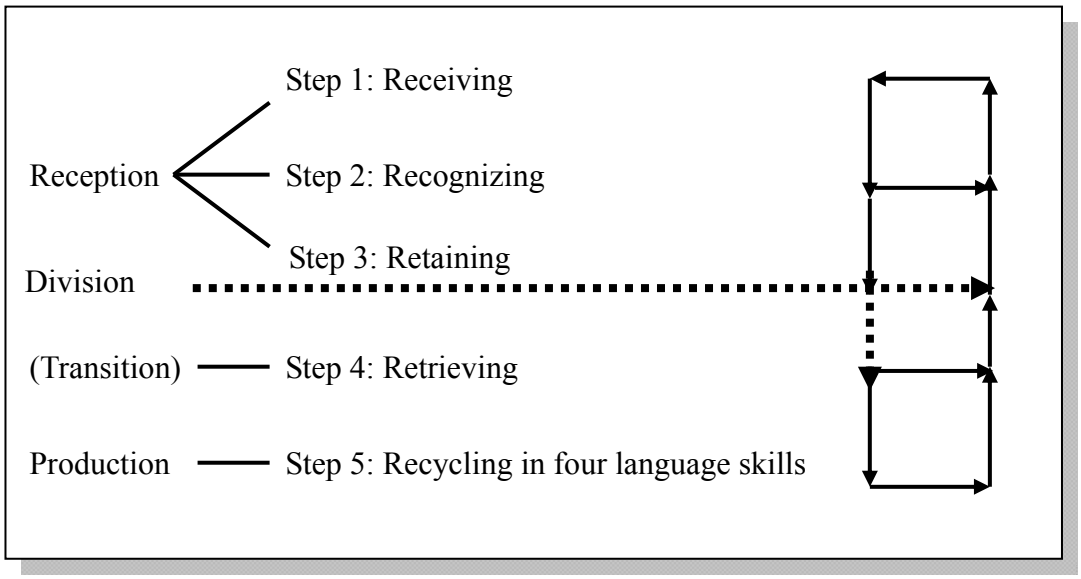


Figure 2.2. Stages of vocabulary learning— a 5R model involving loops (Shen, 2003, p.200)

Researchers hold different viewpoints on the vocabulary learning process; however, it is clear that learners apply different strategies in different learning stages, such as discovering meanings of new words or retaining words in the memory. While a considerable number of definitions have been offered for language learning strategies (as discussed in Section 2.1), only a few researchers have directly elucidated the notion of vocabulary learning strategies.

Schmitt (1997) extended Rubin's (1987) concept of learning to vocabulary learning strategies. Rubin (ibid.) considers learning as "the process by which information is obtained, stored, retrieved, and used" (p.29); accordingly, "vocabulary learning strategies could be any which affect this rather

broadly-defined process" (Schmitt, 1997, p.203). In contrast to Schmitt's (ibid.) broad definition of vocabulary learning strategies, Catalán (2003) defines vocabulary learning strategies more specifically as follows:

> knowledge about the mechanisms (process, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of the unknown word, (b) to retain them in long–term memory, (c) to recall them at will, and (d) to use them in oral or written mode. (p.56)

This definition given by Catalán (2003) is somewhat similar to that offered by Gu and Johnson (1996) who indicate that those strategies used in a process of vocabulary learning are named as vocabulary learning strategies. Such processes include encountering a new word, discovering the word meanings and the word usages, taking notes about the word, and committing the word to memory.

After the review of definitions of language learning strategies and vocabulary learning strategies in the past literature, the distinction between these two terms is clear. Language learning strategies enable learners to use in a wide range of language learning activities (e.g., read an English article, write a short letter, etc.) to accomplish the objectives of any aspect of language learning. When these learning strategies are applied to achieve the goal of vocabulary learning,

they are herein referred to as vocabulary learning strategies.

2.3 Taxonomies of Vocabulary Learning Strategies

To complete an overall picture of vocabulary learning strategies, it is necessary to examine the taxonomies of vocabulary learning strategies. Since the focus of this thesis is vocabulary consolidation, strategies which do not help facilitate vocabulary retention are not elaborated. Three classification systems of vocabulary learning strategies found in the literature are presented in order from broad to detailed categorization.

Nation (2001) offered a general framework of vocabulary learning strategies, as illustrated in Table 2.4. His classification comprises three major categories. The first set of strategies refers to actions taken by learners to determine what words to concentrate on, how to learn the word, and how frequently to review them. The second set of strategies aids learners in seeking information on words they want to learn. Such information may come from the form of the word itself, from the context of the target words, from a written or a spoken reference source, or from a close relationship between L1 and L2. Finally, the third set of strategies relates to methods of retaining vocabulary and making

words usable. To accomplish these objectives, learners have to notice the target words, to retrieve items encountered earlier, and to build up word knowledge (e.g., knowledge about the word form, word meaning, or word usage) through a variety of techniques, such as using semantic mapping to add new aspects of knowledge to the known word.

Table 2.4

Nation's (2001) Taxonomies of Vocabulary Learning Strategies

General class of strategies	**Types of strategies**
Planning: choosing what to focus on and when to focus on it	Choosing words Choosing the aspect of word knowledge Choosing strategies Planning repetition
Sources: finding information about words	Analysing the word Using context Consulting a reference source in L1 or L2 Using parallels in L1 and L2
Processes: establishing knowledge	Noticing Retrieving Generating

Another grouping system of vocabulary learning strategies was suggested by Gu and Johnson (1996). This classification scheme falls into two major dimensions, *metacognitive regulation* and *cognitive strategies*; the former contains 12 sub-strategies, and the latter, 79. Of the total of 91 vocabulary learning

strategies, only 41 sub-strategies under the category of cognitive strategies are relevant to fixing words into memory, as indicated in Table 2.5 (See Appendix A for the 91-strategy list, where the 41 cognitive strategies for word retention are marked with an asterisk *). As shown in Table 2.5, the function of cognitive strategies includes word consolidation and word activation. The strategies used for word consolidation are further classified into two categories:

1. *Rehearsal strategies* involves how learners directly operate the target word to be memorized, under which there are three types of sub-strategies:
   (1) Memorizing target words by *Using word lists*, like making word cards, reviewing word lists, etc.;
   (2) Memorizing words by *Oral repetition*, like repeating their pronunciation;
   (3) Memorizing words by *Visual repetition*, like repeatedly writing the form of the word.
2. *Encoding strategies* involves how learners link the word to be memorized to their prior knowledge. This category consists of seven types of sub-strategies:

(1) Memorizing the words via word *Association/elaboration*, e.g., grouping the words that share a similar part in spelling or pronunciation;

(2) Memorizing the words via the use of *Imagery*, e.g., "I act out a word in order to remember it better" (Gu & Johnson, 1996, p.678);

(3) Memorizing the words via *Visual encoding*, e.g., "I associate a new word to a known English word that looks similar" (Gu & Johnson, 1996, p.678);

(4) Memorizing the words via *Auditory encoding*, e.g., "I remember together words that spelled similarly" (Gu & Johnson, 1996, p.678);

(5) Memorizing the words via studying or analyzing *Word-structure,* e.g., analyzing word prefixes, suffixes, stems, etc.;

(6) Memorizing the words via *Semantic encoding*, e.g., grouping words by themes such as animals, fruits, stationery products, etc.;

(7) Memorizing the words via *Contextual encoding*, e.g., "I remember the new word together with the content context where the new word occurs" (Gu & Johnson, 1996, p.679).

Word activation strategies refers to memorizing words by practicing applying the target word to a real or learning situation. For example, learners practice using the target words in daily conversation, essay writing, or sentence making to facilitate word retention.

Table 2.5
Gu and Johnson's (1996) Category of Cognitive Strategies for Word Consolidation and Activation

Dimensions	**Functions**	**Categories**	**Variables**
Cognitive strategies (41)	Consolidation	Rehearsal Strategies (12)	Using word lists (6) Oral repetition (3) Visual repetition (3)
		Encoding Strategies (24)	Association /elaboration (4) Imagery (4) Visual encoding (3) Auditory encoding (3) Word-structure (3) Semantic encoding (3) Contextual encoding (4)
	Activation	Activation strategies (5)	

Note. Numbers in parentheses indicate the total number of strategies.

In the growing body of literature on vocabulary learning strategy taxonomy, Schmitt's (1997) version has been most popularly adopted/adapted to develop a research instrument to collect data on learner vocabulary learning behaviors (e.g.,

Catalán, 2003; Chen, 1998; Kudo, 1999; Kung, 2004; Liao, 2004; Wang, 2004; Wu, 2005). Because of "the lack of a comprehensive list," Schmitt developed his taxonomy (Schmitt, 1997, p.199). On the basis of Cook and Mayer's (1983) distinction of vocabulary learning activities and Oxford's (1990) classification of language learning strategies, Schmitt's (1997) framework is divided into two major categories, *discovery strategies* and *consolidation strategies.* Cook and Mayer (1983) clarified two major objectives for vocabulary learning activities: (a) ascertaining an unfamiliar word's meaning when it is presented for the first time and (b) memorizing that word with some effort after introduction of the word. Following such notion, Schmitt's (ibid.) scheme of vocabulary learning strategies also consists of two umbrella categories: *discovery* and *consolidation* strategies. The former refers to approaches to obtain the meanings of new words; the latter refers to methods to retain the word forms and meanings.

The other reference for Schmitt (1997) to construct this scheme is the framework of language learning strategies organized by Oxford (1990) which encompasses two broad dimensions of strategies, *direct strategies* and *indirect ones*. *Direct strategies*, which directly process the target language input, constitute memory, cognitive, and compensation strategies; while indirect strategies, which

regulate language learning activities thus considered "indirect", comprise metacognitive, affective, and social strategies. Schmitt (ibid.) adopted four categories (i.e., *social, memory, cognitive*, and *metacognitive strategies*) from Oxford's (1990) learning strategy grouping system, because these four are readily relevant to vocabulary learning. Social strategies, by definition, are those which involve interaction with others in the hope to obtain the meanings of words or to practice using them (e.g., *ask classmates for meaning*), and memory strategies are those which attempt to use different ways to connect new input to learners' prior knowledge (e.g., *connect the word to its synonyms and antonyms*).

With respect to memory and cognitive strategies, both strategies not only "directly involve the target language" but also "require mental processing of the language" (Oxford, 1990, p.37). Schmitt (1997) further clarified the differences between these two strategies. While cognitive strategies involve how learners use mechanical means or repetition to directly manipulate the vocabulary, memory strategies are those which relate "the word to be retained with some previously learned knowledge, using some form of imagery or grouping" (p.211). It is noteworthy that some memory strategies are easily mistaken for cognitive strategies. Take *image the word form* as an example. Using this approach, the

learner seems to be manipulating the vocabulary; however s/he is not directly using the word form (its sound, spelling and meaning). The learner, instead, is creating images in his/her mind in an attempt to remember it. How the word *Xerox* is remembered is a good example of this memory strategy. For many people, all they need to recall are the two *X-s* in *Xerox*. Therefore, *image the word form* is not a cognitive strategy but a memory strategy, which involves "pairing different types of material" (Oxford, 1990, p. 40).

In addition to these four strategies, Schmitt (1997) coined the label of *determination strategies*, such as *consulting a bilingual dictionary* or *guessing word meaning from textual context* to describe actions taken by learners during the process of discovering meanings of new vocabularies without assistance from peers or teachers. The above mentioned development process of Schmitt's (1997) taxonomy is illustrated in Figure 2.3 where the strategies indicated with a check mark (✓) in Oxford's grouping system (1990) represent that those were adopted by Schmitt, and where the symbols (↗ and ↖) represent how Oxford's grouping system was reorganized in Schmitt's classification, with the direction of the arrows indicating their original position in the Schmitt taxonomy.

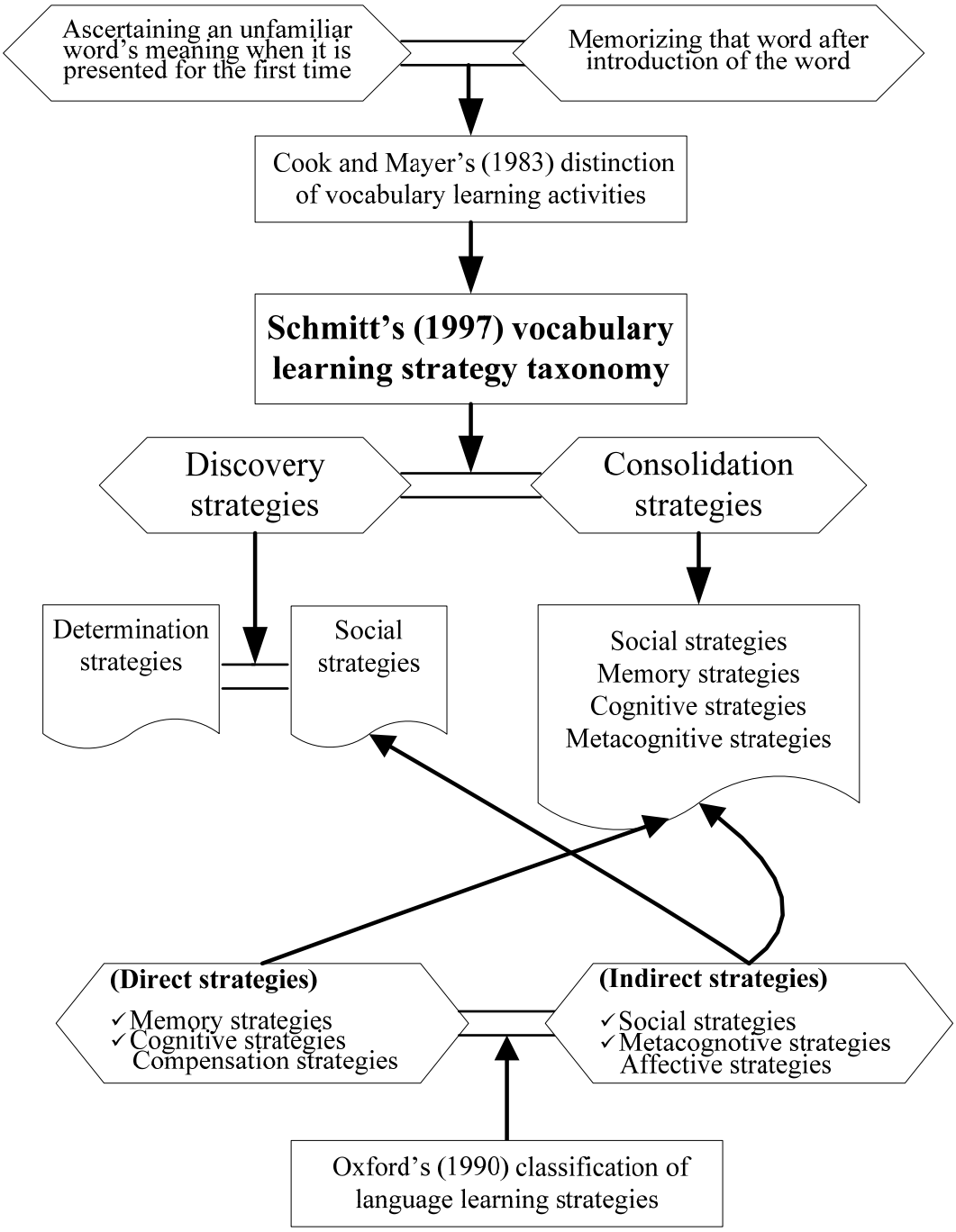


Figure 2.3. Development process of Schmitt's (1997) vocabulary learning strategies

Since the focus of the present study is on consolidation strategies, further examination of the ingredients in such strategies is required, especially in memory strategies. Schmitt (1997) divides memory strategies into the following six subcategories:

1. *Pictures/imagery*: This strategy is used to remember new words via using visual aids, meaningful imagery or relating the target words to personal experience.
2. *Related words*: This strategy refers to connecting the target word by associating with its coordination, synonym, or antonym which learners already know. Such associations can be represented by *semantic maps*.
3. *Unrelated words*: This strategy involves methods linking unrelated words by using, such as the *Loci Method*. Learners can imagine standing in a familiar place, and locating the words to be memorized in appropriate locations.
4. *Grouping*: This strategy indicates a way in which the words can be organized together in a sentence or story.
5. *Word's orthographical or phonological form*: This strategy depicts learners' study of the spelling or pronunciation of the word to facilitate

word retention. The *Keyword Method* is an example in which learners first find a L1 word which sounds similar to the L2 word to be retained, as in " the English word *cat* for the Japanese word *katana* (sword), " and then create an image covering the two concepts, as in "a samurai cat waving a sword" (Schmitt, 1997, p.214).

6. *Other memory strategies*: This subcategory includes those strategies lack a pattern of similarity, such as using a word's affixes, root, part of speech, or physical action to help consolidate the words.

Table 2.6 sketches Schmitt's (1997) overall classification of vocabulary learning strategies (see Appendix B for Schmitt's 58-item list of vocabulary learning strategies).

Table 2.6

Schmitt's (1997) Scheme of Vocabulary Learning Strategies

Major categories	Types of strategy	Subcategories
Discovery Strategies	Determination Strategies (9)	
	Social Strategies (5)	
Consolidation Strategies	Social Strategies (3)	
	Memory Strategies (27)	1. Pictures/ imagery (3) 2. Related words (4) 3. Unrelated words (2) 4. Grouping (4) 5. Words' orthographical or phonological form (7) 6. Other memory strategies (7)
	Cognitive Strategies (9)	
	Metacognitive Strategies (5)	

Note. Numbers in parentheses refer to the total number of strategies.

2.4 Research on Vocabulary Learning Strategies

Research into foreign language learning has shown that language teachers can facilitate learner vocabulary acquisition by incorporating vocabulary learning strategies into their teaching (Fan, 2003; Nation, 2001, 2004; Nation & Meara, 2002; Kojic-Sabo & Lightbown, 1999; Schmitt, 2000; Shen, 2004; Tsuchida, 2002). It is important for teachers to discover students' use and evaluation of vocabulary learning strategies in vocabulary learning. Such understanding allows

teachers to plan strategy training that best benefits the learner. Hence, a growing interest in vocabulary learning strategies has flourished and that resulted in abundant publications on related topics. The following sections present literature review on research adopting vocabulary learning strategies. There are many different types of vocabulary learning strategies; however, only a few vocabulary learning strategies are actually employed by learners to discover meanings of new words and commit the word to memory. Most research findings on learners' use of vocabulary learning strategies are overlapping.

2.4.1 Studies on Discovery Strategies

Schmitt's (1997) survey study of 600 Japanese EFL learners discovered that *bilingual dictionaries* was their most used discovery strategy and they considered that strategy the most helpful. This finding was consistent with the results of Chen (1998), who found that both 255 Chinese and 600 Japanese learners indicated that *the use of bilingual dictionaries* and *guessing the meanings of words from context* were very useful for meaning discovery (not for word consolidation). In addition to those determination strategies, social strategies such as *asking classmates for meaning*, or *asking teacher to paraphrase or offer*

synonyms of new words, were also employed by both Chinese and Japanese learners.

However, a similar study by Kudo (1999) adopting similar method found that *social strategies* were the strategies least frequently adopted by Japanese learners. A possible explanation for this phenomenon provided by Kudo (1999) was that students are able to obtain word meanings on their own by simply consulting a dictionary, thus obviating the need for social interaction. This result was partially similar to Shen's (2004) finding that Chinese-speaking students rarely relied on their peers to acquire knowledge about the meanings or usages of new words. Worth noting in her research results is that not all learning strategies involving social interaction were found to be infrequently used. On the contrary, strategies such as *obtaining information about the words from teachers* were often used by learners. This suggests, according to Shen (2004), that teachers still serve as significant knowledge providers in student language learning and "classes tend to be teacher-centered" (p.587), though nowadays learner-centered teaching approaches are encouraged.

Learners using discovery strategies (e.g., *consulting a dictionary, asking meanings of words form teachers,* etc.) to discover word meanings is only an

initial step in vocabulary learning. To further increase learners' vocabulary size; it is necessary for learners to make more efforts in committing words into memory. Thus, unveiling methods taken by learners to memorize words is important for language educators to improve their vocabulary strategy training teaching. In the next section, studies on consolidation strategies are reviewed

2.4.2 Studies on Consolidation Strategies

The results of learner strategies for word retention derived from survey studies of vocabulary learning strategies are discussed in the next two sections. The first section reviews the research conducted outside Taiwan. Examination of studies conducted in Taiwan will be detailed in the second section.

2.4.2.1 Studies Conducted outside Taiwan

An earlier study of vocabulary learning strategies was conducted by Ahem (1989, as cited in Folse, 2004 and Nation, 2001) who used interviews and think-aloud approaches as research instruments to collect data regarding the strategy use of 300 Sudanese EFL learners. The participants were further grouped as high and low achievers. Results showed that the high achieving learners not

only used strategies more often but also used a wider range of strategies than the low achievers did.

In an influential study of vocabulary learning strategies, Schmitt (1997) investigated what vocabulary learning strategies Japanese learners used and how effective they considered such strategies to be. He designed a questionnaire, comprising 40 types of strategies, to investigate the behavior of 600 participants, consisting of 150 adult learners, 150 university students, 150 high school students, and 150 junior high school students. The results showed that five consolidation strategies considered both most used and effective by all participants are *writing the word repeatedly*, *repeating the word verbally*, *saying the new word aloud*, *studying the spelling*, and *taking notes in class*. Of these five strategies which learners already employed and believed useful, the first four revealed a clear trend of learner preferences for strategies emphasizing a word's form and the last, *taking notes in class,* suggested that learners were able to use study aids to organize those new words so as to create the additional opportunities to review those words.

On the other hand, the least-used and least-effective strategies did not overlap with what was found in the most-used and most-effective strategies. The least-used strategies included (a) *inviting teachers to check flash cards for*

accuracy, (b) *using semantic maps*; and (c) *using physical action*, while the least-effective strategies consisted of (a) *imaging the word form*, (b) *using the Keyword Method*; and (c) *imaging word meanings*. These findings suggest that the learners showed preferences for mechanical strategies, or rote strategies, (i.e., strategies involving low-demanding cognitive processing; e.g., *repeating the word verbally*) over strategies involving deep processing (e.g., *semantic maps* or *the Keyword Method*). In addition, it is not surprising to find that the strategy *using cognates in study* was common to both lists of least-used and least-helpful strategies. Japanese does not belong to the Indo-European language family; as a result, learners have little opportunity to take advantage of cognates. However, given the large number of loanwords in Japanese, loanwords are "readily available for use if Japanese learners can overcome the phonological differences" (Schmitt, 1997, p.220).

Kudo (1999) similarly looked at patterns of vocabulary learning strategy use among Japanese high school students. In this two-phase study, a questionnaire was distributed to 325 participants in the first phase, and 504 in the second. The low means for the strategy use showed that the students did not actively pursue a variety of strategies. Moreover, low-demanding cognitive strategies were adopted

more frequently than strategies requiring more demanding cognitive processing. This result was congruent with what was found in Schmitt's (1997) study.

In contrast, Chinese learners did not limit themselves to certain types of strategies when learning vocabulary. In a large-scale study on the use of vocabulary learning strategies in a Chinese EFL context, Gu and Johnson (1996) found that 850 Beijing Normal University students used a broad spectrum of vocabulary learning strategies. The students made use of a greater variety of strategies for word meaning discovery, such as *guessing word meanings* or *consulting dictionaries*, than rehearsal strategies for word retention (e.g., *using word lists*, or *writing the word repeatedly*). These rehearsal strategies, which involve low-demanding cognitive processing, are often labeled as rote strategies. Among types of rehearsal strategies (*using word lists*, *oral repetition* and *visual repetition*), only the *oral repetition strategy* was especially frequently applied to consolidate new words.

In Hong Kong, Fan (2003) conducted an extremely large survey, eliciting responses from 1,067 tertiary students. She utilized a vocabulary test and a vocabulary learning strategy questionnaire as data collection instruments to scrutinize the frequency of use of vocabulary learning strategies, perceived

usefulness of such strategies, and the actual usefulness of the strategies. Fan (2003) found that strategies considered both most used and helpful are the strategies involving reviewing the words recently learned. These strategies included *recalling the word meaning when encountering the recently learned words in any text*, *reviewing the recently learned words*, *paying attention to the new usage and new meaning of the words*. For infrequently used strategies, learners did not favor strategies involving association (e.g., *Keyword Method*). Meanwhile, students did not utilize *repetition strategies* more frequently than other types of strategies in vocabulary consolidation. This finding differed somewhat from those of Schmitt (1996) who reported that EFL learners adopted repetition strategies more often than others.

Kojic-Sabo and Lightbown (1999) compared vocabulary learning strategies of 47 college ESL learners and 43 pre-university schooling EFL learners. In their study, EFL student used strategies for word retention more often than ESL did. EFL learners tended to memorize words by using strategies like *quizzing themselves about the new words*, *reading their notes*, and *engaging in cooperative reviewing activity with their friends* while ESL students reviewed words by *using them in their daily conversations*, or *posting charts and diagrams in their*

apartments. In conclusion, due to the difference between two learning environments, ESL students seemed to use some strategies more naturally whereas EFL students needed to create opportunities for themselves either to encounter the new words or to review the known words.

