Effectiveness of a Computer-Assisted Vocabulary Learning Package for Nursing Students and Their Learning Attitude

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ชื่อวิทยานิพนธ์   ประสิทธิผลของชุดคอมพิวเตอร์ช่วยสอนคำศัพท์ภาษาอังกฤษและทัศนคติใน
การเรียนของนักศึกษาพยาบาล

ผู้เขียน   Mr. Gyanandra Dewan

สาขาวิชา   การสอนภาษาอังกฤษเป็นภาษานานาชาติ

ปีการศึกษา   2555

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บทคัดย่อ

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งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาประสิทธิผลของบทเรียนคอมพิวเตอร์ช่วยสอน ที่มีต่อการเรียนรู้และจดจำคำศัพท์ ตลอดจนทัศนคติของผู้เรียนที่มีต่อบทเรียน กลุ่มตัวอย่างที่ใช้ในการวิจัยคือ นักศึกษาชั้นปีที่ 2 คณะพยาบาลศาสตร์ มหาวิทยาลัยสงขลานครินทร์ จำนวน 60 คน เริ่มการเก็บข้อมูลในภาคการศึกษาที่ 1 ปีการศึกษา 2555 เครื่องมือที่ใช้ในการวิจัยคือ 1) บทเรียนคอมพิวเตอร์ช่วยสอนคำศัพท์ จำนวน 10 บท แต่ละบทประกอบด้วยคำศัพท์เฉพาะทางการพยาบาล 2) แบบทดสอบคำศัพท์ก่อนและหลังการเรียนรู้ และ 3) แบบสอบถามทัศนคติของผู้เรียนเกี่ยวกับการเรียนรู้คำศัพท์และบทเรียนคอมพิวเตอร์ช่วยสอนคำศัพท์

นักศึกษาได้ทำแบบทดสอบคำศัพท์ก่อนเรียนเพื่อทดสอบความรู้เกี่ยวกับคำศัพท์ที่จะเรียน หลังจากได้เรียนรู้คำศัพท์ทั้งหมดในบทเรียน นักศึกษาต้องทำแบบทดสอบฉบับเดิมเพื่อทดสอบผลสัมฤทธิ์การเรียนรู้คำศัพท์ที่ได้เรียนจากบทเรียนคอมพิวเตอร์ช่วยสอนคำศัพท์และตอบแบบสอบถามเกี่ยวกับกลยุทธ์ที่ใช้ในการเรียนรู้คำศัพท์และทัศนคติต่อบทเรียนและการเรียนรู้ หลังจากนั้นสองสัปดาห์นักศึกษาได้ทำแบบทดสอบคำศัพท์อีกครั้งหนึ่งเพื่อทดสอบระดับความคงทนของความจำคำศัพท์ที่ได้เรียนจากบทเรียน

ผลการวิจัยพบว่า หลังการเรียนรู้คำศัพท์ทั้ง 120 คำ จากบทเรียนคอมพิวเตอร์ช่วยสอนคำศัพท์เฉพาะทางด้านการพยาบาล ซึ่งถูกออกแบบให้เกิดการเรียนรู้โดยตรง นักศึกษาสามารถเรียนรู้คำศัพท์ได้มากขึ้นกว่าก่อนการเรียนอย่างมีนัยสำคัญทางสถิติ (p<0.01) นักศึกษาระบุว่า การที่บทเรียนมีองค์ประกอบช่วยการเรียนรู้คำศัพท์อย่างหลากหลายช่วยให้สามารถเรียนรู้และจดจำคำศัพท์ได้มากขึ้น นอกจากนี้ผลการศึกษาเกี่ยวกับความถี่ (จำนวน) ในการกดปุ่มเลือกเรียนองค์ประกอบของคำศัพท์พบว่า การออกเสียงคำศัพท์ (จำนวนการกดปุ่มเพื่อเรียนรู้ 9,562 ครั้ง) และความหมายของคำศัพท์ในภาษาไทย

(จำนวนการกดปุ่มเพื่อเรียนรู้ 8 ,955 ครั้ง) เป็นองค์ประกอบการเรียนรู้คำศัพท์ที่ช่วยให้เกิดการเรียนรู้และจดจำคำศัพท์ได้มากที่สุด แม้ว่าผลการศึกษาครั้งนี้ไม่พบความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติระหว่างทัศนคติของนักศึกษาต่อการเรียนคำศัพท์และบทเรียนกับผลสัมฤทธิ์ในการเรียนคำศัพท์ นักศึกษายอมรับว่าการเรียนรู้คำศัพท์จากบทเรียนคอมพิวเตอร์ช่วยสอนได้ให้ประสบการณ์และทักษะที่จำเป็นในการเรียนรู้คำศัพท์ใหม่ด้วยตนเอง

คำสำคัญ การเรียนรู้คำศัพท์, บทเรียนคอมพิวเตอร์ช่วยสอน, การเรียนรู้และการจดจำ, ทัศนคติต่อการเรียนรู้

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ABSTRACT

This study aims to investigate the effectiveness of a vocabulary acquisition and Computer-Assisted Vocabulary Learning (CAVL) package on vocabulary acquisition and retention of nursing students and their learning attitudes. The subjects were 60 second-year nursing students at Prince of Songkla University, Hat Yai Campus. The study was conducted in the first semester of 2012 academic year. Three research instruments employed for data collection were 1) the CAVL package consisting of 10 lessons, each lesson contains 12 vocabulary words related to nursing topics; 2) a pre- and post-vocabulary test; and 3) questionnaires on students' attitudes towards learning vocabulary using the CAVL package.

A vocabulary pre-test was conducted to the research subjects to assess their prior knowledge of the target words before the learning session. After the intentional vocabulary learning sessions from the CAVL package, the same version of the vocabulary pre-test was conducted as the immediate post-test to assess the students' vocabulary learning achievement. A set of questionnaires asking for the students' learning strategies and their attitude toward their learning from the package was administered. The retention vocabulary test was again given to the students to test the retention level of the learned vocabulary two weeks after the post-test.

The findings of this study indicated that after learning 120 new words in the CAVL package intentionally designed for subject-specific (nursing) vocabulary words, the students' knowledge of the learned vocabulary increased at a significant level

($p<0.01$). The students believed that provision of several different lexical features helped enhance their vocabulary acquisition and retention. The students also stated that the lesson featuring word pronunciation (total look-up clicks = 9562) with meaning given in Thai (total look-up clicks = 8955) were most useful for their acquisition and retention. Although the students' attitude towards the CAVL package has no significant correlation with their vocabulary achievement scores, they put forward that the CAVL package provided them with essential techniques for independent learning of new vocabulary.

Key words: vocabulary lesson, computer assisted learning, acquisition and retention, learning attitude

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

This introductory chapter presents general information about the research. It contains four sections: rationale, purposes of the study, research questions, definition of terms, and scope and limitations of the study.