The abovementioned research studies (Ahem, 1989, as cited in Nation 2001; Fan, 2003; Gu & Johnson, 1996; Kojic-Sabo & Lightbown, 1999; Kudo, 1999; Schmitt, 1997) conducted outside Taiwan have investigated learners' use of strategies for vocabulary retention. Table 2.7 chronologically summarizes these studies.

Table 2.7

Summary of Previous Studies Conducted outside Taiwan

Studies	Participants	Major findings (focusing more on consolidation strategies)
Ahem (1989, as cited in Folse, 2004 and Nation, 2001) To unveil high and low achievers' vocabulary learning strategy use	300 Sudanese EFL learners	High achieving learners not only used strategies more often but also used a wider range of strategies than the low achievers did.
Gu & Johnson (1996) To survey learners' reported vocabulary learning strategy use	850 Beijing Normal University students	1. Students used a broad spectrum of vocabulary learning strategies. 2. Students used various strategies for meaning discovery, than *memorization strategies involving rote learning* for word retention. 3. *Oral repetition strategy* was frequently applied as a type of word consolidation strategies.
Schmitt (1997) To investigate what vocabulary learning strategies learners used, how effective they considered such strategies to be	600 Japanese participants (150 adult learners,150 university students, 150 high school students, 150 junior high school students)	1. Consolidation strategies considered both most used and effective by all participants included: (a) *written repetition*, (b) *verbal repetition*, (c) *saying the new word aloud*, (d) *studying the spelling*, and (e) *taking notes in class.* 2. Students preferred *strategies which focus on the word itself.* 3. The least-used strategies included (a) *inviting teachers to check flash cards for accuracy*, (b) *using semantic maps*; and (c) *using physical action.* 4. The least-effective strategies included (a) *imaging the word form*, (b) *using the Keyword Method*; and (c) *imaging word meaning.*
Kojic-Sabo & Lightbown (1999) To compare vocabulary learning strategies of ESL and EFL learners	47 college ESL learners and 43 pre-university schooling EFL learner	1. ESL student used strategies for word retention less frequently than EFL did. 2. ESL students seemed to use certain strategies more naturally whereas EFL students needed to create opportunities for themselves to encounter and review the new words.
Kudo (1999) To examine patterns of vocabulary learning strategy use	325 Japanese high school students in the first phase, and 504 in the second	1. Students did not actively use a wide range of strategies. 2. *Low-demanding cognitive strategies* were used more frequently than *strategies involving deeper cognitive processing.*
Fan (2003) To explore the use frequency of vocabulary learning strategies, perceived usefulness of such strategies, and the actual usefulness of the strategies	1,067 Hong Kong tertiary students	1. Students tended to use *strategies for consolidating the knowledge of words lately learned* and viewed them as helpful strategies. 2. Students favored neither *rote learning* nor applied *memory strategies involving the use of association or imagery*.

2.4.2.2 Studies Conducted in Taiwan

Inspired by the suggestion from Schmitt (1997) that cultural differences may result in different patterns of strategy use, Chen (1998) and Wu (2005) conducted similar studies in Taiwan. Chen (1998) replicated Schmitt's (1997) model to investigate the perceptions of 174 Taiwanese college learners and 81 high school learner of the efficiency of vocabulary learning strategies and their usage frequency of such strategies. Chen then compared the results of his study and Schmitt's (ibid.). Three similarities between Taiwanese and Japanese learners' use of consolidation strategies emerged. First, both groups tended to use memory strategies which focus on the word's orthographical or phonological form. Second, both groups exhibited a preference for rote learning, consistent with the finding of Kudo's (1998) study that low-demanding cognitive strategies were used more frequently than strategies involving deeper cognitive processing. Third, *continuing to study words over time* was the only metacognative strategy favored by both groups. One difference found was that Chinese learners favored a particular social strategy (i.e., *interaction with native speakers*) but Japanese learners did not show any special preference for any social strategies for word consolidation. In addition, it is interesting to note that although Chen's (1998) study included participants of

different ages, he did not distinguish the differences in the efficacy evaluation of the strategies between college and high school learners.

Wu (2005) also replicated Schmitt's (1997) model. His participants were 112 college sophomore, 90 high school students, and 101 junior high school students in southern Taiwan. Taking the position that the Internet and translation software have developed rapidly and potentially have affected learner strategies, he conducted a survey to explore vocabulary learning strategies and learner ratings of the efficiency of these strategies. He found that the *electronic bilingual dictionary* was the most used discovery strategy by all three groups of different ages. Consolidation strategies which emphasize a word's form (e.g., *paying attention to the sound of a word,* or *the repetition of the word form*), were frequently used by all participants, and this finding was consistent with previous reports (e.g., Chen, 1998; Kudo, 1998; Schmitt, 1997). Moreover, those most-used strategies focusing on words' form were also regarded most-helpful consolidation strategies. Further, when examining the difference in strategy use among these three different levels of participants, the researcher found that high school learners preferred using cognitive strategies (i.e., *taking notes in class*), junior high school leaner preferred using metacognitive strategies (i.e., *testing oneself with*

*word test*s), and college learners preferred using memory strategies (e.g., *word association*). In general, these learners believed that those strategies they most frequently employed were the most effective strategies as well.

Unlike Chen (1997) and Wu (2005) who adopted Schmitt's (1997) model, Shen (2004) in her study reported 359 Taiwanese college learners' use of vocabulary learning strategies and their evaluation of efficiency of the strategies. She found five features of Taiwanese college learners in discovering the word meanings and consolidating words: (a) preferring using audio and visual materials, such as *listening to radio*, *watching TV or films*, in vocabulary learning; (b) preferring obtaining information about words from teachers instead of other learners; (c) preferring looking up word forms, such as word pronunciation, grammatical information of the word rather than memorizing information about word forms; (d) preferring using strategies which focus on mechanical learning, such as *writing the word repeatedly*, in vocabulary memorization; and (e) preferring learning vocabulary individually—rather than interacting with others—and learning from reading and listening. In addition to these five features, an interesting finding showed that many strategies were considered effective but they were not frequently used by college learners.

Another study also recruited college learners as participants. Hsu (2005) adapted Gu and Johnson's (1996) questionnaire to examine vocabulary learning strategies of 47 college students in Taiwan. The participants were asked respondents to rate the frequency of strategy use on a six-point Likert scale (1=never, 2=sometimes, 3=often, etc.). The finding revealed that in general students did not use strategies for word meaning discovery and word consolidation very often. Furthermore, Hsu (2005) divided the participants into three groups (high-achievers, mid-achievers, and low-achievers) based on participants' scores of the TOEIC test and found that high-achievers used strategies more frequently than low-achievers. Concerning learners' use of strategies, the most popular strategies for word retention were *writing the word repeatedly*, *focusing on a word's spelling*, and *writing both the new words and their Chinese equivalents repeatedly*. Such results partially support the findings of previous research which suggest that low-demanding cognitive stratgeies are favored by most learners (e.g., Chen, 1998; Kudo, 1998; Schmitt, 1997; Wu, 2005). In contrast, *using word lists* and *strategies involving semantic grouping* were the least used strategies.

In Wang's (2004) study of 271 female high school students in northern

Taiwan, students were asked to make frequent use of strategies in vocabulary learning. Students preferred to use *cognitive strategies*, such as *different types of word repetition*, and adopted other strategies that highlighted word forms, such as *studying the sound or spelling of a word*, or *underlining new words*. These were in agreement with results presented by previous studies (e.g., Chen, 1998; Hsu, 2005; Kudo, 1998; Schmitt, 1997; Wu, 2005). By contrast, infrequently used strategies were those involving social interaction (e.g., *interaction with native speakers*) and those involving using study aids (e.g., *using media, pictures, physical actions, or English labels*). These findings in part contradict the results of Chen (1998) that Taiwanese learners (college and high school learners) favored *interaction with native speakers*. Moreover, Wang (2004) classified the participants into two groups on the basis of their scores of vocabulary size test. She found that learners' vocabulary size was correlated with their overall use of strategies. In other words, those learners who are more proficient in vocabulary adopted overall strategies more frequently than those who are less proficient in vocabulary.

The five studies on learners' reported strategies for vocabulary retention (Chen, 1998; Hsu, 2005; Shen, 2004; Wang, 2004; Wu, 2005) conducted in Taiwan have been reviewed in this section. Table 2.8 chronologically summarizes

major findings of these studies.

Table 2.8

Summary of Previous Studies Conducted in Taiwan

Studies	Participants	Major findings (focusing more on consolidation strategies)
Chen (1998) To replicate Schmitt's (1997) study and compare the results of his study and Schmitt's	174 Taiwanese college learners and 81 high school learners	1. Both groups tended to use memory strategies focusing on the word forms. 2. Both groups exhibited a preference for low-demanding cognitive strategies. 3. *Continuing to study words over time* was the only metacognative strategy favored by both groups. 4. Chinese learners favored *interaction with native speakers*.
Shen (2004) To unveil learners' use of vocabulary learning strategies and their perception of efficiency of the strategies	359 Taiwanese university learners	Five features of Taiwanese college learners in word meaning discovery and word retention: (a) "use of audio-visual materials", (b) "teacher-centeredness", (c) "learning of the language system", (d) "memorization", and (e) "individual and receptive learning" (Shen, 2004, pp.587-588).
Wang (2004) To examine learners' frequent use of strategies in vocabulary learning	271 female high school students in northern Taiwan	1. Students preferred to use cognitive strategies (e.g., *different types of word repetition*) and strategies that highlighted word forms. 2. Infrequently used strategies were those involving social interaction.
Hsu (2005) To discover pattern of use of vocabulary learning strategies, and examine the relationship between English language proficiency and strategy use	47 Taiwanese college students	1. In general, students did not frequently employ the vocabulary learning strategies. 2. High-achievers used overall strategies more often than low-achievers did. 3. The most popular word retention strategies were *writing the word repeatedly*, *focusing on a word's spelling*, and *writing both the new words and their Chinese equivalents repeatedly*. 4. The least used strategies were using *word lists* and strategies involving *semantic grouping.*
Wu (2005) To replicate Schmitt's (1997) study	112 college sophomore, 90 high school students, and 101 junior high school students in southern Taiwan.	1. The electronic bilingual dictionary is the most popular discovery strategies. 2. The most-used strategies focusing on words' form were also regarded most-helpful consolation strategies by all learners. 3. Learners believed that those strategies they frequently employed were the most effective strategies as well.

2.4.3 Summary of the Previous Research

To borrow Laufer's (1997) phrase, "Vocabulary is no longer a victim of discrimination in second language learning research, nor in language teaching" (p.104). Thus, a growing number of studies on vocabulary learning strategies are now available to shed light on learner behavior in vocabulary learning. Previous studies have found that students expressed *using bilingual dictionaries* and *guessing the meanings of words from context* the most used strategies when discovering word meanings (e.g., Chen, 1998; Schmitt, 1997). On the other hand, for the most popular consolidation strategies, students preferred those strategies which emphasize the word form such as *repeatedly writing the word,* or *focusing on a word's pronunciation* (e.g., Chen, 1998; Hsu, 2005; Kudo, 1998; Schmitt, 1997; Shen, 2004; Wang, 2004; Wu, 2005). However, these findings differed from those of Gu and Johnson (1996) who reported that Chinese students did not have a high regard for rote learning.

In addition to the contradictions found in previous studies, a major limitation was found during the examination of the literature. Many of the studies (e.g., Chen, 1998; Schmitt, 1997; Wu, 2005) asked participants to report whether certain strategies were used and whether those strategies were useful or not. If

participants had no experience of using particular strategies, they then were asked to evaluate the helpfulness of such strategies based on their perceptions. Certain strategies reported as useful were infrequently, or even never, used by participants. Consequently, the validity of such research on the efficiency evaluation of the strategies is questionable. For this reason, the present study excluded ratings given by those respondents who were not aware of and had not used certain strategies so as to increase the validity of research findings. In addition, the current study examined the strategy use in different spatial contexts (in-class and outside-class contexts). To the researcher's knowledge, little research in Taiwan has clarified this spatial contextual difference so far.

CHAPTER THREE

METHODOLOGY

This chapter discusses the research methodology for the present study. First, the research participants will be introduced. Descriptions of the instrument follow. Last, the procedures of data collection and data analysis are presented.

3.1 Participants

For data collection in this study, a private high school in central Taiwan was first selected; then two classes were randomly drawn from the school. Eighty-two second-year high school students participated in the study. There was a twofold rationale for recruiting second-year high school students as the target population. First-year students are less sophisticated learners, whose experience of word learning in the high school is less than that of second-year students, while third-year students typically are concentrated on preparation for college entrance exams and have little time to spare for the activities not directly contributing to the high-stakes exams.

3.2 Instruments

The research instrument was a questionnaire (see Appendix D) written in Chinese. Although some scholars question whether self-reports may truly reflect respondent behaviors in vocabulary learning tasks (Nation, 2001), Chamot (2005) argued that self-reports serve as the only approach to uncover the secrets of the unobservable mental processes of learners. Among several types of self-reports, a questionnaire is the most appropriate choice for the current study owing to its practicality. The questionnaire used in this study (Appendix C) consists of numerous items. It is not practical for the researcher to interview each of participants about all questions. Because of this practical consideration, the instrument constructed in this study was used to gather the information on high school learners' evaluations of vocabulary consolidation strategies. The next section offers descriptions of the questionnaire development process and the content of the questionnaire.

3.2.1 Questionnaire Development Process

The data collection instrument was a 51-item questionnaire, mainly adapted from two lists of strategies for vocabulary learning: Gu and Johnson's (1996) 91

items and Schmitt's (1997) 58 items. The researcher opted for Schmitt's (1997) version of consolidation strategies as the basis for developing the questionnaire items. This taxonomy has been extensively adopted/adapted by a large number of previous studies (Catalán, 2003; Chen, 1998; Kudo, 1999; Kung, 2004; Liao, 2004; Wang, 2004; Wu, 2005) due to the variety and richness of its strategy items (Catalán, 2003). Along with such advantages, previous studies using Schmitt's (ibid.) scheme have obtained high overall internal consistency reliability, with Cronbach's alpha value above 0.90 (Liao, 2004; Wang, 2004).

In order to fit the objectives of the study, non-consolidation strategies (i.e., strategies used to discover meanings of new words) in both lists were removed. Further, several modifications which were made to the original items are presented as follows.

The current questionnaire includes all of the 43 vocabulary consolidation strategies in Schmitt's (1997) list except for one, the *Peg Method* (see Table 3.1). This memory strategy was removed owing to its impracticality. This method is mainly used to remember a prescribed order of unrelated words. At the beginning, learners have to remember a rhyme, e.g., "one is a bun, two is a shoe, three is a tree etc."; then "an image is created of the word to be remembered and the peg

word. If the first word to be remembered is *chair*, then an image is made of a bun (peg word) resting on a chair" (Schmitt, ibid., p.213). Yet, in reality, learners are rarely required to memorize a *fixed sequence* of unrelated words; moreover, such a technique is too cognitively demanding for learners to use.

Table 3.1

43 Strategies from Schmitt's (1997) list

Original strategy statements (Schmitt, 1997, pp.207-208)	**Categories**	**Original strategy statements (Schmitt, 1997, pp.207-208)**	**Categories**
1. Study and practice meaning in a group	Social	23. Affixes and roots (remembering)	Memory
2. Teacher checks students' flash cards or word lists for accuracy	Social	24. Part of speech (remembering)	Memory
3. Interact with native-speakers	Social	25. Paraphrase the word's meaning	Memory
4. Study word with a pictorial representation of its meaning	Memory	26. Use cognates in study	Memory
5. Image word's meaning	Memory	27. Learn the words of an idiom together	Memory
6. Connect word to a personal experience	Memory	28. Use physical action when learning a word	Memory
7. Associate the word with its coordinates	Memory	29. Use semantic feature grids	Memory
8. Connect the word to its synonyms and antonyms	Memory	30. Verbal repetition	Cognitive
9. Use semantic maps	Memory	31. Written repetition	Cognitive
10. Use 'scale' for gradable adjectives	Memory	32. Word lists	Cognitive
11. Loci Method	Memory	33. Flash cards	Cognitive
12. Group words together to study them	Memory	34. Take notes in class	Cognitive
13. Group words together spatially on a page	Memory	35. Use the vocabulary section in your textbook	Cognitive
14. Use new word in sentences	Memory	36. Listen to a tape of word lists	Cognitive
15. Group words together within a storyline	Memory	37. Put English labels on physical objects	Cognitive
16. Study the spelling of a word	Memory	38. Keep a vocabulary notebook	Metacognitive
17. Study the sound of a word	Memory	39. Use English-language media (songs, movies, newscasts, etc.)	Metacognitive
18. Say new word aloud when studying	Memory	40. Testing oneself with word tests	Metacognitive
19. Image word form	Memory	41. Use spaced word practice	Metacognitive
20. Underline initial letter of the words	Memory	42. Skip or pass new word	Metacognitive
21. Configuration	Memory	43. Continue to study word over time	Metacognitive
22. Using Keyword Method	Memory		

Second, some items in Schmitt's (1997) list look so similar that they may confuse the research participants. These items were paraphrased to help clarify differences among these similar items. For example, the strategies, *Verbal repetition* and *Say new word aloud when studying*, are changed to *Repeat the word orally* (Item 13 of the questionnaire) and *Say the new word aloud when studying the target word's spelling* (Item 22).

Next, a very complex strategy *semantic feature grids* in Schmitt's (1997) list was simplified. The aim of this strategy is to illustrate "the meaning or collocation differences between sets of similar words" (Schmitt, ibid., p.215). The diagram shown in Figure 3.1 is helpful to analyze semantic elements of a set of words that have similar meanings; e.g., the word *good-looking* is defined as "making a pleasant impression on the senses", and "having well-proportioned features" in the semantic grids cited (Rudska, et al., n.d., as cited in Carter, 1987). However, a drawback to using this method is that "it is sometimes difficult to control the metalanguage [i.e., the type of language used to describe, analyze, explain or define a language] or explanatory terms used. Definitions can be more complex semantically than the word being defined" (Carter, 1987, p.172). Another semantic grid shown in Figure 3.2 is to indicate possible partnerships of

collocations of words. For instance, the word *voice* can be modified by "charming" or "lovely" but not by "handsome" or "pretty", as cited in the grid. In vocabulary consolidation, learners may remember word collocations but rarely construct a complicated grid as an aid for learning the meaning of sets of words. Consequently, this strategy statement is revised to *Remember the word with collections of the word* (Item 49).

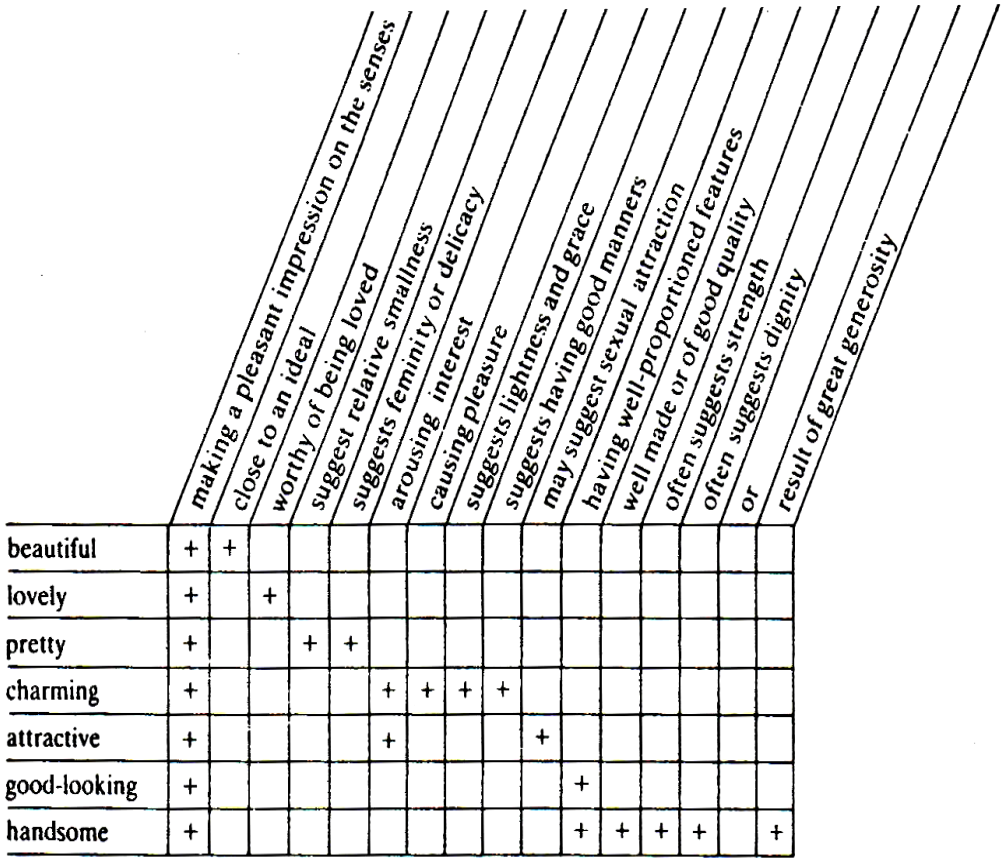


Figure 3.1. A semantic grid used to illustrate differences of the meaning of words (Rudska, et al., n.d., as cited in Carter, 1987, p.172)

	woman	man	child	dog	bird	flower	weather	landscape	view	house	furniture	bed	picture	dress	present	voice
handsome		+									+				+	
pretty	+		+	+	+	+		+	+	+		+	+	+		
charming	+		+							+				+		+
lovely	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+

Figure 3.2. A semantic grid used to illustrate differences of collocations of words (Rudska, et al., n.d., as cited in Carter, 1987, p.172)

On the other hand, only seven items in Gu and Johnson's (1996) list of 41-item strategies for vocabulary memorization and activation are included in the research instrument, given that some items overlap with, or are similar to those of Schmitt's (1997) list. Table 3.2 shows these seven items from the original list. Since the design of the data collection instrument of the current research is mainly based on Schmitt's taxonomy (ibid.), these seven items are re-organized in terms of the definitions of categories proposed by Schmitt (ibid.).

Table 3.2

Seven Strategies from Gu and Johnson's (1996) list

Original strategy statements (Gu & Johnson, 1996, pp.677-679)	**Categories in Gu & Johnson's (1996) list**	**Categories in the questionnaire**
1. I make vocabulary cards and take them with me whenever I go.	Rehearsal strategies (Using word lists)	Cognitive
2. When I try to remember a word, I repeat its pronunciation in my mind.	Rehearsal strategies (Oral repetition)	Cognitive
3. I write both the new words and their Chinese equivalents repeatedly in order to remember them.	Rehearsal strategies (Visual repetition)	Cognitive
4. I remember a group of new words that share a similar part in spelling.	Encoding strategies (Association / elaboration)	Memory (Grouping)
5. I associate a group of new words that share a similar part in spelling with a known word that looks or sounds similar to the shared part.	Encoding strategies (Association / elaboration)	Memory (Grouping)
6. When I try to remember a word, I remember the sentence in which the word is used.	Encoding strategies (Contextual encoding)	Memory (Other memory strategies)
7. I remember the new word together with the context where the new word occurs.	Encoding strategies (Contextual encoding)	Memory (Other memory strategies)

Furthermore, a new item, *Group words together within a song*, was added by the researcher to the research instrument, because some learners may use songs to help memorize the words. Yet this technique was not found in the above-mentioned two lists.

A 51-item questionnaire was constructed. It includes 43 items from Schmitt's (1997) list, 7 items from Gu and Johnson's (1996) list, and 1 new item from the present researcher (see Table 3.3). Table 3.4 outlines the framework of the questionnaire and the item numbers under each category. It is important to note that social strategies (Items 1, 16, and 50) in this study were justified as one type of metacognitive strategies that differs from Schmitt's (1997) classification of vocabulary consolidation strategies. The adjustment was made on the basis of Kudo's (1999) suggestion that social strategies have to do with "social interaction that inevitably involves negotiations for meaning by planning, monitoring, or evaluating the best ways for the students to study" (p.28). This can be seen in, for example, *interacting with native-speakers via using the new word* (Item 50), where learners try to plan to practice and monitor their vocabulary use with native-speakers. Therefore, social strategies were grouped as metacognitive strategies in the present study.

Table 3.3

Sources for the Development of the Questionnaire

Item numbers in the questionnaire	Total item number	Original sources
01, 02, 03, 04, 05, 06, 09, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 32, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 51	43	adapted/adopted from Schmitt's (1997) work
07,08,14,26,37,47,48	7	adapted from Gu and Johnson's (1996) work
31	1	the current researcher

Table 3.4

Framework of the Questionnaire

Categories	Item numbers in the questionnaire
Memory strategies (31)	
1. Pictures/ imagery (3)	02, 03, 17
2. Related words (4)	04, 05, 18, 19
3. Unrelated words (1)	06
4. Grouping (7)	07, 08, 20, 21, 29, 30, 31
5. Words' orthographical or phonological form (7)	09, 10, 22, 23, 32, 33, 40
6. Other memory strategies (9)	11, 12, 24, 34, 41, 43, 47, 48, 49
Cognitive strategies (12)	13, 14, 25, 26, 27, 35, 36, 37, 38, 42, 44, 45
Metacognitive strategies (8)	01, 15, 16, 28, 39, 46, 50, 51

Note. The numbers in parentheses indicate the total numbers in categories.