1.1 Rationale of the Study

It is widely accepted that vocabulary is the basis of language learning. Experts pointed out that without having a sufficient vocabulary; learners cannot express their ideas and communicate meaningfully. Vocabulary is an essential part of language learning and is critically important to a typical language learner (Zimmerman, 1997). Harley (1996) noted that without adequate knowledge of relevant vocabulary, students have difficulty in performing the tasks required of them both in school and at university level. Laufer (1992 & 1997) also highlighted the fact that learners who have more vocabulary knowledge are more capable of understanding texts. Penno, Wilkinson and Moore (2002) stated that acquiring vocabulary is an essential aspect of language learning. Additionally, Leki and Carson (1994) stressed that foreign language learners are keen to acquire as many words as they can because they believe that without vocabulary adequate knowledge they will not be able to communicate properly in real-life situations. Baumann, Kame'enui, & Ash (2003) suggested that students' vocabulary knowledge is strongly related to their academic success. In their study, the students who have sufficient vocabulary knowledge can understand concepts and learn new ideas more quickly than those who have the limited vocabulary knowledge.

For the students who have not developed decoding and comprehension skills necessary for wide reading, the National Reading Panel (2000) suggested the intentional and explicit teaching of specific words and word-learning strategies. The specific word instruction refers to vocabulary instruction that enables students to develop in-depth knowledge of important words

that is, to know the words well enough to access relevant information about them from memory as they read.

Among Thai speaking learners, inadequate vocabulary knowledge is one of the crucial obstacles in both comprehension and communication at all levels. In most Thai school teachers seem to focus mainly on teaching grammar, reading and writing rather than vocabulary (Wimolkasem, 1992 & Sripetpun, 2000). Coady (1997) also pointed out that many teachers and researchers believe that teaching vocabulary is a low-level academic activity which does not worth full attention. Thus, learners have to acquire vocabulary incidentally by themselves.

Several researchers found that incidental vocabulary learning while reading is relatively successful (Day, Omura, & Hiramatsu, 1991), and many researchers proved that computer technology assisting vocabulary learning while reading could be enhanced by providing dictionary definitions, glosses or multimedia annotations (Hulstijn, 1992; Groot, 2000; & Nikolova, 2002).

Recently, for better vocabulary learning, many researchers advocated intentional vocabulary learning. Nation (2001) indicated that multiple exposures have a positive effect on vocabulary acquisition. Paribakht & Wesche (1997) indicated that systematic instruction resulted in more vocabulary acquisition than just guessing target words from the context. Nation (2001) again suggested that the primary focus of teaching vocabulary at the beginning level should be focusing on increasing the size of the vocabulary of the learner through direct vocabulary teaching. Beck, Perfetti, and McKeown (1982) also stated that direct vocabulary instruction leads to a high vocabulary growth. In addition, Tierney & Pearson (1994), stated that it is important to stress that intentional vocabulary instruction is only effective when it is tied directly to the subject matter that students are learning.

In computer-assisted language learning, there are a number of studies investigating the computer-assisted language learning (CALL) environment that promotes vocabulary acquisition (Al-Seghayer, 2001; Laufer & Hill, 2000; Liou, 2000). The computer is used not only to provide input of vocabulary knowledge but also to track the students' behavior in their learning process. The log files can track the data about learned words and how frequently they are looked up. Computer log tracking can provide more accurate and reliable results in order to find the

relationship between students' look-up behavior and their retention of vocabulary knowledge than the think-aloud protocol. In the think-aloud protocol, students are asked to say whatever they are looking at, thinking, doing and feeling while they are doing a certain language activity in non-CALL studies.

In Thailand, the investigation of students' look-up behavior and words retention in CALL environment is new. There is limited literature in CALL studies that investigate the impact of the variety of lexical features the students use while learning vocabulary from the word list and the relationship between their look-up behavior and long-term retention of vocabulary. In order to respond to these needs, the present study examines computer-assisted vocabulary learning (CAVL) package use and satisfaction of the second-year Thai EFL nursing students' of the second year Thai EFL nursing students. In addition, to investigating the effectiveness of the look-up behaviors and their vocabulary acquisition and retention learning new vocabulary words through the CAVL package.

1.2 Purposes of the Study and Research Questions

This research examined the effectiveness of the computer-assisted language learning (CALL) program on vocabulary acquisition of EFL second year nursing students using the Computer Assisted Vocabulary Learning package.

Research Questions

In order to achieve the purposes of the study, the research questions are the followings:

1) To what extent do EFL nursing students acquire and retain vocabulary knowledge after using the CAVL package?

2) What is the relationship between the students' look-up behavior and their levels of vocabulary acquisition?

3) What are the students' attitudes towards learning vocabulary through the CAVL package?

4) Is there any relationship between the students' attitudes toward learning vocabulary using the CAVL package and their learning achievement?

1.3 Definition of Terms

Computer Log Tracking is a device to record the learning process while using the computer software for language learning (Liou, 2000).

Look-up options refer to the choices of lexical information that clarify the meaning of an unknown word freely using look-up options (Laufer & Hill, 2000).

Look-up behavior refers to students' actions when they look-up the meaning of the unknown words choosing any of the different types of look-up options available.

Pre vocabulary test refers to the preliminary test administered to determine a student's baseline knowledge.

Post vocabulary test refers to the pre vocabulary test that is administered immediately after the treatment to assess students' levels of vocabulary learning.

Retention vocabulary test refers to the same vocabulary test as the pre and post vocabulary test that is administered two weeks after the treatment to assess students' long-term retention of vocabulary.

1.4 Scope and Limitations of Study

1. This study aims to investigate the effectiveness of the Computer Assisted Vocabulary Learning (CAVL) package on the nursing students' vocabulary acquisition and their learning attitudes.

2. For vocabulary learning, this study focuses on differences in look-up behavior and word acquisition and retention of students.

3. The subject of the study was a group of 60 second-year nursing students, so the results might not be taken conclusively.

CHAPTER 2

Review of Literature and Related Research

This study aimed to investigate students' acquisition and retention of English Vocabulary through a computer-assisted vocabulary learning (CAVL) package. The theoretical framework involves the importance of vocabulary learning, vocabulary learning in a second language, the Information Processing Theory, Levels of Processing Theory, incidental and intentional vocabulary learning and related studies in computer-assisted vocabulary learning are reviewed.

2.1 Importance of Vocabulary Learning

Vocabulary is of central importance to language and is one of the main aspects of language for meaningful communication. Wilkins (1972) states, *"Without grammar very little can be conveyed but without vocabulary nothing can be conveyed",* this means if the second language learners have sufficient words then their communication can be understandable even though they have the limited knowledge of grammar. On the other hand, without vocabulary knowledge the learners can neither understand nor express themselves in a second language.

2.2 Vocabulary Learning in a Second Language

In this section, essential steps in vocabulary learning which were discussed in Brown and Payne (1994) are provided. Then, two theories related to vocabulary learning namely: a) Information Processing Theory and b) Levels of Processing Theory will be discussed in details.

Steps in Vocabulary Learning

Brown and Payne (1994) stated that there were five essential steps to learn new words: 1) having sources for encountering new words, 2) getting the word form, 3) getting the word meaning, 4) making a strong memory connection between the forms and meaning of the word and 5) using the word.

The first step "encountering new words" refers to having sources for words. This can be done by reading books; newspapers and magazines; listening to TV and radio; talking with native speakers; looking up words in dictionaries or glossaries.

The second step "getting the word form" means to get a clear visual/auditory image of both written and spoken forms of words. It might be done by associating the new words which have a similar sound with the learners' native language or by seeing a word that looks like another word the learners have already known.

The third step "getting the word meaning" includes strategies such as asking the word meaning from the native speakers or people who know the language, guessing from contextual clues and looking up the meaning in dictionaries or glossaries.

The fourth step is memorizing the word. Learners need to create a strong memory connection between the form and meaning of the word. To make this strong connection many strategies are used to strengthen form-meaning relationship so that it can be stored in learners' long-term memory. The most useful drills in this step are matching exercises, and practicing crosswords.

The final step "using the word" is especially important and it depends on the goal of learning vocabulary. Some see that this step is not necessary if learners aim to learn new words for comprehension (receptive). If learners aim to learn new words for communication (productive purpose), word use is certainly necessary.

To enhance vocabulary learning, language teachers must put more attempt assisting learners to acquire new vocabulary. For productive purposes in particular, learners should be provided with a large range of vocabulary which enables them to

discuss topics of their interest. This can be done through the above five steps described in learning and using new words in a new language.

2.3 Information Processing Theory

According to Atkinson and Shiffrin (1968), information is processed and stored in three stages: sensory memory, short-term memory and long-term memory. This theory shows that information is processed in a serial but discontinuous manner as it moves from one stage to the next stage. The Atkinson-Shiffrin model of memory (See diagram 1) suggests that information flows through stages which have different duration and capacities.
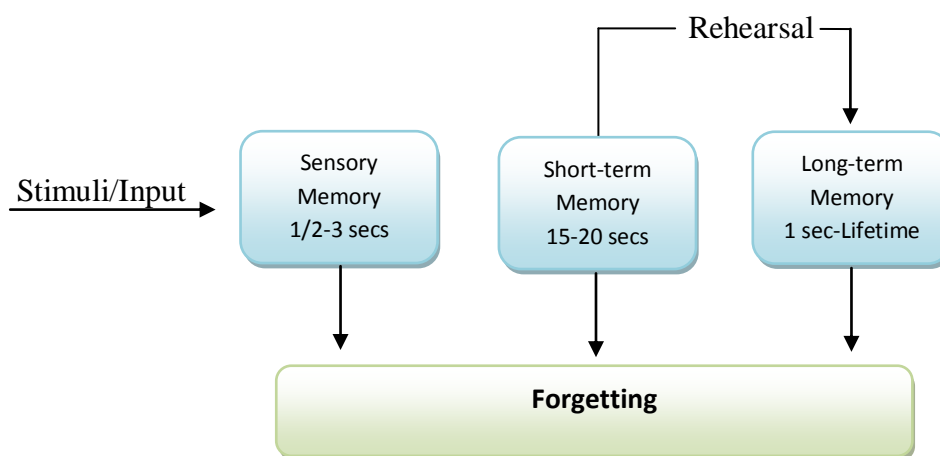
Diagram 1: Atkinson-Shiffrin Memory Model

According to the Atkinson-Shiffrin model of memory, the initial stage of memory is sensory memory. It is connected to the transaction of energy. This external energy is changed to something that can be understood by the special sensory receptor cells of the brain. In this process of the transaction, a memory is created. This memory processes incoming sensory information for a very brief period of time (less than ½ second for vision and about 3 seconds for hearing). The main purpose of sensory memory is to

screen incoming stimuli and process only those stimuli that are most relevant at the present time.

It is critical that the learners attend to the information at this initial stage in order to transfer it to the next stage. To ensure if the information will get into the short-term memory, two major factors are needed. First is when learners are more likely to pay attention to a stimulus because it has some interesting features and second is when the stimulus activates something that the learners have already known. After stimuli enter sensory memory, they are either forwarded to short-term memory or deleted. Short-term memory is also called the working memory and is often viewed as an active or conscious memory related to what we are thinking in a given amount of time. It is created when learners pay attention to an external stimulus or an internal thought or both of them.

The short-term memory, however, has a very limited capacity and unrehearsed information which will last around 15 to 20 seconds unless it is repeated and or rehearsed. Through repetition and rehearsal the new information may be available up to 20 minutes in the human memory. The amount of information to be processed at a time is another limit of the short term memory processing. Miller (1956) suggests seven (plus or minus two) "chunks" of information, for what most learners are trying to remember, but more recent research suggests the number may be more like five (plus or minus two) "chunks", for most learners to remember.

Unlike sensory and short-term memory, long-term memory is not constrained by capacity or duration of attention limitations. Long-term memory is also called unconscious memory. This is because during normal consciousness the data stored in long-term is not available and it can be retrieved when is needed. Elaboration and distributed practice are two processes that help move information from short-term memory into long-term memory. Examples of elaboration that are commonly used in the learning vocabulary are, for example, imaging, method of loci, peg-word method and rhyming. Imaging is a learning process that learners try to create a mental picture for remembering new information, while the loci method is a strategy that helps learners to remember new information by connecting it to objects located in a familiar location. The

peg-word method is a method that helps learners to remember new information by connecting it to specific words (e.g., one-bun, two-shoe, three-tree, etc.). Rhyming is the strategy that helps learners to remember new information by arranging it in a rhyme. (e.g., 30 days has September, April, June and November, etc.).

Additionally, Craik and Lockhart (1972) have developed the levels of processing theory for better learning and retention of new vocabulary as discussed in the next section.

2.4 Levels of Processing Theory

Craik and Lockhart theory (1972) states that the more a word is processed, due to its meaning, the better the word is retained. The Level of Processing Theory holds that memory is not three-staged which separates it immediately from the Atkinson-Shiffrin model of memory. Craik and Lockhart (1972) theory argues that information is processed at multiple levels simultaneously depending on the characteristics, attention and meaningfulness and the deeper the processing, the more information will be remembered.

Furthermore, Craik and Lockhart (1972) suggest that information can be processed at two levels: shallow processing and deep processing. The early stages of processing are "shallow" including processing information in terms of its physical characters (e.g. the typeface of a word and the visual characteristics of letters or the encoded features of sound). The memory traces of shallow processing will be fragile and the information will be quickly forgotten. While in deep processing, information is processed in terms of its meaning and this meaning may be analyzed in terms of associate images or past experiences which are related to the information being processed. The memory traces of deep processing will be durable and information will be remembered.