Moreover, the presentation of the items has been ordered randomly, as the respondents may become fatigued and answer the questionnaire hurriedly near the

end. In addition, the researcher has to avoid factors affecting the reliability of the questionnaire. It is noteworthy that though randomization of the items is employed, certain similar items are grouped together to help respondents distinguish item differences, such pairs as *Repeat the word orally* (Item 13) and *Repeat the word in your mind* (Item 14), *Use word lists* (Item 36) and *Make word cards and take them with you wherever you go* (Item 37), *Group words together within a storyline* (Item 30) and *Group words together within a song* (Item 31), etc.

Finally, the questionnaire was translated into Chinese. In order to make the research instrument more readable and intelligible, the researcher not only repeatedly sought assistance from the advisor to polish the language but also provided examples and illustrations ensure that the respondents understood the questionnaire items (see Table 3.5).

Table 3.5

26 Examples Listed in the Questionnaire

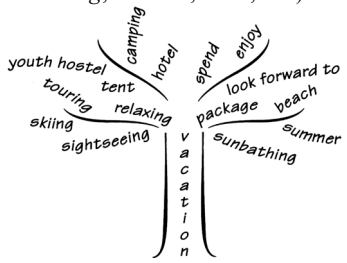
No. in the questionnaire	Strategy statements	Examples (provided by researcher, or otherwise noted)
1	Study and practice meaning through group work.	(e.g., test each other's vocabulary)
4	Use 'scales' for gradable adjectives.	(e.g., *cold → cool → warm → hot*)
5	Group the related words by drawing semantic maps.	(e.g., draw a tree diagram with several branches for the words relating to the theme of *vacation*, such words as *sunbathing*, *summer*, *hotel*, etc.)  (the picture adopted from McCarthy, O'Dell & Shaw, 1997,p.5)
6	Use Loci method.	(link the new word to a familiar place; for example, when memorizing the words about *kitchen appliances* , imagine that you stand in the center of kitchen and then connect the words to be memorized with appropriate locations)
7	Remember a group of new words that share a similar part in spelling.	(e.g., *plan, plane, planet*)
8	Remember a group of new words that sound similar.	(e.g., *fair / fare, sheep / ship)*
10	Study the sound corresponding to the letter in the word carefully.	(e.g., pay attention to the silent letters in the word)
11	Remember the word roots, prefixes, or suffixes.	(e.g., [im-] prefix means *not;* thus, [im-] in the word *im*possible means *not* possible)
12	Remember the part of speech of the word.	(e.g., *noun, verb…)*
17	Connect the word meaning to a personal experience.	(e.g., connect the word *nightmare* to your frightening dream experience).
18	Associate the word with its coordinates.	(e.g., associate the word *banana* with other types of fruit like *apple, peach*…)
19	Connect the word to the words having the similar or opposite meanings.	(e.g., associate the word *excellent* with *good/bad*)

Table 3.5

26 Examples Listed in the Questionnaire (continued)

No. in the questionnaire	Strategy statements	Examples (provided by researcher, or otherwise noted)
20	Group words together to study them.	(e.g., all *colors* first, before moving on to another category like *animals*…)
21	Group words together spatially on a page.	(e.g., group the words by part of speech—such words as, *analysis, analyze,* and *analytical*—or by the three forms of an irregular verb, such as *begin/began/begun)*
30	Group words together within a storyline.	(e.g., use the words *cell phone*, *pond, sad,* and *angry* to make up a storyline: I felt *sad* and *angry* because my *cell phone* fell into the *pond*)
31	Group words together within a song.	(e.g., put the word *party* into a song like "Old Macdonald had a *party*, E-I-E-I-O*"*)
32	Underline the first letter of the word.	(e.g., ***language***)
33	Outline the shape of the word.	(e.g., )
		(the pictures adopted from Chen, 2007, p. 28 and 70)
34	Use physical action when learning a word.	(e.g., memorize the verb *jog* with action of *running slowly* and the adjective *stinky* with action of *holding the nose*)
39	Use English-language media.	(e.g., songs, movies, etc.). (the example adopted from Schmitt, 1997, p.208)
40	Use Keyword Method.	(link the English word to a Chinese word by sound; then form an image consisting of these two concepts; for example, the English word *driver* sounds similar to the Chinese word *chuai* which means *cocky* ; then create an image like *a cocky driver who turned a deaf ear to anyone*) (the example adapted from Lin, 2002, p.20)
41	Use cognates in study.	(e.g., the Chinese word *ji ta* originates from the English word *guitar; ciao ke li* originates from *chocolate)*.
42	Put English labels on physical objects.	(e.g., paste a label with the word *refrigerator* on the refrigerator)
43	Learn the words of an idiom together.	(e.g., learn the idiom *leave me alone* as well as remember the individual meaning of the word *alone*)
47	Remember the new word together with the context where the new word occurs.	(e.g., remember the word *break* with its context such as *during the break*)
49	Remember the word with collocations of the word.	(e.g., *tea*→ *make tea* rather than **do tea*; *black tea* instead of **red tea*)

3.2.2 Content of the Questionnaire

The questionnaire begins with a short letter explaining the purposes of the survey and informing the respondents that anonymity is assured and any responses to the questionnaire items would have no influence on their end-of-semester grades (see Appendices C and D). What follows the letter is a brief introduction on how to fill out the four-part survey, as illustrated by Figure 3.3

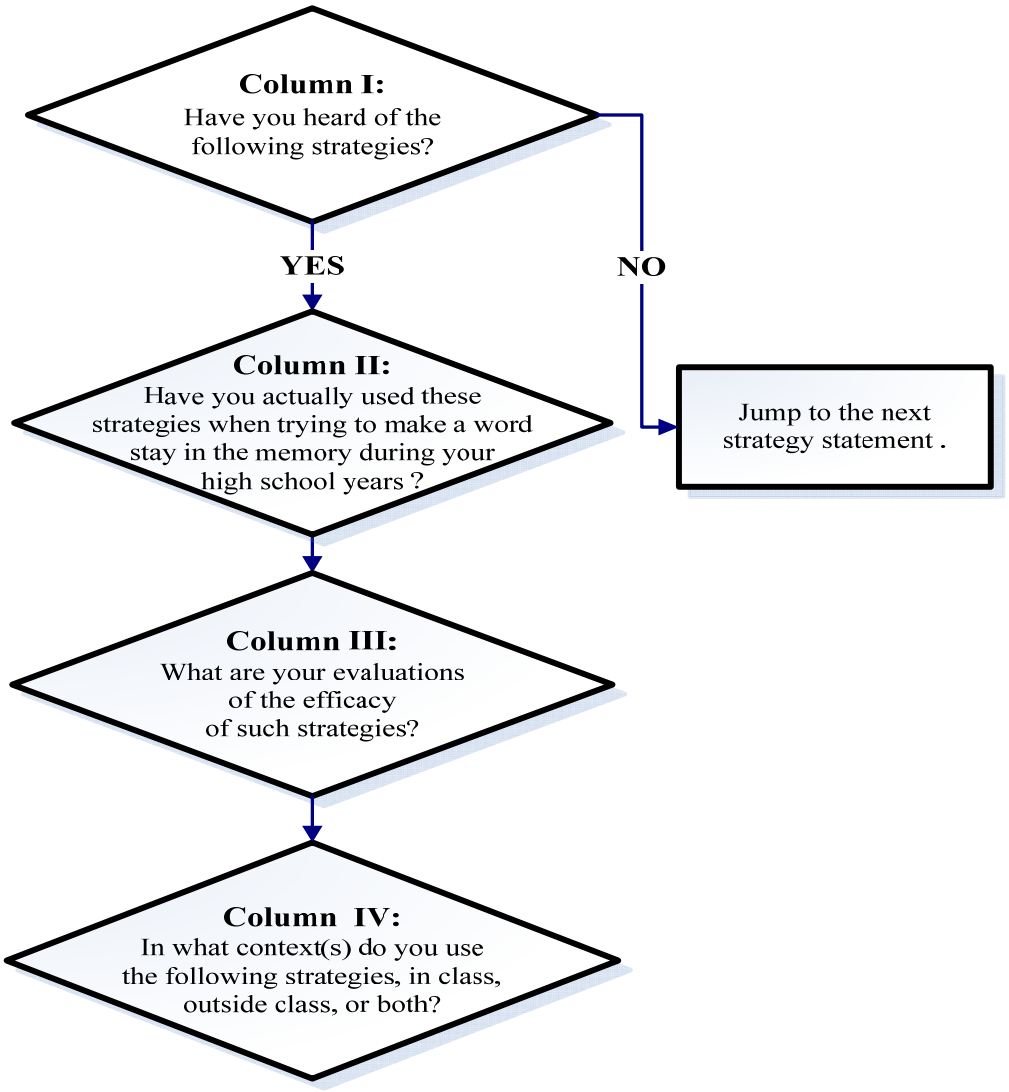


Figure 3.3. Illustration of procedures of filling out the four-part survey

The first column of the questionnaire not only examined student awareness of vocabulary consolidation strategies but served as a gate-keeper which determines whether respondents would answer the questions in subsequent sections. Students who answered “yes” to the question in Column I were asked to continue responding to the subsequent questions in the order of Columns II, III, and IV. Students who answered “no” in Column I would skip the other questions for the same item and directly jump to the next strategy statement. The first screening device aimed to exclude respondents who may *guess* the efficacy of unknown strategies. In other words, only those who were aware of a given strategy were allowed to answer the questions in Column II to IV.

The questions in the second column aimed to understand how often the participants use consolidation strategies. Based on the learning situations participants found themselves in, the participants would describe the frequency of their use of a given strategy on a four-point Likert scale (4=almost always, 3=often, 2= sometimes, 1=rarely/never) .

Column III of the questionnaire was to explore student evaluations of the efficiency of the strategies. Based on participant experiences of strategy use, the participants would measure each item on a four-point Likert scale (4=very

effective, 3=effective, 2=not very effective, 1=not effective at all).

Column IV of the questionnaire investigated the spatial context(s) in which vocabulary retention strategies were used. On the basis of their experiences in learning English, the participants would choose one of the options (3=both contexts, 2=in class, and 1=outside class) that best described the conditions under which they used a given strategy.

Finally, another column next to Column IV was added to Appendices C and D to indicate the original source for each strategy, which would not appear in the formal study. Abbreviations used in the column are listed in Table 3.6. For example, "Gu./R-W-5" (i.e., *Make word cards and take them with you wherever you go*.) means that the original source of that particular strategy can be found under the heading of "Using word lists" (the 5th item) in the category of "Rehearsal strategies" of Gu and Johnson's list (see Appendix A). Similarly, the abbreviation "Sch./M-3" (i.e., *Connect the word meaning to a personal experience, e.g., connect the word nightmare to your frightening dream experience*.) means the 3rd strategy under the heading of " Memory strategies" of Schmitt's list in Appendix B.

Table 3.6

Abbreviations Used to Indicate the Original Source for Each Strategy Described in the Questionnaire

Abbreviations / Meanings		**Abbreviations/ Meanings**	
Sch.	=Schmitt	Gu.	=Gu & Johnson
S	=Social strategies	R-W	=Rehearsal strategies (Using word lists)
M	=Memory strategies	R-O	= Rehearsal strategies (Oral repetition)
C	=Cognitive strategies	R-V	= Rehearsal strategies (Visual repetition)
Meta	=Metacognitive strategies	E-A	= Encoding strategies (Association/elaboration)
R	= (the current) Researcher	E-C	= Encoding strategies (Contextual encoding)

3.3 Data Collection Procedures

With assistance and cooperation from teachers in the high school, the Chinese version of the questionnaire was distributed to all participants as part of take-home work. Students were encouraged to answer the questionnaire to increase their self-awareness of strategy use. They were expected to return the work to their teachers within a week.

3.4 Data Analysis Procedures

Quantitative data analysis was performed with the statistical software package SPSS 13.0 for Windows. First, in order to answer Research Questions 1 about student awareness of vocabulary consolidation strategies, frequency distribution analyses were calculated for each item in Column I of the questionnaire to gain

the frequency of responses. Next, to address Research Question 2 concerning high school student use of consolidation strategies, descriptive statistics and frequency distribution analyses were performed for all items in Column II of the questionnaire to obtain the frequency of responses, means and standard deviations.

Prior to dealing with Research Question 3 on student evaluations of consolidation strategy efficiency, ratings of strategy efficiency given by research participants who had never or rarely used the strategies were screened out in order to increase the validity of the research results. That is, answers from those who choose Option 1 (*rarely/never*) in Column II of the questionnaire were excluded. Similarly, descriptive statistics and frequency distribution analyses were performed on the items in the second column of survey to yield the frequency of responses, means and standard deviations.

Finally, to answer Research Questions 4 about student use of the strategies in different spatial contexts, frequency distribution analyses were be computed for each item in Column IV of the questionnaire to gain the frequency of responses.

The data analysis procedures and research instrument design of the current study distinguished it from previous studies. These differences resulted from the use of two screening devices. First, those participants who were unaware of a

given strategy would not answer the other related questions. Second, those participants who had never or rarely used the strategies but gave ratings of strategy usefulness were eliminated from efficacy analysis. By doing so, it was hoped that the validity of the research results would better represent the real situation.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter is to report and interpret research findings. Prior to reporting the results of the study, validating the research questionnaire is of great importance in that the current data were collected primarily using the instrument. Following this section, the research results are presented in the same sequence as the four research questions were listed in Chapter 1. Presentation of the results, thus, embraces four major sections: (a) student awareness of vocabulary consolidation strategies, (b) their use of the consolidation strategies, (c) their evaluations of the efficacy of the strategies, and (d) their strategy use based on in-class and outside-class spatial contexts.

4.1 Validating of the Research Instrument

To validate the instrument of the study, reliability analyses were conducted in two ways. First, the overall internal-consistency reliability analysis of the whole survey, consisting of 204 items from the four-column questionnaire (see Appendix C), was performed. The reliability estimates of each column of the

questionnaire, Columns I to IV, all approach or exceed .90 (they are .92, .90, .92, and .89) and the overall reliability coefficient value of the four columns together reached .97. This indicates that the instrument used in this study is acceptably reliable. Secondly, when the researcher divided the questionnaire into three categories, memory strategies (31 items), cognitive strategies (12 items) and metacognitive strategies (8 items), and examined their internal consistency reliability, three parts of the questionnaire remained reliable. For the memory strategies in each column of the questionnaire, the reliability coefficient values range from .82 to .87. For the cognitive strategies, reliability coefficient values range from .67 to .76; for the metacognitive strategies, reliability coefficient values range from .63 to .69. Table 4.1 presents all the reliability coefficient values.

Table 4.1

Internal-Consistency Reliability Coefficients (Cronbach's alpha) of the Questionnaire Items

Categories	**Column I**	**Column II**	**Column III**	**Column IV**
	Awareness	**Frequency**	**Efficacy**	**Spatial Contexts**
Memory strategies (31)	.87	.86	.88	.82
Cognitive strategies (12)	.76	.67	.75	.73
Metacognitive strategies (8)	.63	.63	.69	.65
Overall (51) .97	.92	.90	.92	.89

Note. The numbers in parentheses indicate the total number of questions in each category.

4.2 Strategy Awareness

In order to seek an answer to Research Question 1, *How much do high school students know about consolidation strategies*, the researcher calculated the descriptive statistics for strategy awareness for the total participants first and then performed a frequency analysis for individual items in Column 1. Accordingly, this section first reports the results of the descriptive statistical analysis and then those of the frequency analysis.

4.2.1 Results of Descriptive Statistical Analysis

If all 82 respondents were aware of all 51 strategies, then Column I would yield 4,182 points in total. In this study, the sum of students' overall strategy awareness scores was 2,397, and the average was 29.23. That is, an average student knew around 29 (57 %) strategies out of 51 items. Student awareness of the strategies ranged between 6 and 50. Table 4.2 summarizes the results from descriptive statistics in the overall strategy awareness of the respondents. Detailed statistics of the respondents' awareness of vocabulary consolidation strategies are presented in Appendix E.

Table 4.2

Students' Overall Awareness of the Strategies

	Sum	Lowest	Highest	Mean	SD	%
Overall strategies (51)	2397	6	50	29.23	9.93	57

N=82

4.2.2 Results of Frequency Analysis

Results and discussion in this section are divided into three parts by degree of strategy awareness: the most known, the least known, and the moderately known strategies. All *the most known strategies* were marked *yes* by more than 75% of the research participants, while only less than 25% of the respondents were aware of *the least known strategies*. The rest of the items are grouped into *the moderately known strategies*. Accordingly, as revealed in Appendix E, 16 items are grouped as *the most known strategies*, 4 items belong to *the least known strategies*, and 31 items are *the moderately known strategies.*

4.2.2.1 The Most Known Vocabulary Consolidation Strategies

Table 4.3 presents *the most known strategies* in descending order of their percentages of respondents answering *yes* to the item in question. Sixteen strategies were known to more than 75% of the respondents. It is not surprising to

find that most students were aware of cognitive strategies involving repetition techniques (Items 14, 25, 13, and 26), but it is interesting to observe that some students (6% to 7%) were unaware of the top two cognitive strategies (Item 14, *repeat the word in your mind,* and Item 25, *write the word repeatedly*). The researcher could not help but wonder how these students retain words they learned. Examining the original questionnaire, the researcher found that those who were unaware of the most-known strategy (Item 14, *repeat the word in your mind*) were aware of the second-most-known strategy (Item 25, *write the word repeatedly*). This meant that they had knowledge of at least one of the most known strategies.

For metacognitive strategies, two items (Items 51 and 39) out of the eight are on *the most known* list. However, Item 51, *skip the new word this time but pay attention to its context for latter use,* has more to do with what *not* to learn rather than what to learn.

Table 4.3

Frequencies of Responses of the Most Known Strategies

Item No.	Type	Strategy Description	Rank	n	%
14.	COG	Repeat the word in your mind.	1	77	94
25.	COG	Write the word repeatedly.	2	76	93
9.	MEM	Study the spelling rule of the word carefully.	3	75	92
12.	MEM	Remember the part of speech of the word.	3	75	92
10.	MEM	Study the sound corresponding to the letter in the word carefully.	5	70	85
11.	MEM	Remember the word roots, prefixes, or suffixes.	5	70	85
35.	COG	Take notes about the new words to review them later.	7	67	82
36.	COG	Use word lists.	7	67	82
43.	MEM	Learn the words of an idiom together.	7	67	82
51.	META	Skip the new word this time but pay attention to its context for latter use.	10	66	81
21.	MEM	Group words together spatially on a page.	11	64	78
49.	MEM	Remember the word with collocations of the word.	11	64	78
13.	COG	Repeat the word orally.	11	64	78
39.	META	Use English-language media.	11	64	78
22.	MEM	Say the new word aloud when studying the target word's spelling.	15	63	77
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	15	63	77

N=82

Note. COG=Cognitive strategy, MEM=Memory strategy, META=Metacognitive strategy

Half of the most known strategies were memory strategies. Over 77 % of students knew that utilizing their existing knowledge to study new word's spelling rule and pronunciation may facilitate word retention (Items 9, 10, and 22). The results also show that students were aware that *part of speech* (Item 12), *word*

roots (Item 11), *idioms* (Item 43), *a technique for grouping words on a page* (Item 12), and *word collocations* (Item 12), were all vocabulary consolidation strategies.

4.2.2.2 The Least Known Vocabulary Consolidation Strategies

The least known strategies, those recognized by 25% or fewer respondents, are listed in Table 4.4 in an ascending order of their percentages. Only 5% of the research participants knew that they might use *the shape of the word* to help remember new vocabulary (Item 33). Similarly, less than 10% of them had knowledge about the first letter of the word may help recognize or retrieve the word although research has recognized the initial letter of a word as being the most prominent feature in word recognition (Marchbanks and Levin, 1965; Timko, 1970, as cited in Schmitt, 1997). Item 16 involving social interaction, *asking the teacher to check students' word lists for accuracy,* was unknown to most learners (89%) probably because of their culture. Taiwanese students are not used to asking favors of their teachers.

Table 4.4

Frequencies of Responses of the Least Known Strategies

Item No.	Type	Strategy Description	Rank	n	%
33.	MEM	Outline the shape of the word.	51	4	5
32.	MEM	Underline the first letter of the word.	50	7	9
16.	META	Ask the teacher to check students' word lists for accuracy.	49	9	11
31.	MEM	Group words together within a song.	48	19	23

N=82

Note. MEM=Memory strategy, META= Metacognitive strategy

4.2.2.3 The Moderately Known Vocabulary Consolidation Strategies

With respect to *moderately known strategies*, 31 strategies on which 26% to 72% respondents marked *yes* are shown in Table 4.5. Although these 31 strategies belong to the same group, it is very clear that the 10 higher ranking strategies (the 17th item to the 24th item) were better known to the respondents (60% to 72%) than the lower ranking strategies (the 38th item to the 47th item) about which only 28% to 39% of the respondents had shown knowledge of.

Table 4.5

Frequencies of Responses of Moderately Known Strategies

Item No.	Type	Strategy Description	Rank	n	%
7.	MEM	Remember a group of new words that share a similar part in spelling.	17	59	72
23.	MEM	Visualize the word form.	17	59	72
19.	MEM	Connect the word to the words having the similar or opposite meanings.	19	54	66
28.	META	Continue to study the words over time.	19	54	66
15.	META	Test oneself with word tests.	21	53	65
24.	MEM	Paraphrase the word's meaning.	22	52	63
47.	MEM	Remember the new word together with the context where the new word occurs.	23	50	61
37.	COG	Make word cards and take them with you wherever you go.	24	49	60
1.	META	Study and practice meaning through group work.	24	49	60
20.	MEM	Group words together to study them.	24	49	60
41.	MEM	Use cognates in study.	27	48	59
8.	MEM	Remember a group of new words that sound similar.	28	47	57
45.	COG	Use the vocabulary section in your textbook.	29	45	55
18.	MEM	Associate the word with its coordinates.	30	44	54
29.	MEM	Use the new word in sentences.	31	42	51
3.	MEM	Image word's meaning.	32	41	50
6.	MEM	Use Loci method.	32	41	50
4.	MEM	Use 'scales' for gradable adjectives.	34	40	49
17.	MEM	Connect the word meaning to a personal experience	34	40	49
50.	META	Interact with native-speakers via using the new word.	36	39	48
46.	META	Review the word periodically.	36	39	48
48.	MEM	Remember the sentence in which the word is used.	38	32	39
27.	COG	Listen to a tape/CD of word lists.	39	31	38
44.	COG	Keep a vocabulary notebook wherever you go.	39	31	38
2.	MEM	Draw a picture to represent the word meaning.	41	27	33
34.	MEM	Use physical action when learning a word.	41	27	33
42.	COG	Put English labels on physical objects.	43	27	33
40.	MEM	Use Keyword Method.	44	26	32
5.	MEM	Group the related words by drawing semantic maps.	45	24	29
38.	COG	Use flash cards.	45	24	29
30.	MEM	Group words together within a storyline.	47	23	28

N=82

Note. MEM=Memory strategy, COG=Cognitive strategy, META= Metacognitive strategy

4.3 Strategy Use

The second research question was intended to identify *what consolidation strategies are used most and least frequently by high school students.* To this end, mean scores and standard deviations for categories and strategy items in the second column of the questionnaire were calculated. The numbers of the four responses (from 1=rarely/never to 4=almost always) of each item are presented in Appendix F. The results of these analyses are discussed in two major sections: Section 4.3.1 reports the descriptive statistics of strategy use frequency by strategy category and Section 4.3.2 exhibits the results of descriptive statistical analyses as well as frequency analyses for all strategies.

4.3.1 Frequency of Strategy Use by Categories

To explore the high school students' strategy use in this study, the descriptive statistical results of the strategy use by strategy categories are first calculated. It is important to note that only when the participants indicated their knowledge of the strategies would they responded to the questions about the use and efficacy evaluation of the strategies in the survey. Those respondents who reported that they lacked the knowledge of the strategies in the awareness column

of the questionnaire were regarded as those who never used the given strategies. Thus, when calculating mean scores for the overall strategy use, the researcher included the data from those who were unaware of the strategies and treated them as having indicated *rarely/never* use the strategies. In this way, the number of respondents can remain the same (N=82), making it possible to compare the percentages of actual use of each (type) of strategy/strategies. After calculating the overall average mean for the strategy use, mean scores for all strategy items were calculated first and means for the strategy categories were then obtained.

The overall average mean for the use frequency of all strategies is 1.96. In comparison to the four-point Likert scale (1=rarely/never, 2=sometimes, 3=often, and 4=almost always) adopted in this study, the value obtained (1.96) is less than 2, which indicates that students only occasionally employed strategies to facilitate vocabulary retention. A closer look of the statistics reveals that netacognitive strategies were used less frequently than *sometimes* by the students with the lowest mean (1.81). On the other hand, cognitive strategies were *sometimes* used by students, as the mean (2.11) is a little higher than 2. When the researcher further used *t* test (two-tailed) to detect significant difference among these variables (memory, cognitive, and metacognitive strategies), the result of the *t* test

showed significant differences among them (see Table 4.7 for further detail). The above descriptive statistical results of preliminary investigation into student use of the strategies by strategy categories are given in Table 4.6.

Table 4.6

Mean Score and Standard Deviation (SD) of Strategy Use Frequency by Category

Strategy Category	Number of Items	Mean	SD
Overall strategies	51	1.96	0.37
Memory strategies	31	1.93	0.41
Cognitive strategies	12	2.11	0.45
Metacognitive strategies	8	1.81	0.46

Note. N=82 (Those who indicated their unawareness of the given strategies were considered that they never (option 1= rarely/never) used the strategies.)

Table 4.7

Results of the T-test Analysis (Strategy Use)

Variables			Sig. (two-tailed)
Memory	&	Cognitive	p= 0.000*
Memory	&	Metacognitive	p= 0.005*
Cognitive	&	Metacognitive	p= 0.000*

Note. An asterisk (*) indicates the significant difference between two variables at $p<.05$.

4.3.2 Frequency of Strategy Use by Strategies

The current study adopted two data analysis procedures to identify *the most and least often used strategies* in the hope of making a better representation of the real situation. The first analysis procedure is a common practice in the related field,

where the frequencies of strategy use are ranked in accordance with mean scores. Following the traditional method, the researcher first calculated mean scores of the strategy use of all 82 respondents. Please note again that those who did not respond in this part of survey because they were not aware of the strategies were categorized as having marked 1 in the questionnaire (*never/rarely* used the strategy) in that they cannot have used any they did not know. Then, on the basis of the average means, strategies were grouped as follows: those with average mean (a) higher than 2.0, (b) between 1.51 and 1.99, and (c) lower than 1.50 (Appendix F).

In addition to the conventional data analysis procedure, the current study further examined which strategies were used by the students on a regular basis. The researcher also ranked the strategies according to the number of those who used the strategies *often* (3) and *almost always* (4). Next, the strategies used (more than) often by half or more than half of the respondents were labeled as *frequently used strategies* (Appendix G). Using these two calculation methods, the researcher hoped to better reflect students' use of strategies.

For *the least used strategies*, the researcher ranked the strategies on the basis of the number of the respondents who were unaware of the strategies and

used the strategies *rarely/never* (1). Then, those 50% of the low frequent users identified as rarely/never used the strategies were grouped as *the least used strategies* (Appendix H).

Table 4.8 presents two lists of *the most frequently used strategies*. One list was obtained through calculating average means, and the other was organized on the basis of the numbers of frequent users. The 10 most frequently used strategies from the two lists are completely the same, 5 being cognitive strategies and 5 being memory strategies. The respondents did not seem to favor one type of strategy over the other. However, converting the numbers into percentages sheds new light on the problem. While only 16.1% (5 out of 31) of the memory strategies were the most frequently used, 41.7% (5 out of 12) of the cognitive strategies were commonly adopted by the majority of the respondents. These results suggest that among the top 10 *most often used strategies*, students had a strong tendency to use those which primarily emphasize the orthographical form of words, such as *studying the spelling rule of the word* (Item 9), *writing the word repeatedly* (Item 25), *writing both new words and their Chinese equivalents repeatedly in order to remember them* (Item 26), and *using word lists* (Item 36), which focus more on phonological form of words, as evidenced by *repeating the*

word in your mind (Item 14) and *repeating the word orally* (Item 13), or which focus on both orthographical and phonological forms of words like *studying the sound corresponding to the letter in the word* (Item 10). Further, it is important to note that when the researcher compared these two lists (the mean scores and percentages of high frequent users), the mean score list (organized according to the average means) showed 20 strategies (those means higher than 2.00) which were used more frequently but the percentage list (organized on the basis of the percentages of high frequent users) revealed only 16 strategies (percentages higher/equal to 50%) which were used more often. Namely, four strategies (Items 39, 28, 24 and 47) were actually not often used by learners given that the percentages of high frequent users were below 50%.

Table 4.8
Mean (M) of the Strategy Use and Number of High Frequent Users (in %)

Item No.	Type	Strategy Description	Frequency			Frequency (3+4)		
			N	M (M>2.0)	Rank	n=(3+4)[a]	%[b] (%>50%)	Rank
9.	MEM[C]	Study the spelling rule of the word carefully.	82	3.23	1	68	83[d]	1
14.	COG	Repeat the word in your mind.	82	3.17	2	64	78	2
12.	MEM	Remember the part of speech of the word.	82	3.06	4	63	77	3
10.	MEM	Study the sound corresponding to the letter in the word carefully.	82	3.11	3	61	74	4
25.	COG	Write the word repeatedly.	82	2.98	5	57	70	5
11.	MEM	Remember the word roots, prefixes, or suffixes.	82	2.84	6	53	65	6
36.	COG	Use word lists.	82	2.71	7	50	61	7
21.	MEM	Group words together spatially on a page.	82	2.68	8	48	59	8
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	82	2.65	9	48	59	8
13.	COG	Repeat the word orally.	82	2.56	12	47	57	10
22.	MEM	Say the new word aloud when studying the target word's spelling.	82	2.59	10	46	56	11
49.	MEM	Remember the word with collocations of the word.	82	2.59	10	44	54	12
51.	META	Skip the new word this time but pay attention to its context for latter use.	82	2.54	14	44	54	12
43.	MEM	Learn the words of an idiom together.	82	2.55	13	43	52	14
23.	MEM	Visualize the word form.	82	2.48	15	43	52	14
35.	COG	Take notes about the new words to review them later.	82	2.44	16	41	50	16
39.	META	Use English-language media.	82	2.30	17			
28.	META	Continue to study the words over time.	82	2.17	19			
24.	MEM	Paraphrase the word's meaning.	82	2.22	18			
47.	MEM	Remember the new word together with the context where the new word occurs.	82	2.07	20			

Note.
[a] (3+4) = numbers of high frequent users (high frequent users refer to those who gave ratings of 3 *(often)* and 4 *(almost always)* in the use frequency evaluation)
[b] % = the percentage of high frequent users out of the total number of the research participants (N=82)
[c] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy
[d] The percentage is rounded to the nearest whole number.

Similarly, to examine *the least used strategies*, the percentage of the low frequency users (those who were unaware of the strategies and rarely/never used the given strategies) and the mean scores of the strategies were compared (see Table 4.9). Results yielded from these two data analysis methods showed that the bottom 15 strategies in these two lists (one list was organized by mean scores; the other by percentages of the low frequent users) are the same. Out of these 15 strategies, 11 strategies (Items 33, 16, 32, 31, 38, 42, 5, 34, 2, 30, and 40) were not used frequently by the students, mainly because only 33% of the students, or less, indicated that they had knowledge of these strategies. Moreover, the total numbers of the least often used strategies presented in these two lists were different. While the list composed by the average means disclosed 15 of *the least often used strategies*, the other list organized according to the percentages of the low frequency users presented 26 of *the least frequently used strategies*. This suggests that a total of 26 strategies (15 from the mean score list and 11 from the low frequency list) were not employed regularly by the students (Table 4.9).

Table 4.9
Mean (M) of the Strategy Use and Number of Low Frequent Users (in %)

			AW [a]	Use Frequency			Frequency (n=1) [b]		
Item No.	Type	Strategy Description	%	N	M (M<1.5)	Rank	n=1	%[c] (%>50)	Rank
33.	MEM[d]	Outline the shape of the word.	**5**	82	1.01	51	81	99	51
16.	SOC	Ask the teacher to check students' word lists for accuracy.	**11**	82	1.05	50	80	98	50
32.	MEM	Underline the first letter of the word.	**9**	82	1.09	49	78	95	49
31.	MEM	Group words together within a song.	**23**	82	1.17	47	74	90	47
38.	COG	Use flash cards.	**29**	82	1.15	48	74	90	47
42.	COG	Put English labels on physical objects.	**33**	82	1.18	46	72	88	46
5.	MEM	Group the related words by drawing semantic maps.	**29**	82	1.26	44	68	83	44
27.	COG	Listen to a tape/CD of word lists.	38	82	1.26	44	68	83	44
34.	MEM	Use physical action when learning a word.	**33**	82	1.27	43	66	80	43
2.	MEM	Draw a picture to represent the word meaning.	**33**	82	1.29	41	64	78	40
30.	MEM	Group words together within a storyline.	**28**	82	1.38	38	64	78	40
48.	MEM	Remember the sentence in which the word is used.	39	82	1.28	42	64	78	40
40.	MEM	Use Keyword Method.	**32**	82	1.37	39	62	76	39
44.	COG	Keep a vocabulary notebook wherever you go.	38	82	1.41	37	60	73	38
1.	META	Study and practice meaning through group work.	60	82	1.37	39	56	68	37
29.	MEM	Use the new word in sentences.	51				53	65	34
46.	META	Review the word periodically.	48				53	65	34
50.	META	Interact with native-speakers via using the new word.	48				53	65	34
4.	MEM	Use 'scales' for gradable adjectives.	49				49	60	31
6.	MEM	Use Loci method.	50				49	60	31
8.	MEM	Remember a group of new words that sound similar.	57				49	60	31
18.	MEM	Associate the word with its coordinates.	54				47	57	30
17.	MEM	Connect the word meaning to a personal experience	49				46	56	29
45.	COG	Use the vocabulary section in your textbook.	55				45	55	28
3.	MEM	Image word's meaning.	50				44	54	26
37.	COG	Make word cards and take them with you wherever you go.	60				44	54	26

Note.
[a] AW = percentages of the respondents (out of 82) who indicated their awareness of the given strategies and those percentages in boldface refer to 33% of the respondents, or less, who were aware of the strategies.
[b] (n=1) = numbers of low frequent users who included those who gave the rating of *1 (rarely/never)* in the use frequency evaluation and those who were *unaware* of the given strategies
[c] % = the percentage of low frequent users out of the total number of the research participants (N=82)
[d] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

For the group of strategies with mean scores between 1.51 and 1.99, Schmitt (1997) has commented, "it is difficult to draw conclusions … in the middle of the range, since there is no group trend" (p.219). No obvious patterns were found when the researcher searched for categorize a group trend. Finally, the researcher encouraged the respondents to write down strategies they used which did not appear in the survey, but they did not report any. However, they did indicate that they learned new strategies from this questionnaire.

4.4 Strategy Efficacy Evaluation

In order to answer Research Question 3 (*What are high school student evaluations of the effectiveness of these consolidation strategies?)*, ratings for the strategy efficacy reported by respondents who rarely/never used the given strategy were excluded prior to conducting the data analysis. Means and standard deviations for each of the strategy categories and items were obtained from descriptive statistical analyses, while percentages of responses for the degrees of the strategy effectiveness were obtained from the frequency analyses. Results of the two analyses are reported in two sections. Section 4.4.1 discusses the results of the descriptive statistics of strategy efficacy evaluation, by category. Section 4.4.2

presents the results of descriptive statistics, as well as frequency analyses for each individual strategy. Further, in order to gain insight of the relationship between strategy use and strategy effectiveness, the effectiveness of the strategies is presented on the basis of strategy use frequency (Section 4.3.3).

4.4.1 Results of Descriptive Statistical Analyses of Strategy Efficacy by Categories

Table 4.10 provides the mean scores and standard deviations for the effectiveness ratings of the strategy categories. The method used in this study differs from the conventional method, in which researchers did not distinguish efficacy evaluations given by those who used the strategy rarely or regularly (e.g., Chen, 1998; Schmitt, 1997). In the current study, ratings given by those who never or rarely used the strategy were removed. The overall mean score of the 51 strategies reached 3.13 (1=not effective at all, 2 = not very effective, 3 = effective, and 4 = very effective), suggesting that students considered that the strategies they used to retain vocabulary were effective in general.

Table 4.10

Mean Score and Standard Deviation (SD) of Strategy Efficacy by Category

Strategy Category	Number of Items	Mean	SD
Overall strategies	51	3.13	0.25
Memory strategies	31	3.10	0.22
Cognitive strategies	12	3.13	0.25
Metacognitive strategies	8	3.18	0.23

Calculations of the mean scores of the three categories of memory, cognitive and metacognitive yielded comparable results (memory strategies=3.10, cognitive strategies=3.13 and metacognitive strategies=3.18). To detect statistically significant differences among these strategy categories, a *t* test was conducted. The *t* test summary table (Table 4.11) revealed that there were no significant differences among them.

Table 4.11

Results of the T-test Analysis (Strategy Efficacy)

Variables			Sig. (two-tailed)
Memory	&	Cognitive	p= 0.938
Memory	&	Metacognitive	p= 0.226
Cognitive	&	Metacognitive	p= 0.429

Note. p<.05 indicates the significant difference between two variables.

4.4.2 Results of Descriptive Statistics of Strategy Efficacy by Strategies

After the overview of the statistical performance for the effectiveness of the strategy categories, efficacy inspection of each strategy was conducted. The efficacy ratings of the 51 strategies range between 2.63 and 4.00. Such statistical analysis seems to suggest that the effectiveness of these strategies were acceptable, since 33 ratings were equal to/larger than 3.00 and the rest were between 2.63 and 2.98. (Please refer to Appendix I for more details.) Among the 33 highly-rated strategies, 19 were memory strategies, 8 were cognitive strategies, and 6 were metacognitive strategies. (See Table 4.12.)

Table 4.12
Category Distribution of Effective Strategies

Category	**≥ 3**	**< 3**
Memory strategies (31)	19	12
Cognitive strategies (12)	8	4
Metacognitive strategies (8)	6	2

4.4.3 Examination of Efficacy Evaluation by Frequency of Use

Although all the strategies obtained high means on efficacy evaluation, when closely examining the composition of the respondents, the researcher found that some of the strategy evaluations were provided by occasional users. Those

who responded to the questions on efficacy did not use the strategies often, such as using *Keyword Method* (Item 40) or *remembering the sentence in which the word is used* (Item 48), etc. (see Appendix J for more examples). It was debatable whether such a strategy evaluation by the occasional user was as dependable as that of frequent users. Out of curiosity, the researcher removed those ratings provided by low-frequency users and re-ranked the efficacy evaluation by strategy. (See Appendix J.) The correlation between the two rankings was 0.54, which means the two ranking systems were not comparable. To further observer how much covariation existed between these two rankings, the square of correlation r was obtained. With the r^2 being 0.29, the researcher was able to conclude that 29% of the rankings of the vocabulary consolidation strategies were overlapping. Thus, deletion of ratings by infrequent users appears to be statistically significant.

Having examined the overall comparison of the two rankings, the researcher found something else noteworthy. A few *high-efficacy strategies* were evaluated by none or very few respondents that used the strategies frequently. Take the *most effective* strategy, Item 16 (*asking the teacher to check students' word lists for accuracy*), as an example. The mean value of its efficacy is 4; meaning 100 % of the respondents considered it *very effective*. However, the total number of the

respondents to the questionnaire item was 1. Similar cases with fewer than 10 frequent users were tabulated below (see Table 4.13). In addition to these disputable items, the efficacy values of two strategies (Items 33 and 42) dropped to 0, because no respondents actually used the strategies frequently. (See Appendix J.)

Table 4.13

Mean (M), and Standard Deviation (SD) of the Strategy Efficacy Evaluation

Item No.	Type	Strategy Description	Efficacy[a] by users choosing (2+3+4)				Efficacy[b] by users choosing (3+4)			
			Rank	N	M	SD	Rank	N	M	SD
16.	META[c]	Ask the teacher to check students' word lists for accuracy.	1	**1**	4.00	.00	1	**1**	4.00	.00
31.	MEM	Group words together within a song.	17	**8**	3.25	.71	2	**4**	3.75	.50
38.	COG	Use flash cards.	11	**7**	3.29	.76	39	**2**	3.00	1.41
1.	META	Study and practice meaning through group work.	48	**5**	2.80	.45	39	**2**	3.00	.00
32.	MEM	Underline the first letter of the word.	30	**3**	3.00	.00	39	**2**	3.00	.00
42.	COG	Put English labels on physical objects.	17	**4**	3.25	.50	50	**0**	0.00	.00
33.	MEM	Outline the shape of the word.	30	**1**	3.00	.00	50	**0**	0.00	.00

Note.

[a] Efficacy by users choosing (2+3+4) refers to efficacy ratings given by those respondents who indicated they *sometimes* (option 2), *often* (option 3), and *almost always* (option 4) used the strategies in the survey.

[b] Efficacy by users choosing (3+4) refers to efficacy evaluations rated by those who indicated they *often* (option 3), and *almost always* (option 4) used the strategies in the survey.

[c] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

In order to provide a creditable report of strategy efficacy, it was deemed

necessary to re-examine the number of respondents of each strategy. The researcher took an additional step to eliminate strategy items that were used by less than 50 % of the total respondents and that had mean values <3.00. In sum, the researcher took the following steps to shortlist high efficacy strategies:

1. eliminating ratings of those who were unaware of the strategy;
2. eliminating ratings of those who never/rarely used the strategy (Appendix I);
3. eliminating ratings of those who used the strategy only occasionally (Appendix J);
4. eliminating ratings of those strategies that less than 50% of the respondents reported their efficacy (Please refer to Appendix K for the list); and
5. eliminating strategies whose ratings were < 3.00.

The results of these procedures are presented in Table 4.14.

Table 4.14

Strategies Rated highly by High Frequent Users

Item No.	Type	Strategy Description	Frequency (3+4)[a]		Efficacy[b]			
			n	%[c]	Rank	n	M	SD
11.	MEM	Remember the word roots, prefixes, or suffixes.	53	65	1	53	3.57	.57
10.	MEM	Study the sound corresponding to the letter in the word carefully.	61	74	2	61	3.56	.65
21.	MEM	Group words together spatially on a page.	48	59	3	48	3.52	.55
22.	MEM	Say the new word aloud when studying the target word's spelling.	46	56	4	46	3.48	.69
23.	MEM	Visualize the word form.	43	52	5	43	3.44	.67
14.	COG	Repeat the word in your mind.	64	78	5	48	3.44	.65
12.	MEM	Remember the part of speech of the word.	63	77	7	62	3.40	.64
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	48	59	8	45	3.36	.71
51.	META	Skip the new word this time but pay attention to its context for later use.	44	54	9	44	3.34	.57
25.	COG	Write the word repeatedly.	57	70	10	54	3.30	.72
9.	MEM	Study the spelling rule of the word carefully.	68	83	11	67	3.24	.63
13.	COG	Repeat the word orally.	47	57	11	42	3.24	.73

N=82

Note.

[a.] Calculations of the use frequency were based on the data from those high frequent users only (i.e., those respondents who indicated that they *often* (3) and *almost always* (4) used the strategies in the survey).

[b.] Results of the strategy efficacy evaluation were yielded from efficacy ratings given by those high frequent users only.

[c.] % = the percentage of those high frequency user out of the total research participants (N=82)

[d.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

Table 4.14 shows 12 strategies rated highly (with the mean average exceeding 3) by more (than 50%) respondents using them often/almost always. Based on experiences of the strategy use, learners considered that using *the word*

roots, prefixes, or suffixes (Item 11) was *the most effective method* of retaining words, which around 65% of the respondents had often/almost always used this approach. This finding is not entire congruent with that of Schmitt (1997), who found that Japanese learners believed that this strategy was helpful but they infrequently used it.

In addition, there is strong evidence that learners favored strategies highlighting word forms. Most students reported that studying the forms of words benefited their vocabulary retention; this type of strategy includes the emphasis of pronunciation of words (Items 14 and 13), spelling of the word (Items 25, 23, 26 and 9), or both sound and spelling (Items 10 and 22). Such high ratings for both frequency and efficacy may be due to the fact that sound and spelling of words are not only what the language instructor first teaches the learner but also what any learner needs to have in order to recognize them or produce them in speaking/writing. Among these eight strategies focusing on word forms, high school learners especially considered that strategies emphasizing both orthographical and phonological forms at the same time were the most useful, as reflected in the 2nd rank strategy (*studying the sound corresponding to the letter in the word carefully,* Item10) and the 4th rank strategy (*saying the new word aloud*

when studying the target word's spelling, Item 22) in Table 4.14. Please see Table 4.15 for clarifying the difference among these strategies focusing on word forms.

Table 4.15

Strategies Focusing on Word Forms Rated highly by High Frequent Users

Strategies Focusing on Forms			
Orthographical form		**Phonological form**	
MEM	Study the spelling rule of the word carefully. (Item 9)	**COG**	Repeat the word orally. (Item 13)
MEM	Visualize the word form. (Item 23)	**COG**	Repeat the word in your mind. (Item 14)
COG	Write the word repeatedly. (Item 25)		
COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them. (Item 26)		
Both orthographical and phonological forms			
MEM	Study the sound corresponding to the letter in the word carefully. (Item 10)		
MEM	Say the new word aloud when studying the target word's spelling. (Item 22)		

4.5 Strategy Use in Specific Spatial Contexts

To address Research Question 4, *what are the most used consolidation strategies by high school students in specific spatial contexts (in-class and outside-class)*, numbers of respondents who indicated their spatial contexts for the strategy use were calculated using a frequency analysis (see Appendix L). Before analyzing the data, responses from those students who were *unaware* of or *rarely/never* used the word retention strategies given in the questionnaire were eliminated. Screening out such ratings thus increased the reliability of the results.

Appendix L offers numbers of responses to the three options (1=outside class, 2=in class, 3=both) in the sequence of descending numbers of total responses to the item. Among the 51 strategies, 27 strategies (the 1st rank to 27th rank) were evaluated by at least the half of the research participants. In order to seek the patterns of the strategy use in the given spatial contexts, the number of the respondents who chose option 3 (*both contexts*) were added to the number of the responses of options 1 (*outside class*) and 2 (*in class*). With such adjustments in the number of the responses (see Appendix M), it becomes clear that the spatial contexts where strategies were used by learners were overlapping.

In other words, if one learner used a strategy in one spatial context, s/he was likely to use it in the other context. To explore relationships of the strategy use in between two variables (in-class and outside-class contexts), the Pearson correlation analysis of numbers of responses to the context of in-class and the context of outside class was performed. The calculation of the correlation yielded a high correlation value of .918, implying a strong positive relationship between these two contexts. Please see Figure 4.1 for the scatterplot which illustrates the relationship between these two variables. To further observe how much covariation existed between these two spatial contexts, the square of correlation r

was obtained. With the r^2 being .843, the researcher was able to conclude that 84% of the contexts in which vocabulary consolidation strategies were used overlapped.

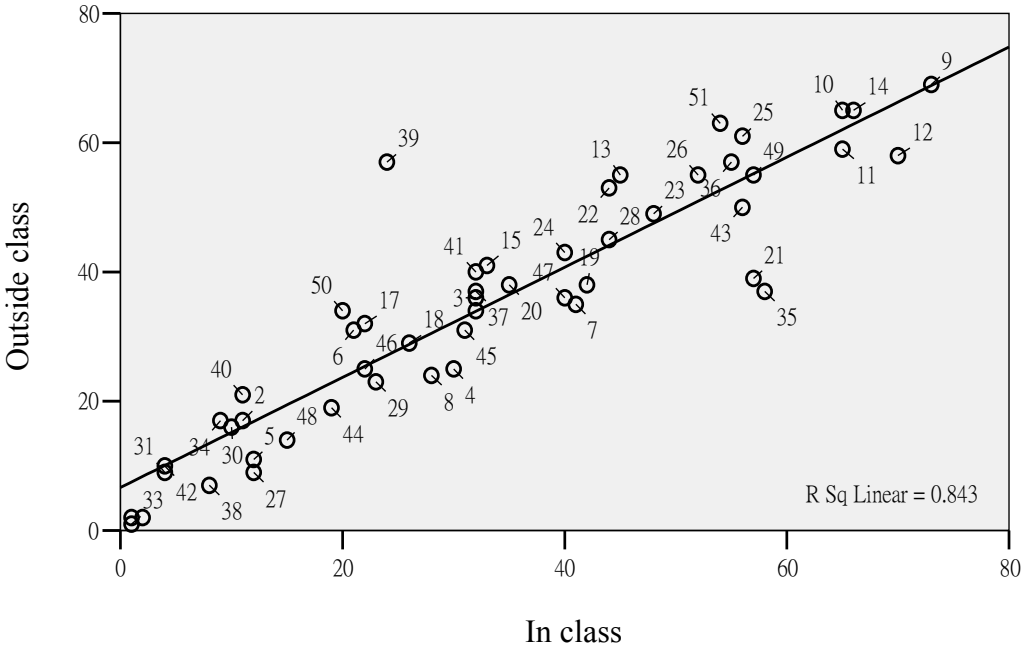


Figure 4.1. A scatterplot illustrates the relationship between the strategy use in in-class and outside-class contexts.