Craik and Lockhart (1972) also distinguished two kinds of rehearsal: maintenance and elaborative rehearsal. In maintenance rehearsal, information is simply repeated like mentioned in the Atkinson-Shiffrin model, whereas elaborative rehearsal tried to rehearse the information in relation to its meaning and think about the meaning of the item. Thus, it makes a connection between item and previously learned knowledge. Comparing these

two, elaborative rehearsal is the most effective in producing a more durable memory trace. To promote deeper levels of processing in vocabulary learning, teachers should draw learners' attention to the words to be learned.

2.5 Intentional and Incidental Vocabulary Learning

There are two types of learning activities to learn new words in second and foreign language, namely incidental and intentional vocabulary learning. Nation (2001), defines the incidental vocabulary learning as the learning which occurs without specific intention to focus on vocabulary. One can develop vocabulary subconsciously while being engaged in activities, especially reading. On the other hand, Ellis (2001) defines intentional vocabulary learning as the planned method involving the use of task designed to elicit forms which have been selected ahead by teachers. However, Schmitt (2000), demonstrates that it can be called explicit learning of vocabulary and it focuses attention directly on the information to be learned.

2.5.1 Incidental Vocabulary Learning

Researchers have suggested some ways to promote vocabulary gains in incidental vocabulary learning: the use of a dictionary, guessing from reading context and so on. According to Laufer and Hulstijn (2001), in the incidental vocabulary learning, learners are required to complete a task involving the processing of some information without being told that they will be tested afterwards on their recall of that information. Furthermore, several researches indicate that first language learners mostly acquire vocabulary through extensive reading without having an intention (Nagy, Herman, and Anderson, 1985, 1987), and the vocabulary knowledge increases when new words are repeatedly encountered in context through reading and listening (Stahl and Fairbanks, 1986). Krashen (1989) quotes that the most frequently examples of vocabulary learning as the by-product of reading. As Hulstijn (2003) points out, learning a second language

can be incidental learning by picking up structures and lexicon of a language through getting involved in a variety of communicative activities, such as reading and listening, while the learner's attention is focused not on the form but on the meaning. The findings showed that learners learn new words while reading for meaning.

The learners can learn new words incidentally by guessing the meaning of unknown words through extensive reading (Huckin & Coady, 1999). However, guessing strategy will only be effective when the context is understandable and the text is familiar, which requires good textual clues and substantial previous vocabulary knowledge on the part of learners (Huckin and Coady, 1999).

Hence, it is confirmed that vocabulary learning is the "by-product" of reading. The incidental vocabulary learning, as Hunt and Beglar (1998) stated, can be a useful approach for all language learners at all levels.

Although incidental learning is believed to be useful for second language learners, it may be hindered due to time cost in the classroom, and it is slow and gradual for learning (Schmitt, 2000). For students with academic goals, this kind of learning will not provide adequate or enough time or skills (Coady, 1997). Therefore intentional learning is needed to accomplish these goals.

2.5.2 Intentional Vocabulary Learning

Intentional vocabulary learning is essential for beginning students whose lack of vocabulary limits their reading ability. According to Hulstijn (2006), intentional vocabulary learning is the learning approach in which participants are informed, prior to their engagement in a learning task, that they will be tested afterward on their retention.

Barcroft (2009) conducted a recent experimental study of intentional vocabulary learning in terms of the relationship between strategy use and vocabulary learning performance. He concluded that students can learn better when using a mnemonic technique and L2-picture association than L2-L1 translation and repetition. Furthermore, Zhao (2007) investigated the effectiveness of intentional and incidental vocabulary

learning among Chinese learners. He suggested that intentional learning should be encouraged to help increase the vocabulary of non-English-major students who usually have a relatively small vocabulary. He also argued that the effectiveness of intentional learning can be enhanced when it is complemented with incidental learning.

Some researchers pointed out that the common way of learning vocabulary intentionally is learning from word-pair in which word is paired with learners' second language translations. Learning from vocabulary list can be an effective way to quickly learn word-pair translation (Nation 1990). Furthermore, Atkinson (1972) stated that using vocabulary cards is more effective to learn new words because learners can control the order in which they study the words.

Kale (1998) studied the effect of categorically and hierarchically structure organized wordlist on the performance of recall memory. Subjects were randomly selected to study an organized and unorganized word lists. In organized wordlist, words were organized according to heading (understand what the topic is about) to subheading (understand what that particular section is about). While in the unorganized wordlist, words were scrambled. Both lists presented the same words. Subjects were asked to recall the words after studying the list. The students who learned the vocabulary words from organized wordlist recalled more words and headings than the students who learned through the unorganized list. Kale concluded that there is positive relationship between how words are organized in the list and memory recall of the participants.

Although intentional vocabulary instruction is essential to develop students' word knowledge, there is not enough time in reading lesson or school day to directly teach all key words those students need to know. Tierney & Pearson (1994), states that it is important to stress that intentional vocabulary instruction is only effective when it is tied directly to the selections that students are learning. That is, the words targeted for teaching must relate to the important topics or according to their field of study. So the learning words can be useful and effective in the CAVL package.

2.6 Computer Assisted Language Learning and Vocabulary Learning

Computer-assisted language learning (CALL) is an approach which focuses on using computer in learning or teaching foreign and second language to students (http://en.wikipedia.org/wiki/Computer-assisted_language_learning). Similar to this, Kocak (1997) stated CALL as the term most commonly used by the language teachers to describe the use of computers as a part of the language course. Recently, computers have become so common in home and school and their uses have expanded so significantly that language teachers must think about the use of technology for implementation of language learning (Warschauer, 1996). And also from the past few years, it is proved that the role of technology, through computer-assisted language learning (CALL) has played an important role for language learners to acquire vocabulary by their own effort. So, the focus of CALL is learning, and not teaching. With the development of the technology and the learners' interest to learn vocabulary independently, the computer-assisted language learning (CALL) has been widely used to promote second language (SL) and foreign language (FL) vocabulary learning and teaching. In the area of computer-based vocabulary learning many studies have been conducted to investigate the effects of the look-up options on a computer screen.

Many studies have shown that multimedia computer-assisted language learning (CALL) environments are helpful for learning foreign language vocabulary (Kang, 1995; Iheanacho, 1997; Al-Seghayer, 2001 & Nikolora, 2002). CAVL programs can also promote autonomous learning and learners can learn at their own pace in their time.

With regard to vocabulary acquisition, Nikolova (2002) investigated the effects of student participation in the authoring of multimedia materials on vocabulary acquisition. The study stated that student's learned vocabulary better when they participated in the creation of the instructional module. In addition, annotations containing text, sound, and pictures were found to be more helpful for vocabulary learning than annotations with sound and text only.