4.5.1 Comparison of the Strategy Use in In-class and Outside-class Contexts

The majority of the students used the strategies without distinguishing the spatial contexts. However, in order to answer the fourth research question in more detail, the researcher examined those items which 12 or more respondents favored

using in one context than in the other. Out of 51 strategies, only 5 display such a difference. Among the five strategies, two strategies (Items 39 and 50) are more frequently used in the outside-class context while three strategies (Items 12, 21 and 35) were often employed in the in-class context. It is not surprising to find that the learners took advantage of *English-language media* (Item 39) outside of class to promote word retention. A ready-made explanation is the inconvenience or inaccessibility of such resources available in class. Meanwhile, no doubt it is more convenient to spend spare time outside the class conducting other private word memorizing activity, for example, *interacting with native-speakers via using the new word* (Item 50). On the other hand, the frequently used strategies in the spatial context of class (Items 12, 21 and 35) may imply that those strategies tended to serve as classroom activities led by language teachers. Either *remembering the part of speech of the word* (Items 12) or *grouping words together spatially on a page* (Item 21) are good examples that may account for this phenomenon. Moreover, both strategies (Items 12 and 21) were not only frequently used but rated as effective by respondents, as earlier discussed in Section 4.4.3. As a result, such type of strategies was used more often in the context of in-class than that of outside-class. Table 4.16 shows the above

mentioned comparison of the strategy use in *the contexts of outside-class and in-class.*

Table 4.16

A Comparison of Strategies Used in the Contexts of Outside-class and In-class

Item No.	Type	Strategy Description	Rank	N	Outside Class 1	In Class 2	Range[a]
12.	MEM[b]	Remember the part of speech of the word.	3	72	58[c]	**70**[d]	12
21.	MEM	Group words together spatially on a page.	12	59	39	**57**	18
35.	COG	Take notes about the new words to review them later.	12	59	37	**58**	21
39.	META	Use English-language media.	15	57	**57**	24	33
50.	META	Interact with native-speakers via using the new word.	28	38	**34**	20	14

Note.

[a.] Range refers to the range between the numbers of the respondents who chosen Option 1 and those of respondents who chosen Option 2.

[b.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy,

[c.] The number under the given option (either 1 = outside class, or 2 = in class) was adjusted by adding numbers of the respondents who chosen Option 3 (3 = both contexts).

[d.] The boldface number indicates that the number under its option is higher than the other.

4.6 Comparisons with Other Related Studies

After all research questions answered, this section compares the results of the current study with those of previous studies and concludes with a brief summary of major findings of the current study. First, when comparing *the most-often used strategies* explored in this study with those reported in other studies, the researcher found that students tended to take advantage of various

strategies which emphasize a word's spelling or pronunciation to facilitate word retention, as evidenced by the strategies (Items 9, 10, 13, 14, 22, 23, 25, 26, and 36) concerning words' orthographical/phonological forms out of 15 *most-often used strategies* (see Table 4.17). It is not surprising to find that learners relied on sound and spelling of words so much when memorizing words because both orthographical/phonological forms of words are the most fundamental components which learners need to recognize or produce them in speaking or writing. This finding is consistent with the findings of previous studies (Schmitt, 1997; Wang, 2004; Wu, 2005) that have indicated that EFL learners pay much attention to word forms when memorizing words, such as *studying the spelling/sound of the word* (Items 9 and 10), *repeating the word orally* (Item 13), *saying new word aloud when studying the target word's spelling* (Items 22), *writing the word repeatedly* (Item25), or *using word lists* (Item36). In addition to the 6 strategies mentioned above which were identical to strategies used in previous studies, three *frequently used strategies* involving word forms explored in this study differed from those of Schmitt's (1997) study: *repeating the word in your mind* (Item14), *writing both the new words and their Chinese equivalents repeatedly in order to remember them* (Item26), and *visualizing the word form*

(Item 23). Items 14 and 26 were adapted from Gu and Johnson's (1996) taxonomy and thus could not be found in Schmitt's (1997) strategy list. Item 23 indicated that Taiwanese learners in this study preferred *visualizing the orthographical form of the known word* when facilitating memorizing the word that has been learnt; however, Japanese learners in Schmitt's (1997) study did not often employ this strategy in word retention. This result may be explained by differences between L1 language systems because learners may transfer strategies they used in learning L1 to learning the foreign language. The Chinese language system is a meaning-based logographic writing system in which each character symbolizes a whole word with an individual meaning rather than a sound. It is important for Chinese learners to image the shape/form of the word in order to recall and memorize the meaning of the word. Accordingly, Taiwanese learners in this study often visualized the word form when memorizing English vocabulary. Unlike Chinese language, Japanese language is a syllabic writing system in which each symbols stands for a syllable in making up words. Japanese learners can easily pronounce the phonographic symbol they encounter, but being able to pronounce the word does not guarantee their knowledge of the word meaning. This may account for the low use frequency of visualizing the word form in Schmitt's (1997)

study.

Table 4.17

Comparisons of the Results on Consolidation Strategy Use Frequencies of the Current Study with Those of Previous Studies

Features	
1. Prefer using strategies associated with sounds/spellings of words.	
Similarities	Dissimilarities
● *Study the spelling rule of the word* (Item 9). ● *Study the sound corresponding to the letter in the word* (Item10). ● *Repeat the word orally* (Item13). ● *Say the new word aloud when studying the target word's spelling* (Item22). ● *Write the word repeatedly* (Item25). ● *Use word lists* (Item36). (Schmitt, 1997; Wang, 2004; Wu, 2005)	● *Repeating the word in your mind* (Item14) and *writing both the new words and their Chinese equivalents repeatedly in order to remember them* (Item26) were revealed only in the current study. ● *Visualizing the word form* (Item 23) was not frequently used by Schmitts' (1997) participants (only 32% of participants in his study reported they used the strategy).
Features	
2. Prefer strategies involving the analysis of word structures.	
Similarities	Dissimilarities
	● *Remember the part of speech of the word* (Item12). ● *Remember the word roots, prefixes, or suffixe*s (Item11).

Further, the participants in this study favored two memory strategies emphasizing word structural analysis, *remembering the word roots, prefixes, or suffixes* (Item 11) and *the part of speech of the word* (Item 12). These results are not congruent with those of Schmitt (1997), who reported that both of the two strategies (Items 11 and 12) were used infrequently by Japanese EFL high school learners. However, the current study found that these two strategies were more

teacher-led than self-initiated; they were more frequently used in class.

On the other hand, when the researcher compared *the least-often used* strategies in this study with those from other studies, one of 26 *least-often used strategies* in this study (Item 32, *underline the first letter of the word*) was, however, often used by Taiwanese EFL high school learners (N=271) in Wang's (2004) study. In the current study, this infrequent use of the memory strategy (Item 32) by students was mainly due to students' unawareness of the strategies (around 91 % of students lacked knowledge of this strategy).

As for comparisons between *the most-effective strategies* in the present study with those from other research, the results revealed that *remembering the word roots, prefixes, or suffixes* (Item11) was the most effective strategy in this study, unlike *repeating the word orally* and *writing the word repeatedly* which were generally listed at the very top (not lower than the third rank) of the most effective strategy lists of previous studies (e.g., Chen, 1998; Schmitt, 1997; Wu, 2005). Second, many techniques focusing on word forms reported to be effective by students in the current study (Items 9, 10, 13, 22 and 25) support the results of the previous studies (Chen, 1998; Schmitt, 1997; Wu, 2005). Among various effective strategies relating to word forms (Items 9, 10, 13, 14, 22, 23, 25 and 26),

it is interesting to note that *visualizing the word form* (Item 23) was rated as helpful by students in this study but was considered not effective by respondents in Schmitt's (1997) study. In Schmitt's (ibid) study, only 32% of respondents indicated they had used this strategy. In other word, this effectiveness rating of the strategy was given not only by those who used the strategy but also by 68% of respondents who had never used this strategy. Thus, the reliability of the ineffectiveness of this strategy may be questionable. See Table 4.18 for the synopsis of the comparisons of the results on strategy efficacy of the current study with those of previous studies.

Table 4.18

Comparisons of the Results on Consolidation Strategy Efficacy Evaluations of the Current Study with Those of Previous Studies

Features	
1. Strategies involving the analysis of word structures were the most effective.	
Similarities	Dissimilarities
	Unlike *written repetition* and *verbal repetition strategies* at the very top of the most effective strategy list in Schmitt's (1997), Chen's (1998), and Wu's (2005) studies, the most effective strategy in this study was *remembering the word roots, prefixes, or suffixes* (Item11).
Features	
2. Strategies which focus on word's forms were rated as effective.	
Similarities	Dissimilarities
● *Study the spelling of the word* (Item 9). ● *Study the sound corresponding to the letter in the word* (Item10). ● *Repeat the word orally* (Item13). ● *Say the new word aloud when studying the target word's spelling* (Item22). ● *Write the word repeatedly* (Item25). (Chen, 1998; Schmitt, 1997; Wu, 2005)	● *Visualize the word form* (Item 23) was one of the effective strategies, but in Schmitt's (1997) study this strategy was the least effective strategy. ● *Repeating the word in your mind* (Item14) and *writing both the new words and their Chinese equivalents repeatedly in order to remember them* (Item26) were revealed only in the current study.

Overall, the current study found that high school learners in this study knew about 29 strategies (57 %) out of 51, implying that the degree of strategy awareness of the students appears to be moderate. With the respect to the strategy use, learners on the average (M= 1.96, SD = 0.37) occasionally employed strategies for word retention. The medium use of the strategies was also reflected in the average percentage of the strategy use of high frequent users (31%).

Although students in the current study steadily use strategies, they tended to utilize certain specific type of strategies more often than others. Strategies involving studying word forms are good examples (Items 9, 10, 13, 14, 22, 23, 25 and 26). These were not only often used but also considered effective by the majority of students. See Table 4.19 for strategies (marked by asterisks) which were labeled as the most known, more frequently used and effective. Furthermore, the present study investigated the strategy use in spatial contexts. The results seemed to imply that those who actually used strategies did not distinguish the spatial contexts (in-class/outside-class contexts), as evidenced by a strong relationship between strategy use in the context of in-class and the context of outside-class (the obtained *r* is as large as .918).

Table 4.19

Summary of the Major Findings of the Study

Item No.	Type	Strategy Description	Awareness	Frequency by (3+4)[a]	Efficacy
			Rank	Rank	Rank
11.	MEM[b.]	*Remember the word roots, prefixes, or suffixes.	5	6	1[c]
10.	MEM	*Study the sound corresponding to the letter in the word carefully.	5	4	2
21.	MEM	*Group words together spatially on a page.	11	8	3
22.	MEM	*Say the new word aloud when studying the target word's spelling.	15	11	4
14.	COG	*Repeat the word in your mind.	1	2	5
23.	MEM	Visualize the word form.	17	14	5
12.	MEM	*Remember the part of speech of the word.	3	3	7
26.	COG	*Write both the new words and their Chinese equivalents repeatedly in order to remember them.	15	8	8
51.	META	*Skip the new word this time but pay attention to its context for later use.	10	12	9
25.	COG	*Write the word repeatedly.	2	5	10
9.	MEM	*Study the spelling of the word carefully.	3	1	11
13.	COG	*Repeat the word orally.	11	10	11
49.	MEM	Remember the word with collocations of the word.	11	12	
43.	MEM	Learn the words of an idiom together.	7	14	
39.	META	Use English-language media.	11		

Note. The strategy with an asterisk (*) indicates the strategy was labeled as the most known, more frequently used, and effective strategies.

[a.] Calculations of the use frequency were based on the data from those high frequent users only (i.e., those respondents who indicated that they *often* (3) and *almost always* (4) used the strategies in the survey).

[b.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy, SOC = Social strategy

[c.] This list is presented on the basis of the rank of the strategy effectiveness.

In conclusion, despite some often-used-and-effective strategies which are

similar to those in other related studies, the current research clears uncertainty regarding the effectiveness of strategies reported by other studies given that the present study excluded efficacy ratings from those who indicated that they had *never/rarely* and *sometimes* used the strategies. Given the use of this novel and effective screening device in the data analysis procedures, the recommendations of this study regarding effective strategies appear to be more reliable.

CHAPTER FIVE

CONCLUSIONS

Previous studies have shown that language learners' overall competence is highly correlated with their vocabulary knowledge (Folse, 2004; Qian, 1999); nonetheless, enlarging vocabulary quantity is undoubtedly a difficult task which learners face, as evidenced by EFL students who typically consider word retention one of the largest obstacles to their progress (Folse, 2004; Gu, 1994; Yu, 1998). To improve learners' vocabulary abilities, incorporation of vocabulary learning strategies into language instruction has been recommended by language educators (Fan, 2003; Nation, 2001; Nation & Meara, 2002; Kojic-Sabo & Lightbown, 1999; Schmitt, 2000; Shen, 2004). In order to implement effective strategy awareness-raising trainings for vocabulary development, knowledge of students' strategy awareness and use is crucial in planning the instruction programs. The current researcher designed a 51-item questionnaire for this study intended to investigate high school learners' consolidation strategy awareness, their strategy use, their strategy efficacy evaluation, and their strategy use by spatial contexts (in-class/outside-class context) in the hope that the findings can help curriculum planners develop useful/suitable programs.

The principal findings of this research are summarized below. First, on the whole, the strategy awareness of the high school students reached a moderate level only. Meanwhile, the high school learners had moderate knowledge of vocabulary consolidation strategies and they used them occasionally. Although these high school students were the moderate users of the strategies, they had strong preference for the memory and cognitive strategies especially those emphasizing the word forms (phonological and orthographical forms). These types of the strategies were not only used very frequently but rated as very effective. With the respect to the strategy use in what spatial contexts, the result suggested that 84% of the contexts where the vocabulary consolidation strategies were utilized overlapped. That is to say, the majority of the learners used the strategies without discriminating the spatial contexts.

Unlike previous studies, the present study excluded efficacy ratings from those who indicated that they were unaware of the strategies and had never/rarely and sometimes used them. In this way, recommendation of the effective strategies will be more confident and certain. After the summary of the major findings, the following section presents several pedagogical implications drawn from these findings. This is followed by some limitations of the current study. Finally,

suggestions for future research are provided.

5.1 Pedagogical Implications

The findings of this study lead to a number of pedagogical implications. First, raising the strategy awareness of students is an important prerequisite to helping students become independent learners in vocabulary acquisition. This study has indicated that high school learners' unawareness of the vocabulary consolidation strategies was the major factor resulting in the low use frequency of certain strategies. On the contrary, the high frequent use of the strategies by learners was mainly because of the high awareness of the strategies that learners had. These findings lead the researcher to believe that informing students of varieties of the strategies is encouraged for fostering students' vocabulary development.

Secondly, 12 strategies rated as the *most often used* and *effective* are recommended for learners to use in vocabulary memorization (see Table 4.14). Among these 12 strategies, it is clear that 8 strategies tend to focus on word forms. High school learners' strategy use and their strategy efficacy evaluation reported in this study have shown that strategies emphasizing orthographical/phonological

form of the word, or both forms, were utilized more frequently and rated as effective by the majority of the students. Among word form association strategies, some strategies are memory strategies (e.g., studying the spelling rule of the word carefully) and some are cognitive strategies (e.g., repeating the word orally). Those cognitive strategies related to repetition techniques have been described as rote/mechanical learning (e.g., Hsu, 2005, Kudo, 1999), which has a negative connotation (Shen, 2004) like learning or memorizing without understanding the meaning of the material (Richards and Schmidt, 2002; Woolfolk, 2004). In fact, sound and spelling of words are the fundamental unit of any language that learners need to have in order to produce the language either in speaking/writing. Learners can adopt diversified methods to study word forms even though they only pronounce the word repeatedly to facilitate word retention. In this study students indeed benefited from these repetition techniques. Since the current study has eliminated the efficacy ratings from those respondents who reported that they had never/rarely and sometimes used the given strategies in the questionnaire, this study's recommendation of such strategies rests on stronger foundations. When the language instructor provides strategy training, learners are encouraged to use the memory strategies to apply what they had leaned (e.g., *spelling rules, sound*

corresponding to the letter, etc.) to the new word, and also use the cognitive strategies to directly manipulate the sound/spelling of the word (e.g., *repeating the word orally*, etc.). Combining memory strategies together with cognitive strategies to notice/manipulate word forms enables learners to obtain increased benefit.

Finally, integrating vocabulary consolidation strategy instruction into English language courses and encouraging learners to practice using strategies in class are strongly recommended. The results of this study show that most strategies were used without distinguishing the spatial contexts. Only a few strategies labeled as frequently-used and effective by the students were also used more often in the spatial context of in-class than in that of outside-class, for example, *grouping words together spatially on a page* (Item 21), or *remembering the part of speech of the word* (Item 12). This suggests that if students learn to use as many types of strategies as possible in class, they would be able to apply what they have learned in the context of in-class to the other context. Accordingly, language teachers are encouraged to discuss with their students how they employed vocabulary consolidation strategies with the reflection on the strategy efficacy. Then learners will be able to develop the habit of using strategies and find the most suitable strategies.

5.2 Limitations of the Study

Although the present study provides pedagogical implications and has the merit of offering new insights into the data analysis methods of this body of research, it has some limitations. The first limitation is related to the data collected using the self-report questionnaire only. Despite multiple screening devices adopted in the procedures of data analyses to increase the reliability of results, it cannot guarantee that all responses in the survey honestly reflect learners' real learning situation. This limitation of using self-reports is unlikely to be resolved any time soon.

The second limitation concerns the fact that this study did not detect how effective each consolidation strategy is in facilitating the retention of words in practice. In general, language learners adopt multiple strategies simultaneously when trying to make the word stay in memory. How to examine the retention efficacy of each of the strategies remains a difficulty.

The third limitation has to do with the limited research participants. The data collected in this study were from those high school students whose aim is to pass the college entrance examination only. Information concerning high school learners' strategy awareness and use provided in this study may be a good

representation of students in college-bound high schools. However, the generalization of the results to the other high school learners like vocational high school learners may be limited.

5.3 Suggestions for Future Research

While this study has its limitations, it is hoped that it can serve as a basis for future study in using multiple data analysis methods to examine research participants' vocabulary consolidation strategy use and efficacy evaluation. The results of the present study suggest two dimensions that might be addressed by future researchers in the area. First, it is acknowledged that various variables may affect learners' strategy awareness and use, and these variables may include learners' learning motivations (intrinsic and extrinsic motivations), their language proficiencies (high-achievers and low-achievers), their school locations (metropolitan and non-metropolitan), their gender differences (male students and female students), and so on. To take the language proficiencies of learners as an example, it is assumed that high-achievers may utilize more strategies than low-achievers. Understanding what effective strategies are frequently used by high-achievers may help language teachers recognize differences between high

and low achieving learners' vocabulary learning. In this way, language teachers can improve low-achievers' vocabulary learning through introducing them to the effective strategies actually used on a regular basis by high achieving students. As the result, more research is needed to investigate how these above mentioned variables correlate with learner behaviors of the use of vocabulary consolidation strategies.

Apart from the examination of strategy use of language learners, understanding language teachers' beliefs about vocabulary consolidation strategies appears to be a promising area of research. Previous studies have shown that language teachers' awareness, more or less, may affect their pedagogical practices (Anders and Evants, 1997; Hollingsworth, 1989; Schommer, 1994; Stoddert, 1994, as cited in Fang, 1996). This finding led the researcher to question how much knowledge of vocabulary consolidation strategies language teachers have, how helpful they perceive those strategies to be, how many strategies they incorporate into their vocabulary instruction, and how language teachers' beliefs and actions interact to improve/inhibit learners' word retention. The further investigation of these potential topics by future researchers may benefit the improvement of vocabulary instruction.

Finally, this study did not examine whether each of vocabulary consolidation strategies is appropriate for facilitating the retention of different types of words (e.g., high-frequency, low-frequency word, multi-syllable words, polysemy, etc.). The researcher wonders whether some words are more difficult to learn than others. Which types of vocabulary consolidation strategies are particularly relevant to memorizing of certain words? These issues may need to be further investigated.

The results of the current study have revealed high school learners' knowledge of vocabulary consolidation, their strategy use, their efficacy evaluation of the strategies, and their strategy use by different spatial contexts. More research work is still required in the above mentioned directions in order to promote the quality of vocabulary consolidation strategy instruction.

BIBLIOGRAPHY

Carter, R. (1987). *Vocabulary: Applied linguistic perspective.* London: Allen & Unwin.

Catalán, R. M. J. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics*, *13*(1), 54-77.

Chamot, A. H. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics, 25*, 112-140.

Chamot, A. U. (1998). *Teaching learning strategies to language students*. (ERIC Document Reproduction Services No. ED433719).

Chen, C. C. (2007). *Vocabulary learning through shared reading: A study on young Taiwanese EFL learners.* Unpublished master's thesis, Tunghai University, Taiwan.

Chen, H. J. (1998). Second language vocabulary learning strategies: A preliminary investigation of Chinese EFL Learners. *The Proceedings of the Seventh International Symposium on English Teaching* (pp.219-230). Taipei, Taiwan: The Crane.

Cohen, A. D. (1998). *Strategies in learning and using a second language*. New York: Longman.

Cohen, A. D. (2007). A new look at leaner strategy instruction. In Y. Leung, H. Chen, K. Cheung, & W. Dai (Eds.), *Selected Papers from the Sixteenth International Symposium on English Teaching* (pp. 7-19). Taipei, Taiwan: The Crane.

Cohen, A. D., & Dörnyei, Z. (2002). Focus on the language learner: Motivation, styles and strategies. In N. Schmitt (Ed.), *An introduction to applied linguistics* (pp. 35-54). London: Arnold.

Cook, L. K., & Mayer, R.E. (1983). Reading strategies training for meaningful learning from prose. In M. Pressley & J. R. Levin (Eds.), *Cognitive strategy research: Educational applications* (pp. 87-131). New York: Springer-Verlag.

Fan, M. Y. (2003). Frequency of use, perceived usefulness, and actual usefulness of second language vocabulary strategies: A study of Hong Kong learners. *Modern Language Journal, 87*(2), 222-241.

Fang, Z. (1996). A review of research on teacher beliefs and practices. *Educational Research, 38*(1), 47-65.

Folse, K.S. (2004). *Vocabulary myths: Applying second language research to classroom teaching*. Ann Arbor, MI: University of Michigan Press

Gu, Y. (1994). *Vocabulary learning strategies of good and poor Chinese EFL learners*. (ERIC Document Reproduction Service No. ED370411).

Gu, Y. (2003). Vocabulary learning in a second language: Person, task, context and strategies. *TESL-EJ, 7*(2), 1-25. Retrieved May 10, 2005, from http://tesl-ej.org/ej26/a4.html

Gu, Y. (2005). *Vocabulary learning strategies in the Chinese EFL context*. Singapore: Marshall Cavendish Academic.

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

Hatch, E., & Brown, C. (1995). *Vocabulary, semantics, and language education.* Cambridge: Cambridge University Press.

Hsiao, T.-Y., & Oxford, R. L. (2002). Comparing theories of language learning strategies: A confirmatory factor analysis. *Modern Language Journal*, *86* (3), 368-383.

Hsu, L. Y. (2005). EFL learners' vocabulary learning strategies and their vocabulary knowledge. In Y. Chen & Y. Leung (Eds.), *Selected Papers from the Fourteenth International Symposium on English Teaching* (pp. 203-213). Taipei, Taiwan: The Crane.

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.

Jiang, J. Y. (2001). *Effects of vocabulary learning strategy instruction on senior high students with different English achievement.* Unpublished master's thesis, National Kaohsiung Normal University, Taiwan.

Kojic-Sabo, I., & Lightbown, P. M. (1999). Students' approaches to vocabulary learning and their relationship to success. *Modern Language Journal, 83*(2), 176-192

Kudo, Y. (1999). *L2 vocabulary learning strategies* (NFLRC Network #14) [html document]. Honolulu: University of Hawai'i, Second Language Teaching & Curriculum Center. Retrieved [December 15, 2006] from the World Wide Web: http://www.nflrc.hawaii.edu/NetWorks/NW14/

Kung, W. C. (2004). *An exploratory study on vocabulary learning strategies by Taiwanese EFL elementary school students*. Unpublished master's thesis, National Taipei Teacher College, Taiwan.

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.

Liao, Y. -F. (2004). A survey study of Taiwan EFL freshmen's vocabulary learning strategies. *Journal of Pingtung Teachers College, 21*, 271-288. Retrieved October 10, 2007, from http://www.npue.edu.tw/adm/academy/pub_data/1/21 期/廖怡芬.pdf

Lin, Y. S. (林于詩) (2002, April). 歌曲教學教案: The wheels on the bus go round and round. *敦煌英語教學雜誌, 33 期*, 17-22 頁.

McCarthy, M., O'Dell, F., & Shaw, E. (1997). *Vocabulary in use: Upper intermediate: Self-study reference and practice for students of North American English*. Cambridge: Cambridge University Press.

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

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., & 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.

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

O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.

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

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

Richards, J. C., & Schmidt, R. (2002). *Longman dictionary of language teaching & applied linguistics* (3rd ed.). Pearson Education Limited.

Rubin, J. (1987). Learning strategies: Theoretical assumptions, research history and typology. In A. Wenden & J. Rubin (Eds.), *Learner strategies in language learning* (pp. 15-30). New York: Prentice Hall.

Sahbazian, S. (2004). Perceived vocabulary learning strategies of Turkish university students. (Doctoral dissertation, Oklahoma State University, 2004). *Dissertation Abstracts International*, *65* (07), 2586A.

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., & McCarthy, M. (Eds.). (1997). *Vocabulary: Description, acquisition, and pedagogy*. Cambridge: Cambridge University Press.

Seal, B. D. (1991). Vocabulary learning and teaching. In Celce-Murcia, M. (Ed.), *Teaching English as a second or foreign language* (2nd Ed., pp.296-311). Boston, MA: Heinle & Heinle.

Shen, W. W. (2003). Current trends of vocabulary teaching and learning strategies for EFL settings. *Feng Chia Journal of Humanities and Social Sciences 7*, 187-224. Retrieved October 1, 2007, from http://www.cohss.fcu.edu.tw /paper/7-9.doc

Shen, W. W. (2004). Does the practice of English vocabulary learning strategies

follow theories? In Y. Leung & Y. Chen (Eds.), *Selected Papers from the Thirteenth International Symposium on English Teaching* (pp. 91-97). Taipei, Taiwan: The Crane.

Shih, H. H. (2004). *The effects and the strategies of vocabulary learning on EFL junior and senior high school students in Taiwan*. Unpublished master's thesis, National Kaoshiung Normal University, Taiwan.

Tamada, Y. (1997). The review of studies in related to language learning strategies. (ERIC Document Reproduction Service No. ED404857).

The Language Training and Testing Center. (語言訓練測驗中心) (1999). *全民英語能力分級測驗（中級）研究報告*. Retrieved December 15, 2006, from http://www.lttc.ntu.edu.tw/research/i/中級預試報告.pdf。

Tsuchida, M. (2002). *The learning strategies: Helping students learn how to learn*. (ERIC Document Reproduction Service No. ED463655)

Wang, Y. H. (2004). *An investigation into vocabulary learning strategies used by senior high school students in Taiwan.* Unpublished master's thesis, National Chengchi University, Taiwan.

Woolfolk, A. (2004). *Educational psychology* (9th ed). Boston：Allyn and Bacon.

Wu, W.-S. (2005). Use and helpfulness rankings of vocabulary learning strategies

employed by EFL learners in Taiwan. *Journal of Humanities and Social Science*. *1*(2), 7-13.

Yu, J. (尤菊芳) (1998). *高中生學習英文的困難.* Unpublished manuscript.

APPENDICES

Appendix A

Gu and Johnson's (1996) Taxonomy of Vocabulary Learning Strategies

*consolidation strategies which are indicated with an asterisk

I. Metacognitive Regulation: (12 items)

1. Selective attention (7 items)
    1) I know when a new word or phrase is essential for adequate comprehension of a passage.
    2) I know which words are important for me to learn.
    3) I have a sense of which word I can guess and which word I can't.
    4) I look up words hat I'm interested in.
    5) When I meet a new word or phrase, I have a clear sense of whether I need to remember it.
    6) I know what cues I should use in guessing the meaning of a particular word.
    7) I make a not of words that seem important to me.

2. Self-initiation (5 items)
    1) Besides textbooks, I look for other readings that fall under my interest.
    2) I wouldn't learn what my English teacher doesn't tell use to learn. (Reversed value)
    3) I only focus on things that are directly related to examinations.(Reversed value)
    4) I wouldn't care much about vocabulary items that my teacher does not explain in class. (Reversed value)
    5) I use various means to make clear vocabulary items that I am not quite clear of.

II. Cognitive Strategies: (79 items)

Guessing Strategies (12 items)

1. Using background knowledge/wider context (7 items)
    1) I use alternative cues and try again if I fail to guess the meaning of a word.
    2) I make use of the logical development in the context (e.g., cause and effect) when guessing the meaning of a word.
    3) I make use of my common sense and knowledge of the world when guessing the meaning of a word.
    4) I check my guessed meaning against the wider context to see if it fits in.

Appendix A (Continued)

5) I make use of my knowledge of the topic when guessing the meaning of a word.
6) I look for other words or expressions in the passage that support my guess about the meaning of a new word.
7) I look for any definitions or paraphrases in the passage that support my guess about the meaning of a word.

2. Using linguistic cues/ immediate context (5 items)

1) I make use of the grammatical structure of a sentence when guessing the meaning of a new word.
2) I look for any examples provided in the context when guessing the meaning of a new word.
3) I make use of the part of speech of a new word when guessing its meaning.
4) I check my guessed meaning against the immediate context to see if it fits in.
5) I analyze the word structure (prefix, root, and suffix) when guessing the meaning of a word.

Dictionary strategies (17 items)

1. Dictionary strategies for comprehension (4 items)

1) When I see an unfamiliar word again and again, I look it up.
2) When I want to confirm my guess about a word, I look it up.
3) When not knowing a word prevents me form understanding a whole sentence or even a whole paragraph, I look it up.
4) I look up words that are crucial to the understanding of the sentence or paragraph in which it appears.

2. Extended dictionary strategies (8 items)

1) I pay attention to the examples of use when I look up a word in a dictionary.
2) I look for phrases or set expressions that go with the word I look up.
3) I consult a dictionary to find out about the subtle differences in the meanings of English words.
4) When I want to know more about a word that I already have some knowledge of, I look it up.
5) When I don't know the usage of a word I already have some knowledge of, I look it up.

Appendix A (Continued)

6) I make a note when I want to help myself distinguish between the meanings of two or more words.
7) When I looking up a word in the dictionary, I read sample sentences illustrating various meanings of the word.
8) When I get interested in another new word in the definitions of the word I look up, I look up this word as well.

3. Looking-up strategies (5 items)
1) If the new word is inflected, I remove the inflections to recover the form to look up (e.g., for created, look for create).
2) If the new word I try to look up seems to have prefix or suffix, I will try the entry for the stem.
3) If the unknown appears to be an irregularly inflected form or a spelling variant, I will scan nearby entries.
4) If there are multiple senses or homographic entries, I use various information (e.g., part of speech, pronunciation, style, collocation, meaning, etc.) to reduce them by elimination.
5) I try to integrate dictionary definitions into context where the unknown was met and arrive at a contextual meaning by adjusting for complementation and collocation, part of speech, and breadth of meaning.

Note-Taking Strategies (9 items)

1. Meaning-oriented note-taking strategies (5 items)
1) I make a note of the meaning of a new word when I think the word I'm looking up is commonly used.
2) I make a note when I think the word I'm looking up is relevant to my personal interest.
3) I put synonyms or antonyms together in my notebook.
4) I write down the English synonym(s) or explanations of the word I look up.
5) I write down both the Chinese equivalent and the English synonyms of the word I look up.

2. Usage-oriented note-taking strategies (4 items)
1) I make a note when I see a useful expression or phrase.
2) I take down the collocations of the word I look up.
3) I take down grammatical information about a word when I look it up.
4) I note down examples showing the usages of the word I look up.

Appendix A (Continued)

Rehearsal Strategies (12 items)

1. Using word lists (6 items)
   - *1) I make vocabulary lists of new words that I meet.
   - *2) I write the new words on one side of a card and their explanations on the other side.
   - *3) I keep the vocabulary lists of new words that I make.
   - *4) I go through my vocabulary list several times until I am sure that I do not have any words on that list that I still don't understand.
   - *5) I make vocabulary cards and take them with me whenever I go.
   - *6) I make regular and structured reviews of new words I have memorized.

2. Oral repetition (3 items)
   - *1) When I try to remember a word, I repeat it aloud to myself.
   - *2) Repeating the sound of a new word to myself would be enough for me to remember the word.
   - *3) When I try to remember a word, I repeat its pronunciation in my mind.

3. Visual repetition (3 items)
   - *1) When I try to remember a word, I write it repeatedly.
   - *2) I memorize the spelling of a word letter by letter.
   - *3) I write both the new words and their Chinese equivalents repeatedly in order to remember them.

Encoding Strategies (24 items)

1. Association/elaboration (4 items)
   - *1) I remember a group of new words that share a similar part in spelling.
   - *2) I associate a group of new words that share a similar part in spelling with a known word that looks or sounds similar to the shared part.
   - *3) I create a sentence in Chinese when I link a new word to a known word.
   - *4) I attach physical sensations to certain words (e.g., stinking) when I try to remember them.

Appendix A (Continued)

2. Imagery (4 items)
   - *1) I act out a word in order to remember it better.
   - *2) I create a mental image of the new word to help me remember it.
   - *3) I associate one or more letters in a word with the word meaning to help me remember it (look has two "eyes" in the middle).
   - *4) I create mental images of association when I link a new word to a known word.

3. Visual encoding (3 items)
   - *1) I visualize the new word to help me remember it.
   - *2) I associate a new word to a known English word that looks similar.
   - *3) I remember the spelling of a word by breaking it into several visual parts.

4. Auditory encoding (3 items)
   - *1) I remember together words that sound similar.
   - *2) I remember together words that that spelled similarly.
   - *3) I associate a new word with a known English word that sounds similar.

5. Word-structure (3 items)
   - *1) I analyze words in terms of prefixes, stems, and suffixes.
   - *2) I deliberately study word –formation rules in order to remember more words.
   - *3) I memorize the commonly used stems and prefixes.

6. Semantic encoding (3 items)
   - *1) I try to create semantic networks in my mind and remember words in meaningful groups.
   - *2) When I meet a new word, I search in my memory and see if I have any synonyms and antonyms in my vocabulary stock.
   - *3) I group words into categories (e.g., animals, utensils, vegetables, etc.).

Appendix A (Continued)

7. Contextual encoding (4 items)
   - *1) When I try to remember a word, I remember the sentence in which the word is used.
   - *2) I deliberately read books in my areas of interest so that I can find out and remember the special terminology that I know in Chinese.
   - *3) I remember the new word together with the context where the new word occurs.
   - *4) I learn words better when I put them in contexts (e.g., phrases, sentences, etc.).

Activation Strategies (5 items)

- *1) I try to read as much as possible so that I can make use of the words I tried to remember.
- *2) I make up my own sentences using the words I just learned.
- *3) I try to use the newly learned words as much as possible in speech and writing.
- *4) I try to use the newly learned words in real situations.
- *5) I try to use newly learned words in imaginary situation in my mind.

Appendix B

Schmitt's (1997) Taxonomy of Vocabulary Learning Strategies

*consolidation strategies which are indicated with an asterisk

Strategies for the discovery of a new word's meaning: (14 items)

I. Determination Strategies (9 items)

1) Analyze part of speech
2) Analyze affixes and roots
3) Check for L1 cognate
4) Analyze any available pictures or gestures
5) Guess from textual context
6) Bilingual dictionary
7) Monolingual dictionary
8) Word lists
9) Flash cards

II. Social Strategies (5 items)

1) Ask teacher for an L1 translation
2) Ask teacher for paraphrase or synonym of new word
3) Ask teacher for a sentence including the new word
4) Ask classmates for meaning
5) Discover new meaning through group work activity

Strategies for consolidating a word once it has been encountered: (44 items)

I. Social Strategies (3 items)

*1) Study and practice meaning in a group
*2) Teacher checks students' flash cards or word lists for accuracy
*3) Interact with native-speakers

II. Memory Strategies(27 items)

Pictures/ imagery (3)

*1) Study word with a pictorial representation of its meaning
*2) Image word's meaning
*3) Connect word to a personal experience

Related words (4)

*4) Associate the word with its coordinates
*5) Connect the word to its synonyms and antonyms
*6) Use semantic maps
*7) Use 'scale' for gradable adjectives

Unrelated words (2)

*8) Peg Method
*9) Loci Method

Grouping (4)

*10) Group words together to study them
*11) Group words together spatially on a page
*12) Use new word in sentences
*13) Group words together within a storyline

Words' orthographical or phonological form (7)

*14) Study the spelling of a word
*15) Study the sound of a word
*16) Say new word aloud when studying
*17) Image word form
*18) Underline initial letter of the words
*19) Configuration
*20) Using Keyword Method

Other memory strategies (7)

*21) Affixes and roots (remembering)
*22) Part of speech (remembering)
*23) Paraphrase the word's meaning
*24) Use cognates in study
*25) Learn the words of an idiom together
*26) Use physical action when learning a word
*27) Use semantic feature grids

III. Cognitive Strategies(9 items)

*1) Verbal repetition
*2) Written repetition
*3) Word lists
*4) Flash cards
*5) Take notes in class
*6) Use the vocabulary section in your textbook
*7) Listen to a tape of word lists
*8) Put English labels on physical objects
*9) Keep a vocabulary notebook

Appendix B (Continued)

IV. Metacognitive Strategies (5 items)

*1) Use English-language media (songs, movies, newscasts, etc.)
*2) Testing oneself with word tests
*3) Use spaced word practice
*4) Skip or pass new word
*5) Continue to study word over time

Appendix C

Consolidation Strategy Questionnaire—English Version

Dear all:

Thank you for taking the time to fill out this survey. The goals of the survey are to understand to what extend you are familiar with strategies for word retention, what strategies you use to make the words stay in the memory, and what opinions about the helpfulness of such strategies you hold.

Please read the following items and choose responses that best describe your learning situation. Results of this survey will bear no influence on your semester grade, since you don't have to put down your name and student number on the questionnaire.

If you have any questions about this survey, please contact with me. Thank you for your cooperation and help.

Research Institute: MA Program in TEFL of the Department of Foreign Languages and Literature, Tunghai University
Researcher: Hsiao, Huang-Chieh
Phone number: 0915-151-128
E-mail: heymyronald@gmail.com

Below is a 51-item list; each item states a strategy for word retention. Please read each item carefully and then answer the questions in the order from Column **I** to Column **IV** via **circling** one of the following responses that best fits your learning situation. The following provides step by step directions in how to fill out this questionnaire.

Column I: **Have you heard of the following strategies?**
2=Yes， 1=No

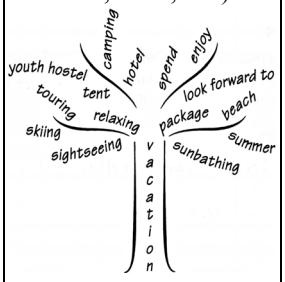
Attention!
If yes, please circle *Yes* and then continue to **ANSWER** the questions from Column **II** to Column **III**.
If no, please circle *No* and **SKIP** the questions from Column **II** to Column **III**.

Column II: **Have you actually used these strategies when trying to make a word stay in the memory during your high school years?**
4= Almost always, 3= Often, 2= Sometimes, 1= Rarely/never

Column III: **What are your evaluations of the efficacy of such strategies?**
4= Very effective, 3= Effective, 2= Not very effective, 1= Not effective at all

Column IV: **In what spatial context(s) do you use the following strategies, in class, outside class, or both?**
3= Both, 2= In class, 1= Outside class

Appendix C (Continued)

		Heard of ? Column I	Frequency? Column II	Efficacy? Column III	In what context(s)? Column IV	Sources
1	Study and practice meaning through group work (e.g., test each other's vocabulary).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ S-1
2	Draw a picture to represent the word meaning.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-1
3	Image word's meaning.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-2
4	Use 'scales' for gradable adjectives (e.g., *cold → cool → warm → hot*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-7
5	Group the related words by drawing semantic maps (e.g., draw a tree diagram with several branches for the words relating to the theme of *vacation*, such words as *sunbathing*, *summer*, *hotel*, etc.).  (the picture adopted fromMcCarthy, O'Dell & Shaw, 1997, p5)	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-6

Appendix C (Continued)

		Heard of?	Frequency	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
6	Use Loci method (link the new word to a familiar place; for example, when memorizing the words about *kitchen appliances* , imagine that you stand in the center of kitchen and then connect the words to be memorized with appropriate locations).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-9
7	Remember a group of new words that share a similar part in spelling (e.g., *plan, plane, planet*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Gu./ E-A-1
8	Remember a group of new words that sound similar (e.g., *fair / fare, sheep / ship)*.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Gu./ E-A-2
9	Study the spelling rule of the word carefully.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-14
10	Study the sound corresponding to the letter in the word carefully (e.g., pay attention to the silent letters in the word).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-15
11	Remember the word roots, prefixes, or suffixes (e.g., [im-] prefix means *not;* thus, [im-] in the word *im*possible means *not* possible).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-21

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
12	Remember the part of speech of the word (e.g., *noun, verb…)*.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-22
13	Repeat the word orally.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-1
14	Repeat the word in your mind.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Gu. / R-O-3
15	Test oneself with word tests.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ Meta-2
16	Ask the teacher to check students' word lists for accuracy.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ S-2
17	Connect the word meaning to a personal experience (e.g., connect the word *nightmare* to your frightening dream experience).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-3
18	Associate the word with its coordinates (e.g., associate the word *banana* with other types of fruit like *apple, peach*…).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-4

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
19	Connect the word to the words having the similar or opposite meanings (e.g., associate the word *excellent* with *good/bad*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-5
20	Group words together to study them (e.g., all *colors* first, before moving on to another category like *animals*…).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-10
21	Group words together spatially on a page (e.g., group the words by part of speech—such words as, *analysis, analyze,* and *analytical*— or by the three forms of an irregular verb, such as *begin/ began/begun).*	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-11
22	Say the new word aloud when studying the target word's spelling.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-16
23	Visualize the word form.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-17
24	Paraphrase the word's meaning.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-23
25	Write the word repeatedly.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-2

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
26	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Gu / R-V-3
27	Listen to a tape/CD of word lists.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-7
28	Continue to study the words over time.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ Meta-5
29	Use the new word in sentences.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-12
30	Group words together within a storyline (e.g., use the words *cell phone*, *pond, sad,* and *angry* to make up a storyline: I felt *sad* and *angry* because my *cell phone* fell into the *pond*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-13
31	Group words together within a song (e.g., put the word *party* into a song like "Old Macdonald had a *party*, E-I-E-I-O*"*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	R
32	Underline the first letter of the word (e.g., ***language***).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-18

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
33	Outline the shape of the word (e.g ). (the pictures adopted from Chen, 2007, p. 28 and 70)	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-19
34	Use physical action when learning a word (e.g., memorize the verb *jog* with action of *running slowly* and the adjective *stinky* with action of *holding the nose*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-26
35	Take notes about the new words to review them later.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-5
36	Use word lists.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-3
37	Make word cards and take them with you wherever you go.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	GU./ R-W-5
38	Use flash cards.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-4

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
39	Use English-language media (e.g., songs, movies, etc.). (the example adopted from Schmitt, 1997, p.208)	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ Meta-1
40	Use Keyword Method (link the English word to a Chinese word by sound; then form an image consisting of these two concepts; for example, the English word *driver* sounds similar to the Chinese word *chuai* which means *cocky* ; then create an image like *a cocky driver who turned a deaf ear to anyone*). (the example adapted from Lin, 2002, p.20)	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-20
41	Use cognates in study (e.g., the Chinese word *ji ta* originates from the English word *guitar; ciao ke li* originates from *chocolate)*.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-24
42	Put English labels on physical objects (e.g., paste a label with the word *refrigerator* on the refrigerator).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-8

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
43	Learn the words of an idiom together (e.g., learn the idiom *leave me alone* as well as remember the individual meaning of the word *alone*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-25
44	Keep a vocabulary notebook wherever you go.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-9
45	Use the vocabulary section in your textbook.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ C-6
46	Review the word periodically.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ Meta-3
47	Remember the new word together with the context where the new word occurs (e.g., remember the word *break* with its context such as *during the break*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	GU./ E-C-3
48	Remember the sentence in which the word is used.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	GU./ E-C-1

Appendix C (Continued)

		Heard of ?	Frequency?	Efficacy?	In what context(s)?	
		Column I	**Column II**	**Column III**	**Column IV**	**Sources**
49	Remember the word with collocations of the word (e.g., *tea→ make tea* rather than **do tea*; *black tea* instead of **red tea*).	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ M-27
50	Interact with native-speakers via using the new word.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ S-3
51	Skip the new word this time and pay attention to its context for later use.	2=Yes 1=No	4=Almost always 3=Often 2=Sometimes 1=Rarely/never	4=Very effective 3=Effective 2=Not very effective 1=Not effective at all	3=Both 2=In class 1=Outside class	Sch./ Meta-4

❖ Please describe below any other strategies that you have used that do not appear in this survey:

_____

_____

_____

_____

_____

_____

~ Thank you for your help and cooperation! ~

Appendix D

Consolidation Strategy Questionnaire—Chinese Version

高中生對英文字彙鞏固策略之認知及其使用之問卷

親愛的同學，您好：

感謝您們給我機會透過這份問卷，來了解**高中生如何背英文單字**，以及**對於單字策略的認知**。同時我也希望透過回答這份問卷，同學們更了解自己的學習方式，並有機會參考不同的英文單字記憶法。

這份問卷沒有標準答案，請依照自己平日的學習狀況，圈選項目中最符合的陳述。本問卷採不具名方式作答，問卷的結果僅作為研究參考之用，絕對不會影響您的學業成績，請您放心作答。

如有任何問題，歡迎與我聯絡，再次感謝您耐心地協助！祝您事事順心！

研究單位：東海大學外國語文學系碩士班英語教學組
研究生：蕭黃介
聯絡電話：0915-151-128
E-mail: heymyronald@gmail.com

作答方示說明：

以下 51 道題目，代表 51 種背單字的方法，請仔細閱讀每一項策略的敘述，並依序回答 A、 B、 C、D 四個欄位的問題， 圈選 最符合自己真實學習情形的選項。

■ **問題 A:** **您是否知道這種背單字的方法?**

2=是， 1=否

請注意!

圈選 是 → **請繼續回答「B、 C、D 欄的問題」。**

圈選 否 → **直接回答下一題。**

■ **問題 B:** **在您的高中生涯，是否常使用這種方法來背單字?**

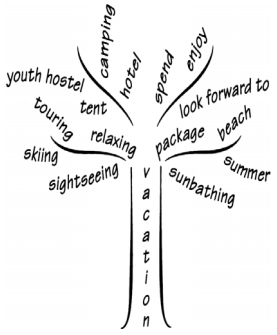
4=幾乎總是使用， 3=常常使用， 2=偶爾會用， 1=很少用或幾乎不用

■ **問題 C:** **您認為用這種方法來背單字，效果好嗎?**

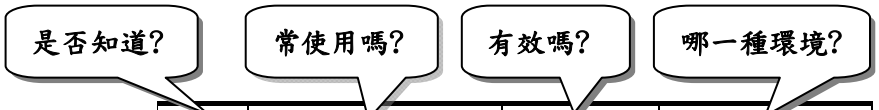
4=非常有效， 3=有效， 2=效果有限， 1=毫無效果

■ **問題 D:** **在哪一種環境下，您會用這種方法?**

3=課堂內外都有， 2=課堂內 ， 1=課堂外

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
1.	在小組活動中學習和練習字義（例如 ：同學間互相考問單字）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ S-1
2.	用圖畫來顯示單字的意思。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-1
3.	在心中把單字的意思化成一個影像。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-2
4.	把形容詞分排成漸進的等級來記(例如：*cold*→ *cool*→ *warm*→ *hot*) 。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-7
5.	藉由語意圖把意思相近或相關的單字組織起來(例如：畫一個和 *vacation* 有關的樹狀圖，其分枝可包含的單字如: *sunbathing* 日光浴、*summer* 夏天、*hotel* 旅館等字 ）。  (the picture adopted from McCarthy, O'Dell & Shaw, 1997, p.5)	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-6

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
6.	把生字與熟悉的地方聯想在一起（例如 ：要背家電用品名稱時，想像自己站在廚房的中央，把這些用品依序放在適當的位置）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-9
7.	背單字時，將拼法相似的字放在一起背（例如 ：*plan, plane, planet* ）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Gu. / E-A-1
8.	把發音類似的單字放在一起記憶（例如 ：*fair / fare , sheep / ship* ）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Gu. / E-A-2
9.	特別注意單字的拼字規則。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-14
10.	特別注意單字的聲音與字母的對應 （例如：注意不發音的字母）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-15
11.	背單字時，順便記下單字的字根、字首、或字尾，以便以後應用（例如：*impossible* 這個字的字首〔im-〕是「否定」的意思，所以 *impossible* 即是**不**可能的意思）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-21



		欄位 A	欄位 B	欄位 C	欄位 D	來源
12.	背單字時，順便記下單字的詞性（例如：名詞、動詞）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-22
13.	大聲複誦單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-1
14.	重複默唸單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Gu./ R-O-3
15.	自己做字彙測驗練習。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ Meta-2
16.	找老師檢查自己做的單字表是否正確。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ S-2
17.	把單字和自己的生活經驗聯想在一起（例如：*nightmare* 這個字就想到自己做惡夢的經驗）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-3
18.	聯想單字同等的相關字（例如:*banana* 這個字就想到其它水果如 *apple*, *peach*)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-4

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
19.	聯想單字的同義字或反義字(例如 ：*excellent* 這個字就想到 *good* 或 *bad)*。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-5
20.	把單字分類以便學習（例如 ：把所有和顏色相關的單字放在一起背，之後在背其它類別的單字，如與動物有關的字）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-10
21.	在課本的空白處，整裡單字以便記憶（例如：單字的不同詞類，如「分析」這個字的名詞 *analysis* 、動詞 *analyze*、形容詞 *analytica1*；或動詞的三態變化，如 *begin/began/ begun*）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-11
22.	背單字的拼法時，也試著唸出單字的聲音。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-16
23.	背完單字後，在心中想像該單字寫出來的樣子。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-17
24.	用自己的話重新解釋字義，以加深單字的印象。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-23

Appendix D (Continued)

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
25.	重複練習寫單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-2
26.	一邊背單字，一邊把英文單字跟中文解釋寫出來。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Gu. / R-V-3
27.	聽單字表的錄音(帶或CD)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-7
28.	持續注意單字的學習 。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ Meta-5
29.	用新學的單字造句。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-12
30.	把幾個單字串起來，編成一個有情節的句子(例如：我的 *cell phone* 掉到 *pond* 裡面真是感到很 *sad* 又 *angry*)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-13
31.	把新學的單字放在歌曲裡唱出來(例如：把 *party* 這個字放在「王老先生有塊地」的英文版裡，即成 *Old Macdonald had a party, E-I-E-I-O*)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	R

		欄位 A 是否知道?	欄位 B 常使用嗎?	欄位 C 有效嗎?	欄位 D 哪一種環境?	來源
32.	把單字的第一個字母畫線（例如：***language***）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-18
33.	以筆描繪單字的輪廓（例如：   ）。 (the pictures adopted from Chen, 2007, p. 28 and 70)	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-19
34.	運用肢體動作幫助記憶（例如：背動詞 *jog* 時，會做出「慢跑」的動作；背形容詞 *stinky* 時，會捏鼻子表示「很臭」的意思）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-26
35.	聽到課外生字，就記下來以便複習。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-5
36.	把要背的單字列表。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-3
37.	把要背的單字寫在小卡片上隨時複習。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	GU./ R-W-5
38.	一張卡片寫一個單字，以便以自我考驗的方式記憶。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-4

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
39.	使用不同的英語媒體（例如，歌曲、電影等）。 (the example adopted from Schmitt, 1997, p.208）	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ Meta-1
40.	背單字時，把單字的中文諧音及圖像聯想在一起（例如：記 *driver* 這個字的時候 ，想像公車司機都不理人，很「跩」的樣字所以，「司機」的英文就是 *driver* ）。 (the example adapted from Lin, 2002, p.20）	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-20
41.	透過同源字幫助記憶（例如：「吉他」源自於 *guitar* 、「巧克力」源自於 *chocolate*）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-24
42.	製作英文單字標籤並貼於實物上（例如:在「冰箱」上貼著 *refrigerator* 的標籤）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-8
43.	學片語時順便把個別的單字學下來（例如：背 *leave me alone*「別管我」這個片語時，順便把 *alone* 這個單字的個別意思「獨自」記下）。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-25

是否知道? 常使用嗎? 有效嗎? 哪一種環境?