With regard to the vocabulary Learning and retention, Opasruttanakorn (2005) investigated the effectiveness of two Computer-Assisted Vocabulary Learning (CAVL) packages on English vocabulary learning and retention of prince of Songkla university first year students. The results showed that the subjects learned from the wordlist CAVL package significantly more words (97 %) than those who learnt from sentence-context CAVL package (86 %). It means that the learning word intentionally from a wordlist helps students to learn and retain more words.

Phetchmunee (20004), in her study tried to see the effect of look-up behavior on the acquisition and retention of English vocabulary among Prince of Songkla University first year students using computer-assisted language learning (CALL) reading material. The findings revealed that there was a weak correlationship between the frequency of looking ups and vocabulary acquisition (r = .414, p < .01) and as well as between the frequency of looking ups and vocabulary retention (r = .280, p < .05). Regarding CALL package they perceived that the provisions of lexical information enhanced vocabulary acquisition and retention.

Satitsart (2003) constructed a computer-assisted vocabulary games package designed to teach vocabulary necessary for the students in learning Preparatory Foundation English at Prince of Songkla University and to increase baseline vocabulary for their future studies. The result shows that the subjects agreed that the package helped motivate them to learn vocabulary with enjoyment. From the test results they acquired 21 out of 22 new words in 76 minutes using the package in non-stressful situations. This means that learning new vocabulary from the CAVL package helped increase their motivation to learn new within a short period of time.

Bualuang, Sinprajakphol & Chanphrom (2012), in their study they tried to enhance English vocabulary learning and ability of retention through the use of CALL. The study revealed that the immediate vocabulary tests show improvement in learning English vocabulary through the use of CALL was 83.25% and as well as retention of the recall vocabulary after learning English vocabulary through CALL was

satisfactory. Overall, Students' satisfaction was strongly agree all aspects in CALL lesson.

Lyman-Hager, Davis, Burnett, and Chennault (1993) compared two groups of L2 learners of French, one that receiving assistance with computerized dictionaries and the other with printed pages of glosses. The results showed that students who worked on-line had significantly better scores on the vocabulary quiz containing 20 words considered crucial to the story they read than those who did not.

Laufer and Hill (2000) used a computerized dictionary in a study on incidental vocabulary learning to investigate the relationship between computerized dictionary look-up behavior and word retention by providing four look-up options: hear a word pronunciation, English meaning, L1 meaning (in Chinese and Hebrew), other forms of the word and root. The subjects looked up unknown words by clicking on the word and choosing the type of look-up option. The package was programmed to record the number of words each student looked up. The study showed that the students who used L1 together with L2 dictionary information had a better retention.

Groot (2000) has conducted the experimental research on computer-assisted second language vocabulary acquisition. This paper summarizes a number of experiments that were performed to evaluate the effectiveness of computer-assisted vocabulary word acquisition program in comparison with a control condition of bilingual wordlists. The result suggested that an approach combining the two methods is most advisable.

Kang (1995) examined the effect of a context-embedded approach to second language vocabulary instruction with elementary school students who had basic knowledge of the English alphabet and sentence structure. The subjects were divided into four groups and 100 words were taught under four instructional methods used for vocabulary learning, namely: "Paper and Pencil (P&P), Computer-based Word-for-word (CW), Computer-based word-for-word plus Picture (CP) and Computer-based Context (CC)". The P&P condition represented a conventional method of vocabulary learning guided by a human instructor. The CW condition incorporated the same definition-based approach used in the P&P, but employed a computer instead of a human instructor. In the

CP condition, pictures were additionally used with the features included in the CW. The CC condition provided students with a situational context first in which the target English vocabulary occurred and then the meaning of the word and an example sentence. The results showed that the group treated by the computer-based context method performed significantly better than any other group in a retention test. This suggests that the presentation of vocabulary with visual, auditory and sentence contexts in computer-assisted learning environments would enhance vocabulary learning and teaching.

In one of the earlier studies on electronic glossaries, Leffa (1992) investigated the efficacy of such glossaries on text comprehension in a translation task. He found that a computer-mediated electronic glossary was more efficient than a traditional bilingual dictionary, allowing beginning level students to understand 38% more of the passages, using 50% less time.

The review of related literature shows that the learning vocabulary CALL environment can serve as an effective alternative to enhance vocabulary acquisition and retention. Moreover, only few studies have explored the relationship between look-up behavior and vocabulary acquisition and retention. In order to investigate the extent of students' vocabulary knowledge in short-term and long-term retention of vocabulary and students' look-up behavior, the present study provided students with not only various types of lexical information to elaborate on a word meaning but also activities that require them to access lexical information in CAVL materials.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter describes the research design and methodology including the purposes of the study, research subjects, construction of research instruments, data collecting procedure and data analysis.

3.1 Purposes of the Study

This research examines the effectiveness of the Computer-Assisted Vocabulary Learning package on vocabulary acquisition of EFL second year nursing students.

Three Main Purposes of the Study:

- To increase the students' vocabulary knowledge through a computer-assisted vocabulary learning (CAVL) package,
- To investigate the effectiveness of the package by comparing the pre-test and, the post-test score, and the post-test and the retention test scores, and the students' look-up behavior,
- To encourage students to be self-learners and to enable them to control their own learning process.

3.2 Subjects of the Study

The participants of this study were 60 second-year students from the   Faculty of Nursing at Prince of Songkla University, Hat Yai campus. All were female whose ages were between 17 to 22 years old.

3.3 Construction of Research Instruments

A computer-assisted vocabulary learning (CAVL) package was designed and constructed by the researcher as an experimental instrument. A vocabulary test was used in pre-test, post-test, and retention test. A questionnaire was used to explore the learners' learning attitudes toward the CAVL package and their learning strategies.

3.3.1 Vocabulary pre-test, post-test and retention test

A vocabulary test of 40 items was divided into four parts. Part 1 included 10 items of identify part of speech. Part 2 consisted of 10 items of matching the English word with Thai meaning. Part 3 consisted of 10 multiple choice questions. Finally, in the last 10 items in part 4 the students were required to fill out the blank in each sentence with a correct word.

The test was used to measure the participants' prior knowledge of the target words, their vocabulary acquisition after using the CAVL package and their retention of the vocabulary words two weeks after the post-test. The test was piloted with 40 second year nursing students from Faculty of Nursing, Prince of Songkla University, Hat Yai Campus, Songkhla, who were not involved in the main study, resulting in a test of 40 items. This test was implemented as the vocabulary pre-test, post-test and retention test.

3.3.2 Questionnaire on attitudes towards vocabulary learning through the CAVL package

A five-point Likert scale from "strongly agree" to "strongly disagree" questionnaire was used to determine the participants' vocabulary learning strategies and their attitudes towards the package. The students were asked to respond to a questionnaire asking them to rate their opinions towards the CAVL package. The questionnaire consisted of four parts asking for: 1) the students' vocabulary learning strategies; 2) their attitudes towards the package; 3) their attitudes about word feature options that assist them in learning and retaining new vocabulary; and 4) their

comments and suggestions for the improvement of the lesson. The questionnaire was distributed to the participants by the end of the learning stage.

3.3.3   Computer Assisted Vocabulary Learning (CAVL) Package

The CAVL package used as an experimental instrument was designed intentionally for teaching 120 vocabulary words in the nursing area. It consisted of ten lessons of twelve words. The procedure for the CAVL construction included five stages.

Firstly, related empirical research on the design and effectiveness of the computer-based packages contributing to vocabulary acquisition and retention was reviewed. Other information, such as techniques for presenting unfamiliar words in a vocabulary learning lessons and the types of lexical information provided, was also studied.

Secondly, the selection of the target English words was done in four steps: (1) 200 specialized nursing terms were selected by the researcher from a nursing text book named "Holistic Nursing". (2) The chosen words were reviewed by the researcher's advisor and two other lecturers from the Faculty of Nursing, Prince of Songkla University, Hat Yai Campus. (3) The list of 200 words was tested with a group of second-year nursing students who were not involved in the main study. They were required to rate the level of agreement (see appendix A) on how much the target words were known to them in both receptive (meaning) and productive (use) levels. Those were not known to these students were then included in.

Thirdly, four vocabulary exercises namely *the word part of speech, matching Thai word with the definition in English, multiple choice questions, and filling in the blanks* were prepared for the practice of the twelve words in each lesson.

Fourthly, the researcher constructed the CAVL package using "Macromedia Authorware 7". The twelve lessons of the CAVL package were constructed using the information and design techniques applied from the studies of empirical CAVL research done in the first stage. This package consisted of 10 lessons, each contains 12 words. For each word to be learned, students can click to learn the eight options of lexical information about the word. The computer log tracking was used in the package to record the students' use (clicks on learning options) of the

package. The complete 10 lessons were reviewed by 3 experts in ELT and validated as suggested. Finally, the complete lessons were tried out with forty second-year nursing students who were not involved in the main study to adjust the navigation, instruction and face validity of the lessons.

3.3.3.1   Description of the CAVL Package

The Main Lesson

The CAVL package of 120 nursing-related words consists of 10 lessons. Each lesson has 2 main parts, the lesson and the practice parts. The lesson part contains a list of twelve words to be learned (Figure 3.1).

Figure 3.1 The Twelve Words to be Learned in One Lesson

Each of the twelve words provides eight individual look-up options: (1) word meaning in English; (2) word meaning in Thai; (3) word synonym and antonym; (4) word belongings to the same family (word derivatives); (5) examples of the word used in a sentence context; (6) word pronunciation; (7) English sentence with sound; and, (8) Thai sentence with sound. The students are able to click on any look-up options or choose one or more look-up options to learn word

meaning and related lexical information of the word. Eight look-up options are shown in Figures 3.2 and 3.3.

Figure 3.2 The Eight look-up Options to be Learned about the Word

Figure 3.3 Sample Sentences in English and Thai with Sounds

The Practice Section

Vocabulary exercises are displayed on the screen asking the students to answer questions after learning each lesson. Figure 3.4 shows the screen print with part of speech exercise; figure 3.5 shows the exercise on drag and drop the meaning in L2; figure 3.6 shows exercise on a word meaning in L1 (Thai); and figure 3.10 shows the exercise on filling in the blanks with the given words.
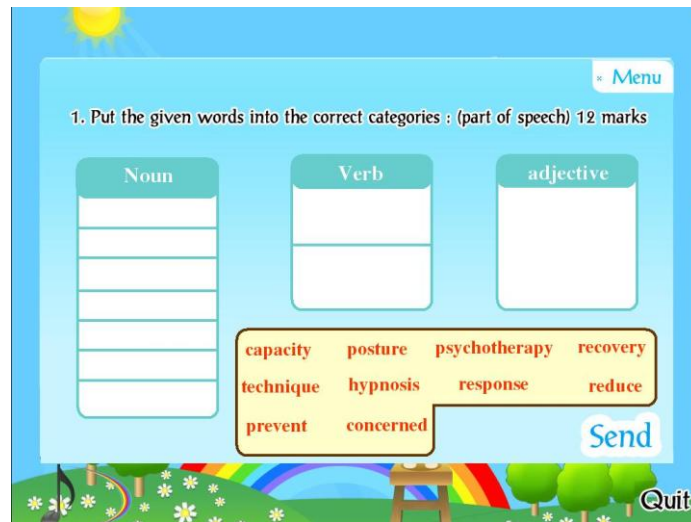
Figure 3.4 Exercises on Part of speech

Figure 3.5 Word Meaning in L2

Figure 3.6 Exercise on word meaning in L1 (Thai)
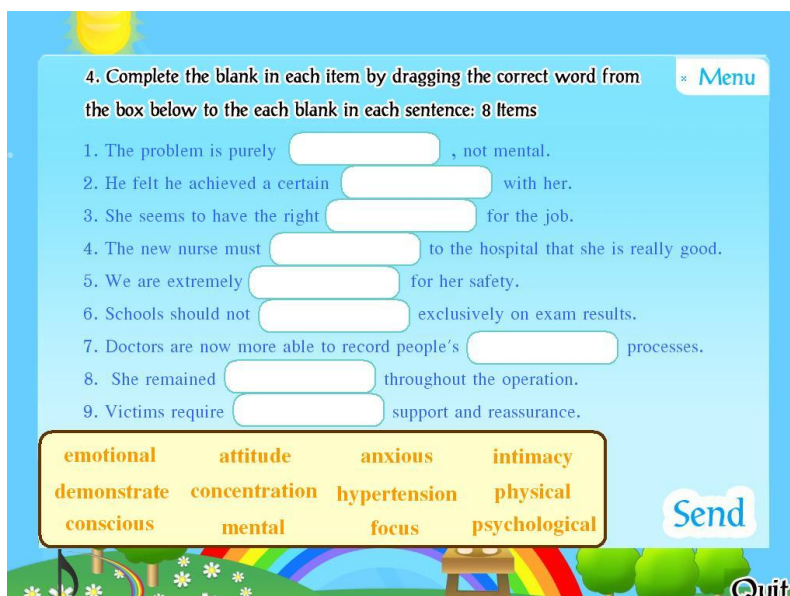
Figure 3.7 Exercise on filling in the blanks with the given Words