		欄位 A	欄位 B	欄位 C	欄位 D	來源
44.	隨身攜帶單字筆記本，以便隨時查閱複習較早前所學的單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-9
45.	用教科書中的單字總表，以便整個複習。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ C-6
46.	有規率地定期複習單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ Meta-3
47.	把單字的前後文當成片語一起記下(例如：記 *break* 這個單字時，會把 *during the break* 當成片語一起記下)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	GU./ E-C-3
48.	把單字的例句整個背下來。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	GU./ E-C-1
49.	把單字的搭配用法一起記下(例如：「泡茶」的英文是 *make tea* 不是 **do tea*；「紅茶」是 *black tea* 不是 **red tea*)。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ M-27
50.	和外國人溝通的時候，練習使用新學的單字。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ S-3

		是否知道? 欄位 A	常使用嗎? 欄位 B	有效嗎? 欄位 C	哪一種環境? 欄位 D	來源
51.	在閱讀文章中碰到生字時，即使不查字典，也會注意生字的使用情境，讓下次再看到的時候比較熟悉。	2=是 1=否	4=幾乎總是使用 3=常常使用 2=偶爾會用 1=很少用或幾乎不用	4=非常有效 3=有效 2=效果有限 1=毫無效果	3=課堂內外都有 2=課堂內 1=課堂外	Sch./ Meta-4

❖ 如果您曾使用過，未出現在以上 51 個項目中的方法背單字，可在此處分享：

_____

_____

_____

_____

_____

_____

~ 作答結束 ~

親愛的同學，

感謝您耐心地作答與協助！

如有任何問題，歡迎與我聯絡，最後再次謝謝您的參與！

Appendix E
Frequencies of Responses (in %) of Student Awareness of the Vocabulary Consolidation Strategies

Item No.	Type	Strategy Description	Rank	n	%
14.	COG	Repeat the word in your mind.	1	77	94
25.	COG	Write the word repeatedly.	2	76	93
9.	MEM	Study the spelling rule of the word carefully.	3	75	92
12.	MEM	Remember the part of speech of the word.	3	75	92
10.	MEM	Study the sound responding to the letter in the word carefully.	5	70	85
11.	MEM	Remember the word roots, prefixes, or suffixes.	5	70	85
35.	COG	Take notes about the new words to review them later.	7	67	82
36.	COG	Use word lists.	7	67	82
43.	MEM	Learn the words of an idiom together.	7	67	82
51.	META	Skip the new word this time but pay attention to its context for later use.	10	66	81
21.	MEM	Group words together spatially on a page.	11	64	78
49.	MEM	Remember the word with collocations of the word.	11	64	78
13.	COG	Repeat the word orally.	11	64	78
39.	META	Use English-language media.	11	64	78
22.	MEM	Say the new word aloud when studying the target word's spelling.	15	63	77
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	15	63	77
7.	MEM	Remember a group of new words that share a similar part in spelling.	17	59	72
23.	MEM	Visualize the word form.	17	59	72
19.	MEM	Connect the word to the words having the similar or opposite meanings.	19	54	66
28.	META	Continue to study the words over time.	19	54	66
15.	META	Test oneself with word tests.	21	53	65
24.	MEM	Paraphrase the word’s meaning.	22	52	63
47.	MEM	Remember the new word together with the context where the new word occurs.	23	50	61

N=82 (Reliability coefficient alpha = .92)
Note. MEM = Memory Strategies, COG = Cognitive Strategies, META = Metacognitive strategies

Appendix E (Continued)

Item No.	Type	Strategy Description	Rank	n	%
37.	COG	Make word cards and take them with you wherever you go.	24	49	60
1.	META	Study and practice meaning through group work.	24	49	60
20.	MEM	Group words together to study them.	24	49	60
41.	MEM	Use cognates in study.	27	48	59
8.	MEM	Remember a group of new words that sound similar.	28	47	57
45.	COG	Use the vocabulary section in your textbook.	29	45	55
18.	MEM	Associate the word with its coordinates.	30	44	54
29.	MEM	Use the new word in sentences.	31	42	51
3.	MEM	Image word's meaning.	32	41	50
6.	MEM	Use Loci method.	32	41	50
4.	MEM	Use ‘scales’ for gradable adjectives.	34	40	49
17.	MEM	Connect the word meaning to a personal experience	34	40	49
50.	META	Interact with native-speakers via using the new word.	36	39	48
46.	META	Review the word periodically.	36	39	48
48.	MEM	Remember the sentence in which the word is used.	38	32	39
27.	COG	Listen to a tape/CD of word lists.	39	31	38
44.	COG	Keep a vocabulary notebook wherever you go.	39	31	38
2.	MEM	Draw a picture to represent the word meaning.	41	27	33
34.	MEM	Use physical action when learning a word.	41	27	33
42.	COG	Put English labels on physical objects.	43	27	33
40.	MEM	Use Keyword Method.	44	26	32
5.	MEM	Group the related words by drawing semantic maps.	45	24	29
38.	COG	Use flash cards.	45	24	29
30.	MEM	Group words together within a storyline.	47	23	28
31.	MEM	Group words together within a song.	48	19	23
16.	META	Ask the teacher to check students' word lists for accuracy.	49	9	11
32.	MEM	Underline the first letter of the word.	50	7	9
33.	MEM	Outline the shape of the word.	51	4	5

Appendix F

Frequency of Use (in %), Mean (M), and Standard Deviation (SD) of the Vocabulary Consolidation Strategies

Item No.	Type	Strategy Description	Rank	1[a] (%)	2 (%)	3 (%)	4 (%)	M	SD
9.	MEM[b]	Study the spelling rule of the word carefully.	1	6[c]	11	37	46	3.23	.88
14.	COG	Repeat the word in your mind.	2	9	13	31	48	3.17	.97
10.	MEM	Study the sound corresponding to the letter in the word carefully.	3	17	9	21	54	3.11	1.14
12.	MEM	Remember the part of speech of the word.	4	12	11	35	42	3.06	1.01
25.	COG	Write the word repeatedly.	5	16	15	26	44	2.98	1.11
11.	MEM	Remember the word roots, prefixes, or suffixes.	6	18	17	27	38	2.84	1.13
36.	COG	Use word lists.	7	22	17	29	32	2.71	1.14
21.	MEM	Group words together spatially on a page.	8	27	15	22	37	2.68	1.23
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	9	24	17	28	31	2.65	1.16
22.	MEM	Say the new word aloud when studying the target word's spelling.	10	33	11	21	35	2.59	1.28
49.	MEM	Remember the word with collocations of the word.	11	24	22	24	29	2.59	1.15
13.	COG	Repeat the word orally.	12	29	13	29	28	2.56	1.19
43.	MEM	Learn the words of an idiom together.	13	23	24	27	26	2.55	1.11
51.	META	Skip the new word this time but pay attention to its context for later use.	14	21	26	33	21	2.54	1.04
23.	MEM	Visualize the word form.	15	35	12	22	31	2.48	1.26

N=82 (Reliability coefficient alpha = .90)

Note.

[a.] 1 = rarely/never (including those who were *not aware of* the given strategies), 2 = sometimes, 3 = often, 4 = almost always

[b.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

[c.] The percentage is rounded to the nearest whole number.

Appendix F (Continued)

Item No.	Type	Strategy Description	Rank	1[a] (%)	2 (%)	3 (%)	4 (%)	M	SD
35.	COG	Take notes about the new words to review them later.	16	28	22	28	22	2.44	1.12
39.	META	Use English-language media.	17	29	28	26	17	2.30	1.07
24.	MEM	Paraphrase the word's meaning.	18	37	24	20	20	2.22	1.14
28.	META	Continue to study the words over time.	19	40	17	28	15	2.17	1.12
47.	MEM	Remember the new word together with the context where the new word occurs.	20	44	17	27	12	2.07	1.10
37.	COG	Make word cards and take them with you wherever you go.	21	54	13	16	17	1.96	1.18
15	META	Test oneself with word tests.	22	43	35	9	13	1.93	1.03
7.	MEM	Remember a group of new words that share a similar part in spelling.	23	45	28	18	9	1.90	.99
19.	MEM	Connect the word to the words having the similar or opposite meanings.	24	43	32	18	7	1.90	.95
45.	COG	Use the vocabulary section in your textbook.	25	55	16	17	12	1.87	1.10
41.	MEM	Use cognates in study.	26	46	29	17	7	1.85	.96
20.	MEM	Group words together to study them.	27	48	31	15	7	1.82	.94
3.	MEM	Image word's meaning.	28	54	20	21	6	1.79	.98
4.	MEM	Use 'scales' for gradable adjectives.	29	60	12	22	6	1.74	1.00
17.	MEM	Connect the word meaning to a personal experience	30	56	22	17	5	1.71	.92
6.	MEM	Use Loci method.	31	60	18	15	7	1.70	.98
18.	MEM	Associate the word with its coordinates.	31	57	23	12	7	1.70	.95
8.	MEM	Remember a group of new words that sound similar.	33	60	21	13	6	1.66	.93
50.	META	Interact with native-speakers via using the new word.	34	65	17	10	9	1.62	.98

Appendix F (Continued)

Item No.	Type	Strategy Description	Rank	1[a] (%)	2 (%)	3 (%)	4 (%)	M	SD
29.	MEM	Use the new word in sentences.	35	65	16	15	5	1.60	.91
46.	META	Review the word periodically.	36	65	23	9	4	1.51	.80
44.	COG	Keep a vocabulary notebook wherever you go.	37	73	17	5	5	1.41	.80
30.	MEM	Group words together within a storyline.	38	78	10	9	4	1.38	.80
1.	META	Study and practice meaning through group work.	39	68	27	5	0	1.37	.58
40.	MEM	Use Keyword Method.	39	76	15	7	2	1.37	.73
2.	MEM	Draw a picture to represent the word meaning.	41	78	16	5	1	1.29	.62
48.	MEM	Remember the sentence in which the word is used.	42	78	18	1	2	1.28	.61
34.	MEM	Use physical action when learning a word.	43	81	15	2	2	1.27	.63
5.	MEM	Group the related words by drawing semantic maps.	44	83	10	6	1	1.26	.62
27.	COG	Listen to a tape/CD of word lists.	44	83	11	4	2	1.26	.64
42.	COG	Put English labels on physical objects.	46	88	7	4	1	1.18	.55
31.	MEM	Group words together within a song.	47	90	5	2	2	1.17	.58
38.	COG	Use flash cards.	48	90	6	2	1	1.15	.50
32.	MEM	Underline the first letter of the word.	49	95	2	1	1	1.09	.42
16.	META	Ask the teacher to check students' word lists for accuracy.	50	98	1	0	1	1.05	.35
33.	MEM	Outline the shape of the word.	51	99	1	0	0	1.01	.11

Appendix G
Comparison the Mean (M) of the Strategy Use with the Number of High Frequent Users (in %)

Item No.	Type	Strategy Description	N	M	Rank	n=(3+4)[a]	%[b]	Rank
9.	MEM	Study the spelling rule of the word carefully.	82	3.23	1	68	83	1
14.	COG	Repeat the word in your mind.	82	3.17	2	64	78	2
12.	MEM	Remember the part of speech of the word.	82	3.06	4	63	77	3
10.	MEM	Study the sound corresponding to the letter in the word carefully.	82	3.11	3	61	74	4
25.	COG	Write the word repeatedly.	82	2.98	5	57	70	5
11.	MEM	Remember the word roots, prefixes, or suffixes.	82	2.84	6	53	65	6
36.	COG	Use word lists.	82	2.71	7	50	61	7
21.	MEM	Group words together spatially on a page.	82	2.68	8	48	59	8
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	82	2.65	9	48	59	8
13.	COG	Repeat the word orally.	82	2.56	12	47	57	10
22.	MEM	Say the new word aloud when studying the target word's spelling.	82	2.59	10	46	56	11
49.	MEM	Remember the word with collocations of the word.	82	2.59	10	44	54	12
51.	META	Skip the new word this time but pay attention to its context for later use.	82	2.54	14	44	54	12
43.	MEM	Learn the words of an idiom together.	82	2.55	13	43	52	14
23.	MEM	Visualize the word form.	82	2.48	15	43	52	14
35.	COG	Take notes about the new words to review them later.	82	2.44	16	41	50	16

Note.
[a] (3+4) = numbers of high frequency users (high frequency users refer to those who gave ratings of 3 *(often)* and 4 *(almost always)* in the use frequency evaluation)
[b] % = the percentage of high frequency users out of the total number of the research participants (N=82)
[c] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy
[d] The percentage is rounded to the nearest whole number.

Appendix G (Continued)

Item No.	Type	Strategy Description	N	M	Rank	n=(3+4)[a]	%[b]	Rank
39.	META	Use English-language media.	82	2.30	17	35	43	17
28.	META	Continue to study the words over time.	82	2.17	19	35	43	17
24.	MEM	Paraphrase the word's meaning.	82	2.22	18	32	39	19
47.	MEM	Remember the new word together with the context where the new word occurs.	82	2.07	20	32	39	19
37.	COG	Make word cards and take them with you wherever you go.	82	1.96	21	27	33	21
45.	COG	Use the vocabulary section in your textbook.	82	1.87	25	24	29	22
4.	MEM	Use 'scales' for gradable adjectives.	82	1.74	29	23	28	23
7.	MEM	Remember a group of new words that share a similar part in spelling.	82	1.90	23	22	27	24
3.	MEM	Image word's meaning.	82	1.79	28	22	27	24
19.	MEM	Connect the word to the words having the similar or opposite meanings.	82	1.90	23	21	26	26
41.	MEM	Use cognates in study.	82	1.85	26	20	24	27
15.	META	Test oneself with word tests.	82	1.93	22	18	22	28
20.	MEM	Group words together to study them.	82	1.82	27	18	22	28
17.	MEM	Connect the word meaning to a personal experience	82	1.71	30	18	22	28
6.	MEM	Use Loci method.	82	1.70	31	18	22	28
18.	MEM	Associate the word with its coordinates.	82	1.70	31	16	20	32
8.	MEM	Remember a group of new words that sound similar.	82	1.66	33	16	20	32
29.	MEM	Use the new word in sentences.	82	1.60	35	16	20	32
50.	META	Interact with native-speakers via using the new word.	82	1.62	34	15	18	35
46.	META	Review the word periodically.	82	1.51	36	10	12	36

Appendix G (Continued)

Item No.	Type	Strategy Description	N	M	Rank	n=(3+4)[a]	%[b]	Rank
30.	MEM	Group words together within a storyline.	82	1.38	38	10	12	36
44.	COG	Keep a vocabulary notebook wherever you go.	82	1.41	37	8	10	38
40.	MEM	Use Keyword Method.	82	1.37	39	8	10	38
5.	MEM	Group the related words by drawing semantic maps.	82	1.26	44	6	7	40
2.	MEM	Draw a picture to represent the word meaning.	82	1.29	41	5	6	41
27.	COG	Listen to a tape/CD of word lists.	82	1.26	44	5	6	41
34.	MEM	Use physical action when learning a word.	82	1.27	43	4	5	43
42.	COG	Put English labels on physical objects.	82	1.18	46	4	5	43
31.	MEM	Group words together within a song.	82	1.17	47	4	5	43
1.	META	Study and practice meaning through group work.	82	1.37	39	3	4	46
48.	MEM	Remember the sentence in which the word is used.	82	1.28	42	3	4	46
38.	COG	Use flash cards.	82	1.15	48	3	4	46
32.	MEM	Underline the first letter of the word.	82	1.09	49	2	2	49
16.	META	Ask the teacher to check students' word lists for accuracy.	82	1.05	50	1	1	50
33.	MEM	Outline the shape of the word.	82	1.01	51	0	0	51

Appendix H

Comparison the Mean (M) of the Strategy Use with the Number of Low Frequent Users (in %)

			AW [a]	Frequency			Frequency (n=1)[b]		
Item No.	Type	Strategy Description	%	N	M	Rank	n=1	%[c]	Rank
33.	MEM[d]	Outline the shape of the word.	5	82	1.01	51	81	99[e]	51
16.	META	Ask the teacher to check students' word lists for accuracy.	11	82	1.05	50	80	98	50
32.	MEM	Underline the first letter of the word.	9	82	1.09	49	78	95	49
31.	MEM	Group words together within a song.	23	82	1.17	47	74	90	47
38.	COG	Use flash cards.	29	82	1.15	48	74	90	47
42.	COG	Put English labels on physical objects.	33	82	1.18	46	72	88	46
5.	MEM	Group the related words by drawing semantic maps.	29	82	1.26	44	68	83	44
27.	COG	Listen to a tape/CD of word lists.	38	82	1.26	44	68	83	44
34.	MEM	Use physical action when learning a word.	33	82	1.27	43	66	80	43
2.	MEM	Draw a picture to represent the word meaning.	33	82	1.29	41	64	78	40
30.	MEM	Group words together within a storyline.	28	82	1.38	38	64	78	40
48.	MEM	Remember the sentence in which the word is used.	39	82	1.28	42	64	78	40
40.	MEM	Use Keyword Method.	32	82	1.37	39	62	76	39
44.	COG	Keep a vocabulary notebook wherever you go.	38	82	1.41	37	60	73	38

Note.
[a.] AW = percentages of the respondents (out of 82) who indicated their awareness of the given strategies
[b.] (n=1) = numbers of low frequent users who included those who gave the rating of *1 (rarely/never)* in the use frequency evaluation and those who were *unaware of* the given strategies
[c.] % = the percentage of low frequent users out of the total number of the research participants (N=82)
[d.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy
[e.] The percentage is rounded to the nearest whole number.

Appendix H (Continued)

			AW [a]	Frequency			Frequency (n=1)[b]		
Item No.	**Type**	**Strategy Description**	**%**	**N**	**M**	**Rank**	**n=1**	**%[c]**	**Rank**
1.	META	Study and practice meaning through group work.	60	82	1.37	39	56	68	37
29.	MEM	Use the new word in sentences.	51	82	1.60	35	53	65	34
46.	META	Review the word periodically.	48	82	1.51	36	53	65	34
50.	META	Interact with native-speakers via using the new word.	48	82	1.62	34	53	65	34
4.	MEM	Use 'scales' for gradable adjectives.	49	82	1.74	29	49	60	31
6.	MEM	Use Loci method.	50	82	1.70	31	49	60	31
8.	MEM	Remember a group of new words that sound similar.	57	82	1.66	33	49	60	31
18.	MEM	Associate the word with its coordinates.	54	82	1.70	31	47	57	30
17.	MEM	Connect the word meaning to a personal experience	49	82	1.71	30	46	56	29
45.	COG	Use the vocabulary section in your textbook.	55	82	1.87	25	45	55	28
3.	MEM	Image word's meaning.	50	82	1.79	28	44	54	26
37.	COG	Make word cards and take them with you wherever you go.	60	82	1.96	21	44	54	26
20.	MEM	Group words together to study them.	60	82	1.82	27	39	48	25
41.	MEM	Use cognates in study.	59	82	1.85	26	38	46	24
7.	MEM	Remember a group of new words that share a similar part in spelling.	72	82	1.90	23	37	45	23
47.	MEM	Remember the new word together with the context where the new word occurs.	61	82	2.07	20	36	44	22
15.	META	Test oneself with word tests.	65	82	1.93	22	35	43	20

Appendix H (Continued)

Item No.	Type	Strategy Description	AW [a] (%)	Frequency N	Frequency M	Frequency Rank	Frequency (n=1)[b] n=1[a]	Frequency (n=1)[b] %[b]	Frequency (n=1)[b] Rank
19.	MEM	Connect the word to the words having the similar or opposite meanings.	66	82	1.90	23	35	43	20
28.	META	Continue to study the words over time.	66	82	2.17	19	33	40	19
24.	MEM	Paraphrase the word's meaning.	63	82	2.22	18	30	37	18
23.	MEM	Visualize the word form.	72	82	2.48	15	29	35	17
22.	MEM	Say the new word aloud when studying the target word's spelling.	77	82	2.59	10	27	33	16
13.	COG	Repeat the word orally.	78	82	2.56	12	24	29	14
39.	META	Use English-language media.	78	82	2.30	17	24	29	14
35.	COG	Take notes about the new words to review them later.	82	82	2.44	16	23	28	13
21.	MEM	Group words together spatially on a page.	78	82	2.68	8	22	27	12
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	77	82	2.65	9	20	24	10
49.	MEM	Remember the word with collocations of the word.	78	82	2.59	10	20	24	10
43.	MEM	Learn the words of an idiom together.	82	82	2.55	13	19	23	9
36.	COG	Use word lists.	82	82	2.71	7	18	22	8
51.	META	Skip the new word this time but pay attention to its context for later use.	81	82	2.54	14	17	21	7
11.	MEM	Remember the word roots, prefixes, or suffixes.	85	82	2.84	6	15	18	6
10.	MEM	Study the sound corresponding to the letter in the word carefully.	85	82	3.11	3	14	17	5
25.	COG	Write the word repeatedly.	93	82	2.98	5	13	16	4
12.	MEM	Remember the part of speech of the word.	92	82	3.06	4	10	12	3
14.	COG	Repeat the word in your mind.	94	82	3.17	2	7	9	2
9.	MEM	Study the spelling rule of the word carefully.	92	82	3.23	1	5	6	1

Appendix I

Efficacy Rating (in %), Mean (M), and Standard Deviation (SD) of the Vocabulary Consolidation Strategies

Item No.	Type	Strategy Description	Rank	N	1 [a] (%)	2 (%)	3 (%)	4 (%)	M	SD
16.	META	Ask the teacher to check students' word lists for accuracy.	1	1	0	0	0	100	4.00	.00
48.	MEM	Remember the sentence in which the word is used.	2	12	0	8	33	58	3.50	.67
11.	MEM	Remember the word roots, prefixes, or suffixes.	3	67	0	6	40	54	3.48	.61
50.	META	Interact with native-speakers via using the new word.	4	17	0	0	53	47	3.47	.51
9.	MEM	Study the spelling rule of the word carefully.	4	68	0	10	32	57	3.47	.68
10.	MEM	Study the sound corresponding to the letter in the word carefully.	4	68	0	10	32	57	3.47	.68
27.	COG	Listen to a tape/CD of word lists.	7	14	0	7	43	50	3.43	.65
22.	MEM	Say the new word aloud when studying the target word's spelling.	8	55	0	13	35	53	3.40	.71
14.	COG	Repeat the word in your mind.	9	60	2	8	40	50	3.38	.72
25.	COG	Write the word repeatedly.	10	66	2	11	44	44	3.30	.72
38.	COG	Use flash cards.	11	7	0	14	43	43	3.29	.76
47.	MEM	Remember the new word together with the context where the new word occurs.	12	43	0	14	44	42	3.28	.70
23.	MEM	Visualize the word form.	12	54	0	17	39	44	3.28	.74
12.	MEM	Remember the part of speech of the word.	12	72	0	14	44	42	3.28	.70
21.	MEM	Group words together spatially on a page.	15	60	0	17	40	43	3.27	.73

Reliability coefficient alpha = .92

Note.