A computer log tracking file (Shown in Figure 3.8): A computer log tracking file registers every action of the user. Whenever a student clicks any look-up options, the log registers the frequency of look-up options the students have clicked. For example, the word definition in Thai was looked up twice (See Figure 3.8). Each student's data recorded in the log file were used for analyzing their look-up behaviors.
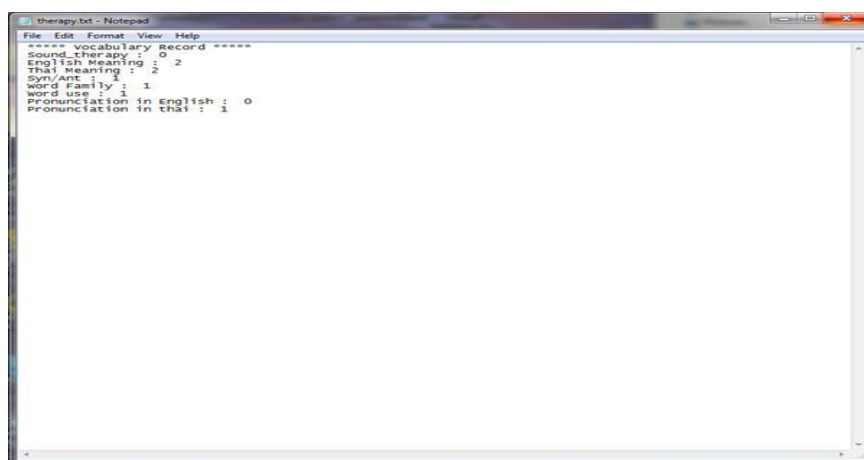
Figure 3.8 A Log Tracking File Recording students' look-up behaviors while learning

3.4 Data Collection Procedure

The researcher sent a letter to the Dean of Faculty of Nursing, PSU Hat Yai campus, asking for the permission to conduct the present research. After having been granted the permission, the researcher followed the data collection procedures below.

This study was conducted over a period of two months. The data collection took place during the students' leisure time in a computer lab under the supervision of the researcher. The research procedure consisted of the following five phases: (1) pretest and introduction to the learning package phase, (2) learning phase, (3) vocabulary post-test phase, (4) questionnaire response phase, and (5) vocabulary retention test phase.

3.4.1   Pre-Test and Introduction to the learning package

In this phase, the students were informed that they were going to learn a hundred and twenty new vocabulary words from ten lessons. The students were allowed to learn any of the twelve words in each lesson as they wish to learn vocabulary in each lesson within a period of one-hour.

Next, the subjects were given a brief introduction to the CAVL package, and its objectives. The researcher explained how to use the CAVL package and demonstrated that each word from the lessons allowed them to select a variety of look-up options, namely word pronunciation, word meaning in English, word meaning in Thai, word synonym/antonym, word family, and an example of the word used in a sentence context. They were told that they could look-up words whenever they wished and as many times as they wished.

After the introduction, the students were given a vocabulary pre-test. This test took one hour.

3.4.2   Learning Phase

Ten meetings were arranged in the first semester of 2012 academic year. The students learned one of the ten lessons in each meeting in a period of one hour. In this phase, the computer log tracking recorded the look-up options the students clicked and also the number of times each look-up was clicked. The subjects spent approximately one hour learning each lesson and practicing exercises.

3.4.3 Vocabulary Post-Test Phase

After finishing the ten lessons the students were asked to complete the post-test which were same as the pre-test to measure their vocabulary acquisition. The students spent one hour taking the vocabulary post-test.

3.4.4 Questionnaire Response Phase

After taking the post-test, the students were asked to respond to a questionnaire asking them to rate their opinions towards the CAVL package. The students spent twenty minutes responding to the questionnaire.

3.4.5 Vocabulary Retention Test Phase

Two weeks after the post-test, the same vocabulary test was administered in order to measure their long-term retention of the vocabulary knowledge. The students spent one hour taking the vocabulary retention test.

3.5 Data Analysis Procedure

The data gathered from the pre, post, and retention vocabulary tests and the questionnaire were analyzed by using statistical devices.

Research Question 1: To what extent do EFL nursing students acquire and retain vocabulary knowledge after using the computer assisted vocabulary learning (CAVL) package?

To answer the first research question, the pre-test, immediate post-test and the retention vocabulary test were scored. One point was allocated for the correct answer and zero for an incorrect answer. Mean scores on the pre, post and retention vocabulary tests were calculated to identify the extent of vocabulary knowledge students acquire and retain after using the CAVL package. To determine the significance difference between mean scores of pre- test, post- test and retention-test, 2-tailed t-test was used.

Research Question 2: What is the relationship between students' look-up behaviors and their levels of vocabulary acquisition?

For the investigation of the students' look-up behaviors, the frequencies and percentages of clicks on look-up options were calculated. The students were classified by their look-up behavior registered by the computer log tracking files. In order to find out whether there was a relationship between the number of word look-ups and scores of post-test, the Pearson Correlation Coefficient was computed.

Research Question 3: What are the students' attitudes towards learning vocabulary through the CAVL package?

To answer the third research question, data obtained from the five-point rating scale questionnaire was calculated for mean scores and standard deviations. Criteria for the rating scale interpretation were as follows:

Table 3.1 Criteria for the rating scale interpretation

Ranges of the Mean Scores	Levels of Agreement
1.00-1.80	Strongly disagree
1.81-2.60	Disagree
2.61-3.40	Moderately agree
3.41-4.20	Agree
4.21-5.00	Strongly Agree

Research Question 4: Is there any relationship between the students' attitudes toward learning vocabulary using the CAVL package and their learning achievement?

To answer the fourth research question, the Pearson Correlation Coefficient was used to investigate the relationship between the students' attitudes towards the package and their achievement level assisting them in learning and retaining the newly learned words.

CHAPTER 4

RESEARCH FINDINGS AND DISCUSSIONS

In this chapter the results of the four research questions are presented. These include the students' levels of vocabulary acquisition and retention after learning, the relationship between students' look-up behaviors and their levels of vocabulary acquisition, the students' attitudes toward the CAVL package and lesson features provided in the package; and the correlation between students' attitudes toward the CAVL package and their post-test vocabulary scores; and finally the discussion on the results.

4.1 The Students' Levels of Vocabulary Acquisition and Retention

Research question 1:   To what extent do EFL nursing students acquire and retain vocabulary knowledge after using the CAVL package?

To answer the first research question, 2-tailed t-test was used in order to compare between the pre and post test mean scores, and between the immediate post-test and retention test (delayed post-test).

4.1.1   The Level of Vocabulary Acquisition

To find out the effectiveness of the CAVL package, pre-test scores assessing the students' vocabulary knowledge prior to their learning of 120 vocabulary words in the package was compared with the post-test scores which represent their vocabulary knowledge after learning from the package. The result is shown in Table 4.1.