[a.] 1 = not effective at all, 2 = not effective, 3 = effective, 4 = very effective

[b.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

[c.] The percentage is rounded to the nearest whole number.

Appendix I (Continued)

Item No.	Type	Strategy Description	Rank	N	1[a] (%)	2 (%)	3 (%)	4 (%)	M	SD
13.	COG	Repeat the word orally.	16	57	0	14	46	40	3.26	.70
31.	MEM	Group words together within a song.	17	8	0	13	50	38	3.25	.71
42.	COG	Put English labels on physical objects.	17	4	0	0	75	25	3.25	.50
29.	MEM	Use the new word in sentences.	19	29	0	3	69	28	3.24	.51
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	19	58	0	21	35	45	3.24	.78
39.	META	Use English-language media.	21	48	0	17	46	38	3.21	.71
40.	MEM	Use Keyword Method.	22	20	0	20	40	40	3.20	.77
28.	META	Continue to study the words over time.	23	48	2	6	63	29	3.19	.64
51.	META	Skip the new word this time but pay attention to its context for later use.	24	65	0	12	59	29	3.17	.63
24.	MEM	Paraphrase the word's meaning.	25	51	0	18	49	33	3.16	.70
37.	COG	Make word cards and take them with you wherever you go.	26	38	0	18	53	29	3.11	.69
46.	META	Review the word periodically.	27	29	0	17	59	24	3.07	.65
19.	MEM	Connect the word to the words having the similar or opposite meanings.	28	47	0	15	64	21	3.06	.60
30.	MEM	Group words together within a storyline.	28	17	0	29	35	35	3.06	.83
5.	MEM	Group the related words by drawing semantic maps.	30	14	0	14	71	14	3.00	.55
20.	MEM	Group words together to study them.	30	42	2	14	64	19	3.00	.66
32.	MEM	Underline the first letter of the word.	30	3	0	0	100	0	3.00	.00
33.	MEM	Outline the shape of the word.	30	1	0	0	100	0	3.00	.00

Appendix I (Continued)

Item No.	Type	Strategy Description	Rank	N	1[a] (%)	2 (%)	3 (%)	4 (%)	M	SD
43.	MEM	Learn the words of an idiom together.	34	60	0	28	45	27	2.98	.75
18.	MEM	Associate the word with its coordinates.	35	35	0	17	69	14	2.97	.57
7.	MEM	Remember a group of new words that share a similar part in spelling.	36	45	0	22	60	18	2.96	.64
15.	META	Test oneself with word tests.	37	42	0	21	62	17	2.95	.62
17.	MEM	Connect the word meaning to a personal experience	38	35	0	23	60	17	2.94	.64
8.	MEM	Remember a group of new words that sound similar.	38	33	0	21	64	15	2.94	.61
4.	MEM	Use ‘scales’ for gradable adjectives.	38	33	3	18	61	18	2.94	.70
36.	COG	Use word lists.	38	63	2	24	54	21	2.94	.72
3.	MEM	Image word's meaning.	42	38	0	18	71	11	2.92	.54
45.	COG	Use the vocabulary section in your textbook.	43	25	8	12	60	20	2.92	.81
6.	MEM	Use Loci method.	44	33	0	27	55	18	2.91	.68
44.	COG	Keep a vocabulary notebook wherever you go.	45	19	0	32	53	16	2.84	.69
41.	MEM	Use cognates in study.	45	43	2	23	63	12	2.84	.65
49.	MEM	Remember the word with collocations of the word.	47	33	3	30	49	18	2.82	.77
1.	META	Study and practice meaning through group work.	48	5	0	0	20	80	2.80	.45
34.	MEM	Use physical action when learning a word.	48	15	0	20	80	0	2.80	.41
2.	MEM	Draw a picture to represent the word meaning.	50	18	0	39	44	17	2.78	.73
35.	COG	Take notes about the new words to review them later.	51	27	7	37	41	15	2.63	.84

Appendix J
Mean Scores (M) and Standard Deviations (SD) of the Strategy Efficacy Evaluation

Item No.	Type	Strategy Description	Efficacy[a] by users choosing (2+3+4)				Efficacy[b] by users choosing (3+4)			
			Rank	n	M	SD	Rank	n	M	SD
16.	META	Ask the teacher to check students' word lists for accuracy.	1	1	4.00	.00	1	1	4.00	.00
31.	MEM	Group words together within a song.	17	8	3.25	.71	2	4	3.75	.50
40.	MEM	Use Keyword Method.	22	20	3.20	.77	3	8	3.63	.74
2.	MEM	Draw a picture to represent the word meaning.	50	18	2.78	.73	4	5	3.60	.55
11.	MEM	Remember the word roots, prefixes, or suffixes.	3	67	3.48	.61	5	53	3.57	.57
10.	MEM	Study the sound corresponding to the letter in the word carefully.	4	68	3.47	.68	6	61	3.56	.65
50.	META	Interact with native-speakers via using the new word.	4	17	3.47	.51	7	15	3.53	.52
21.	MEM	Group words together spatially on a page.	15	60	3.27	.73	8	48	3.52	.55
48.	MEM	Remember the sentence in which the word is used.	2	12	3.50	.67	9	2	3.50	.71
27.	COG	Listen to a tape/CD of word lists.	7	14	3.43	.65	9	4	3.50	1.00
29.	MEM	Use the new word in sentences.	19	29	3.24	.51	9	16	3.50	.52
46.	META	Review the word periodically.	27	29	3.07	.65	9	10	3.50	.53
44.	COG	Keep a vocabulary notebook wherever you go.	45	19	2.84	.69	9	2	3.50	.71
22.	MEM	Say the new word aloud when studying the target word's spelling.	8	55	3.40	.71	14	46	3.48	.69

Note.

[a.] Efficacy by users choosing (2+3+4) refers to efficacy ratings given by those respondents who indicated they *sometimes* (option 2), *often* (option 3), and *almost always* (option 4) used the strategies in the survey.

[b.] Efficacy by users choosing (3+4) refers to efficacy evaluations rated by those who indicated they *often* (option 3), and *almost always* (option 4) used the strategies in the survey.

[c.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

Appendix J (Continued)

Item No.	Type	Strategy Description	Efficacy[a] by users choosing (2+3+4)				Efficacy[b] by users choosing (3+4)			
			Rank	n	M	SD	Rank	n	M	SD
20.	MEM	Group words together to study them.	30	42	3.00	.66	15	17	3.47	.51
23.	MEM	Visualize the word form.	12	54	3.28	.74	16	43	3.44	.67
14.	COG	Repeat the word in your mind.	9	60	3.38	.72	16	48	3.44	.65
19.	MEM	Connect the word to the words having the similar or opposite meanings.	28	47	3.06	.60	18	21	3.43	.51
24.	MEM	Paraphrase the word's meaning.	25	51	3.16	.70	19	31	3.42	.56
12.	MEM	Remember the part of speech of the word.	12	72	3.28	.70	20	62	3.40	.64
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	19	58	3.24	.78	21	45	3.36	.71
47.	MEM	Remember the new word together with the context where the new word occurs.	12	43	3.28	.70	22	31	3.35	.66
17.	MEM	Connect the word meaning to a personal experience	38	35	2.94	.64	22	17	3.35	.49
51.	META	Skip the new word this time but pay attention to its context for later use.	24	65	3.17	.63	24	44	3.34	.57
39.	META	Use English-language media.	21	48	3.21	.71	25	25	3.32	.69
28.	META	Continue to study the words over time.	23	48	3.19	.64	25	25	3.32	.56
7.	MEM	Remember a group of new words that share a similar part in spelling.	36	45	2.96	.64	25	22	3.32	.57
18.	MEM	Associate the word with its coordinates.	35	35	2.97	.57	28	16	3.31	.48
30.	MEM	Group words together within a storyline.	28	17	3.06	.83	29	10	3.30	.82
25.	COG	Write the word repeatedly.	10	66	3.30	.72	29	54	3.30	.72
8.	MEM	Remember a group of new words that sound similar.	38	33	2.94	.61	31	16	3.25	.58

Appendix J (Continued)

Item No.	Type	Strategy Description	Efficacy[a] by users choosing (2+3+4)				Efficacy[b] by users choosing (3+4)			
			Rank	n	M	SD	Rank	n	M	SD
9.	MEM	Study the spelling rule of the word carefully.	4	68	3.47	.68	32	67	3.24	.63
13.	COG	Repeat the word orally.	16	57	3.26	.70	32	42	3.24	.73
6.	MEM	Use Loci method.	44	33	2.91	.68	34	18	3.22	.55
5.	MEM	Group the related words by drawing semantic maps.	30	14	3.00	.55	35	6	3.17	.41
3.	MEM	Image word's meaning.	42	38	2.92	.54	36	22	3.14	.47
43.	MEM	Learn the words of an idiom together.	34	60	2.98	.75	37	37	3.05	.78
41.	MEM	Use cognates in study.	45	43	2.84	.65	37	19	3.05	.62
38.	COG	Use flash cards.	11	7	3.29	.76	39	2	3.00	1.41
37.	COG	Make word cards and take them with you wherever you go.	26	38	3.11	.69	39	3	3.00	1.00
32.	MEM	Underline the first letter of the word.	30	3	3.00	.00	39	2	3.00	.00
15.	META	Test oneself with word tests.	37	42	2.95	.62	39	12	3.00	.85
4.	MEM	Use ‘scales’ for gradable adjectives.	38	33	2.94	.70	39	23	3.00	.67
1.	META	Study and practice meaning through group work.	48	5	2.80	.45	39	2	3.00	.00
36.	COG	Use word lists.	38	63	2.94	.72	45	45	2.98	.72
49.	MEM	Remember the word with collocations of the word.	47	33	2.82	.77	46	23	2.96	.77
45.	COG	Use the vocabulary section in your textbook.	42	25	2.92	.81	47	10	2.90	.74
35.	COG	Take notes about the new words to review them later.	51	27	2.63	.84	48	12	2.83	.72
34.	MEM	Use physical action when learning a word.	48	15	2.80	.41	49	3	2.67	.58
42.	COG	Put English labels on physical objects.	17	4	3.25	.50	50	0	0.00	.00
33.	MEM	Outline the shape of the word.	30	1	3.00	.00	50	0	0.00	.00

Appendix K

Frequency of Use and Efficacy Evaluation by High Frequent Users

Item No.	Type	Strategy Description	Frequency[a] (3+4)			Efficacy [b]			
			Rank	n	%[c]	Rank	n	M	SD
16.	META	Ask the teacher to check students' word lists for accuracy.	50	1	1	1	1	4.00	.00
31.	MEM	Group words together within a song.	43	4	5	2	4	3.75	.50
40.	MEM	Use Keyword Method.	38	8	10	3	8	3.63	.74
2.	MEM	Draw a picture to represent the word meaning.	41	5	6	4	5	3.60	.55
11.	MEM	Remember the word roots, prefixes, or suffixes.	6	53	65	5	53	3.57	.57
10.	MEM	Study the sound corresponding to the letter in the word carefully.	4	61	74	6	61	3.56	.65
50.	META	Interact with native-speakers via using the new word.	35	15	18	7	15	3.53	.52
21.	MEM	Group words together spatially on a page.	8	48	59	8	48	3.52	.55
29.	MEM	Use the new word in sentences.	32	16	20	9	16	3.50	.52
46.	META	Review the word periodically.	36	10	12	9	10	3.50	.53
44.	COG	Keep a vocabulary notebook wherever you go.	38	8	10	9	2	3.50	.71
27.	COG	Listen to a tape/CD of word lists.	41	5	6	9	4	3.50	1.00
48.	MEM	Remember the sentence in which the word is used.	46	3	4	9	2	3.50	.71
22.	MEM	Say the new word aloud when studying the target word's spelling.	11	46	56	14	46	3.48	.69

N=82

Note.

[a.] Calculations of the use frequency were based on the data from those high frequency users only (i.e., those respondents who indicated that they *often* (3) and *almost always* (4) used the strategies in the survey).

[b.] Results of the strategy efficacy evaluation were based on efficacy ratings given by those high frequency users only.

[c.] % = the percentage of those high frequency user out of the total research participants (N=82)

[d.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

Appendix K (Continued)

Item No.	Type	Strategy Description	Frequency[a] (3+4)			Efficacy [b]			
			Rank	n	%[c]	Rank	n	M	SD
20.	MEM	Group words together to study them.	28	18	22	15	17	3.47	.51
23.	MEM	Visualize the word form.	14	43	52	16	43	3.44	.67
14.	COG	Repeat the word in your mind.	2	64	78	16	48	3.44	.65
19.	MEM	Connect the word to the words having the similar or opposite meanings.	26	21	26	18	21	3.43	.51
24.	MEM	Paraphrase the word's meaning.	19	32	39	19	31	3.42	.56
12.	MEM	Remember the part of speech of the word.	3	63	77	20	62	3.40	.64
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	8	48	59	21	45	3.36	.71
47.	MEM	Remember the new word together with the context where the new word occurs.	19	32	39	22	31	3.35	.66
17.	MEM	Connect the word meaning to a personal experience	28	18	22	22	17	3.35	.49
51.	META	Skip the new word this time but pay attention to its context for later use.	12	44	54	24	44	3.34	.57
28.	META	Continue to study the words over time.	17	35	43	25	25	3.32	.56
39.	META	Use English-language media.	17	35	43	25	25	3.32	.69
7.	MEM	Remember a group of new words that share a similar part in spelling.	24	22	27	25	22	3.32	.57
18.	MEM	Associate the word with its coordinates.	32	16	20	28	16	3.31	.48
30.	MEM	Group words together within a storyline.	36	10	12	29	10	3.30	.82
25.	COG	Write the word repeatedly.	5	57	70	29	54	3.30	.72
8.	MEM	Remember a group of new words that sound similar.	32	16	20	31	16	3.25	.58
9.	MEM	Study the spelling rule of the word carefully.	1	68	83	32	67	3.24	.63

Appendix K (Continued)

Item No.	Type	Strategy Description	Frequency[a] (3+4)			Efficacy [b]			
			Rank	n	%[c]	Rank	n	M	SD
13.	COG	Repeat the word orally.	10	47	57	32	42	3.24	.73
6.	MEM	Use Loci method.	28	18	22	34	18	3.22	.55
5.	MEM	Group the related words by drawing semantic maps.	40	6	7	35	6	3.17	.41
3.	MEM	Image word's meaning.	24	22	27	36	22	3.14	.47
43.	MEM	Learn the words of an idiom together.	14	43	52	37	37	3.05	.78
41.	MEM	Use cognates in study.	27	20	24	37	19	3.05	.62
37.	COG	Make word cards and take them with you wherever you go.	21	27	33	39	3	3.00	1.00
4.	MEM	Use 'scales' for gradable adjectives.	23	23	28	39	23	3.00	.67
15.	META	Test oneself with word tests.	28	18	22	39	12	3.00	.85
1.	META	Study and practice meaning through group work.	46	3	4	39	2	3.00	.00
38.	COG	Use flash cards.	46	3	4	39	2	3.00	1.41
32.	MEM	Underline the first letter of the word.	49	2	2	39	2	3.00	.00
36.	COG	Use word lists.	7	50	61	45	45	2.98	.72
49.	MEM	Remember the word with collocations of the word.	12	44	54	46	23	2.96	.77
45.	COG	Use the vocabulary section in your textbook.	22	24	29	47	10	2.90	.74
35.	COG	Take notes about the new words to review them later.	16	41	50	48	12	2.83	.72
34.	MEM	Use physical action when learning a word.	43	4	5	49	3	2.67	.58
42.	COG	Put English labels on physical objects.	43	4	5	50	0	0.00	.00
33.	MEM	Outline the shape of the word.	51	0	0	50	0	0.00	.00

Appendix L
Strategy Use in Spatial Contexts: the Raw Data Presented in the Descending Order of the Numbers of the Total Responses

Item No.	Type	Strategy Description	Rank	N	Outside Class	In Class	Both
					1	2	3
9.	MEM[a]	Study the spelling rule of the word carefully.	1	76	3[b]	7	66
14.	COG	Repeat the word in your mind.	2	73	7	8	58
12.	MEM	Remember the part of speech of the word.	3	72	2	14	56
25.	COG	Write the word repeatedly.	4	70	14	9	47
10.	MEM	Study the sound corresponding to the letter in the word carefully.	5	68	3	3	62
11.	MEM	Remember the word roots, prefixes, or suffixes.	6	67	2	8	57
51.	META	Skip the new word this time but pay attention to its context for later use.	7	65	11	2	52
36.	COG	Use word lists.	8	64	9	7	48
43.	MEM	Learn the words of an idiom together.	9	62	6	12	44
49.	MEM	Remember the word with collocations of the word.	9	62	5	7	50
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	11	61	9	6	46
13.	COG	Repeat the word orally.	12	59	14	4	41
21.	MEM	Group words together spatially on a page.	12	59	2	20	37
35.	COG	Take notes about the new words to review them later.	12	59	1	22	36
22.	MEM	Say the new word aloud when studying the target word's spelling.	15	57	13	4	40
39.	META	Use English-language media.	15	57	33	0	24
23.	MEM	Visualize the word form.	17	54	6	5	43
24.	MEM	Paraphrase the word’s meaning.	18	50	10	7	33
1.	META	Study and practice meaning through group work.	19	49	17	15	17

Reliability coefficient alpha = .89

Note.

[a.] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy,

[b.] The number represents numbers of the respondents who chosen the given option.

Appendix L (Continued)

Item No.	Type	Strategy Description	Rank	N	Outside Class	In Class	Both
					1	2	3
28.	META	Continue to study the words over time.	19	49	5	4	40
7.	MEM	Remember a group of new words that share a similar part in spelling.	21	47	6	12	29
15.	META	Test oneself with word tests.	21	47	14	6	27
19.	MEM	Connect the word to the words having the similar or opposite meanings.	21	47	5	9	33
47.	MEM	Remember the new word together with the context where the new word occurs.	24	46	6	10	30
41.	MEM	Use cognates in study.	25	44	12	4	28
20.	MEM	Group words together to study them.	26	43	8	5	30
37.	COG	Make word cards and take them with you wherever you go.	27	41	9	4	28
3.	MEM	Image word's meaning.	28	38	6	2	30
17.	MEM	Connect the word meaning to a personal experience	28	38	16	6	16
50.	META	Interact with native-speakers via using the new word.	28	38	18	4	16
45.	COG	Use the vocabulary section in your textbook.	31	37	6	6	25
6.	MEM	Use Loci method.	32	34	13	3	18
18.	MEM	Associate the word with its coordinates.	33	34	8	5	21
4.	MEM	Use ‘scales’ for gradable adjectives.	34	33	3	8	22
8.	MEM	Remember a group of new words that sound similar.	35	31	3	7	21
46.	META	Review the word periodically.	36	30	8	5	17
29.	MEM	Use the new word in sentences.	37	29	6	6	17
44.	COG	Keep a vocabulary notebook wherever you go.	38	23	4	4	15
40.	MEM	Use Keyword Method.	39	22	11	1	10
48.	MEM	Remember the sentence in which the word is used.	40	18	3	4	11
2.	MEM	Draw a picture to represent the word meaning.	41	17	6	0	11

Appendix L (Continued)

Item No.	Type	Strategy Description	Rank	N	Outside Class	In Class	Both
					1	2	3
30.	MEM	Group words together within a storyline	41	17	7	1	9
34.	MEM	Use physical action when learning a word.	41	17	8	0	9
27.	COG	Listen to a tape/CD of word lists.	44	15	3	6	6
5.	MEM	Group the related words by drawing semantic maps.	45	14	2	3	9
42.	COG	Put English labels on physical objects.	46	10	6	0	4
31.	MEM	Group words together within a song.	47	9	5	0	4
38.	COG	Use flash cards.	47	9	1	2	6
16.	META	Ask the teacher to check students' word lists for accuracy.	49	3	1	1	1
32.	MEM	Underline the first letter of the word.	49	3	2	1	0
33.	MEM	Outline the shape of the word.	51	1	0	0	1

Appendix M

Strategy Use in In-Class and Outside-Class Contexts: the Adjustment Data Presented in the Descending Order of the Numbers of the Total Responses

Item No.	Type	Strategy Description	Rank	N	Outside Class 1	In Class 2
9.	MEM[a]	Study the spelling rule of the word carefully.	1	76	69[b]	**73**[c]
14.	COG	Repeat the word in your mind.	2	73	65	**66**
12.	MEM	Remember the part of speech of the word.	3	72	58	**70**
25.	COG	Write the word repeatedly.	4	70	**61**	56
10.	MEM	Study the sound corresponding to the letter in the word carefully.	5	68	65	65
11.	MEM	Remember the word roots, prefixes, or suffixes.	6	67	59	**65**
51.	META	Skip the new word this time but pay attention to its context for later use.	7	65	**63**	54
36.	COG	Use word lists.	8	64	**57**	55
43.	MEM	Learn the words of an idiom together.	9	62	50	**56**
49.	MEM	Remember the word with collocations of the word.	9	62	55	**57**
26.	COG	Write both the new words and their Chinese equivalents repeatedly in order to remember them.	11	61	**55**	52
13.	COG	Repeat the word orally.	12	59	**55**	45
21.	MEM	Group words together spatially on a page.	12	59	39	**57**
35.	COG	Take notes about the new words to review them later.	12	59	37	**58**
22.	MEM	Say the new word aloud when studying the target word's spelling.	15	57	**53**	44
39.	META	Use English-language media.	15	57	**57**	24
23.	MEM	Visualize the word form.	17	54	**49**	48
24.	MEM	Paraphrase the word's meaning.	18	50	**43**	40
1.	META	Study and practice meaning through group work.	19	49	**34**	32

Reliability coefficient alpha = .89

Note.

[a] MEM = Memory strategy, COG = Cognitive strategy, META = Metacognitive strategy

[b] The number under the given option (either 1 = outside class, or 2 = in class) was adjusted by adding numbers of the respondents who chosen Option 3 (3 = both contexts).

[c] The boldface number indicates that the number under its option is higher than the other option.

Appendix M (Continued)

Item No.	Type	Strategy Description	Rank	N	Outside Class 1	In Class 2
28.	META	Continue to study the words over time.	19	49	**45**	44
7.	MEM	Remember a group of new words that share a similar part in spelling.	21	47	35	**41**
15.	META	Test oneself with word tests.	21	47	**41**	33
19.	MEM	Connect the word to the words having the similar or opposite meanings.	21	47	38	**42**
47.	MEM	Remember the new word together with the context where the new word occurs.	24	46	36	**40**
41.	MEM	Use cognates in study.	25	44	**40**	32
20.	MEM	Group words together to study them.	26	43	**38**	35
37.	COG	Make word cards and take them with you wherever you go.	27	41	**37**	32
3.	MEM	Image word's meaning.	28	38	**36**	32
17.	MEM	Connect the word meaning to a personal experience	28	38	**32**	22
50.	META	Interact with native-speakers via using the new word.	28	38	**34**	20
45.	COG	Use the vocabulary section in your textbook.	31	37	31	31
6.	MEM	Use Loci method.	32	34	**31**	21
18.	MEM	Associate the word with its coordinates.	32	34	**29**	26
4.	MEM	Use ‘scales’ for gradable adjectives.	34	33	25	**30**
8.	MEM	Remember a group of new words that sound similar.	35	31	24	**28**
46.	META	Review the word periodically.	36	30	**25**	22
29.	MEM	Use the new word in sentences.	37	29	23	23
44.	COG	Keep a vocabulary notebook wherever you go.	38	23	19	19
40.	MEM	Use Keyword Method.	39	22	**21**	11
48.	MEM	Remember the sentence in which the word is used.	40	18	14	**15**
2.	MEM	Draw a picture to represent the word meaning.	41	17	**17**	11
30.	MEM	Group words together within a storyline	41	17	**16**	10
34.	MEM	Use physical action when learning a word.	41	17	**17**	9
27.	COG	Listen to a tape/CD of word lists.	44	15	9	**12**

Appendix M (Continued)

Item No.	Type	Strategy Description	Rank	N	Outside Class 1	In Class 2
5.	MEM	Group the related words by drawing semantic maps.	45	14	11	**12**
42.	COG	Put English labels on physical objects.	46	10	**10**	4
31.	MEM	Group words together within a song.	47	9	**9**	4
38.	COG	Use flash cards.	47	9	7	**8**
16.	META	Ask the teacher to check students' word lists for accuracy.	49	3	2	2
32.	MEM	Underline the first letter of the word.	49	3	**2**	1
33.	MEM	Outline the shape of the word.	51	1	1	1