Table 4.1 The Comparison of Vocabulary Pre- and Post-test Scores

Vocabulary Test Score	Total Marks	Mean	S.D.	t value	Sig (2-tailed)
Pre-test	40	17.92	6.23	6.380**	0.01
Post-test	40	25.62	7.088		

**Significant at 0.01 level.

Results in Table 4.1 show that before learning vocabulary through the CAVL package, the mean score of the pre-test was 17.92 (out of 40). After learning from the CAVL, the mean score of the post-test was 25.6. This shows that the students' recognition of the learned vocabulary improved at a significant level (p < 0.01). The CAVL package used as an experimental instrument in this study was therefore proved effective for improving the students' knowledge of newly learned vocabulary in the nursing area.

4.1.2   The Level of Vocabulary Retention

To further investigate if the CAVL package can help students retain their vocabulary knowledge in a longer period of time, the post-test and the retention test (two weeks delayed post-test) scores were compared. The result is shown in Table 4.2.

Table 4.2 The Comparison of Vocabulary Post- and Retention- test Scores

Vocabulary Test Score	Total Marks	Mean	S.D.	t value	Sig (2-tailed)
Post-test	40	25.62	7.088	-0.067	0.947
Retention-test	40	25.53	7.084		

Results show that after learning words from the CAVL package, the mean score of the immediate test was 25.62 while that of the retention test was 25.53. Results of the 2 tailed t-tests showed no significant difference between these two mean scores. The insignificant difference of the mean score of these post-test and retention test indicated that the students could retain the knowledge of the learned words even two weeks after they learned the CAVL package. The CAVL packaged used as the instrument in this study can help the students retain their knowledge in a longer period of time.

4.2 The Relationship between students' Look-up Behavior and their Levels of Vocabulary Acquisition

Research question 2: What is the relationship between students' look-up behavior and their levels of vocabulary acquisition?

4.2.1 Students' Look-up Behaviors

In order to determine the look-up behaviors of the subjects, the frequency of clicks on each look-up options recorded by a tracking file was calculated. Table 4.3 shows the number and percentage of clicks of each look-up option.

Table 4.3 Frequency of Look-up Options the Students Clicked on to Learn the Word

Look-up Options	Total Clicks	Percentage
Sound	9562.00	19.78%
Thai Meaning	8955.00	18.52%
Word Use	6697.00	13.85%
Word Family	6480.00	13.40%
Word Synonyms/Antonyms	5917.00	12.24%
Eng sentence with Sound	5496.00	11.37%
English Meaning	4458.00	9.22%

Thai sentence with Sound	780.00	1.61%

The information in Table 4.3 showed the frequency of look-up options that the students clicked on to learn the word. Among all types of look-up options, look-up option for listening to word pronunciation was used the most often (19.78%) during the learning process. Other types of look-up options clicked on, in descending order are: meaning in Thai (18.52%), word use (13.85%), word family (13.40%), synonym and antonym (12.24%), English sentences with sound, (11.37%). English meaning (9.22%) and Thai sentences with sound (1.61%).

4.2.2 Relationship between the Frequency of Look-ups and the Vocabulary Acquisition Level

To find out if the frequency of look-up options the students performed had any influence on their word acquisition level, the Pearson Correlation Coefficient was performed to investigate the relationship between the frequency of look-up options and the vocabulary post-test scores. Results are demonstrated in Table 4.4.

Table 4.4 Correlation between the Frequency of Look-up and the level of Vocabulary Post-test Scores

Features	Total Clicks	r.	sig
Sound	9562.00	-.043	.373
Thai Meaning	8955.00	-.270*	.019
Word Use	6697.00	-.059	.326
Word Family	6480.00	-.313**	.007
Word Synonyms/Antonyms	5917.00	-.099	.225
Eng sentence with Sound	5496.00	-.125	.170
English Meaning	4458.00	-.201	.062
Thai sentence with Sound	780.00	.022	.434
Total	48,345.00	-.182	0.082

** Correlation is significant at the 0.01 level (1-tailed).
* Correlation is significant at the 0.05 level (1-tailed).

Data in Table 4.4 indicates that in total, there was no relationship between the frequency of look-up behaviors and the vocabulary post-test scores (Total Clicks = 48,345; r = -.182; p = 0.082). This means that look-up frequency does not influence the acquisition of word meanings.

Considering individual types of look-up options, results show that there are no relationship between post-test scores and frequency of the look-up options: sound (r=-. 043, p= .373), word use (r= -.059, p= .326), synonym and antonym (r= -.099, p= .225), word in the English sentence with sound (r=-.125, p= -.170), meaning in English (r= -.201, p= .062), and word in the Thai sentence with sound (r =.022, p= .434). This can be said that the types of word learning options clicked to learn word features (meaning in Thai, meaning in English, pronunciation etc.) to learn new words does not influence acquisition at a significant level. However, there was a weak negative relationship between the frequency of look-up and the level of vocabulary post- test scores in "meaning in Thai" feature (r= -.270*, p= .019) and a "moderate negative relationship in "word family" feature (r= -.313**, p= .007). It can be said that these two word learning options may not help word learning as being expected.

4.3 The Students' Attitudes towards Learning Vocabulary through the CAVL Package

Research question 3: What are the students' attitudes towards learning vocabulary through the CAVL package?

To investigate the students' attitudes toward vocabulary learning using the CAVL package, three areas of information related to their attitude in learning vocabulary from the CAVL package were surveyed. These include the vocabulary learning strategies the students employed prior to the vocabulary learning session (Table 4.5, p.), their attitudes toward the CAVL package (Table 4.6, p. 35), and their attitudes towards the lesson features of the CAVL package assisting their learning and retention of vocabulary knowledge (Table 4.7, p. 35) were studied.

The students were asked to respond to the questionnaire at the end of ten-hour CAVL package. The questions are on five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire also included open-ended questions asking for students'

opinions, comments and suggestions for any aspects of the CAVL package. They found specially helpful. The data drawn from the questionnaire were calculated for means and standard deviations in order to interpret the levels of agreement. Criteria for the rating scale interpretation were as follows:

Criteria for the rating scale interpretation

Ranges of the Mean Scores	Levels of Agreement
4.21-5.00	strongly agree
3.41-4.20	agree
2.61-340	moderately agree
1.81-2.60	disagree
1.00-1.80	strongly disagree

The results of the questionnaire responses are presented in the following sections:

4.3.1 Vocabulary Learning Strategies

4.3.2 Attitudes towards the Package

4.3.3 Attitudes about Lesson Features Assisting in Learning and Retaining words

4.3.1 Vocabulary Learning Strategies

The first section of the questionnaire aimed at finding out the degree of awareness of the importance of vocabulary knowledge and vocabulary learning. The results of the responses are presented in Table 4.5.

Table 4.5 Vocabulary Learning Strategies

Statements	Mean	SD	Levels of Agreement
1. Learning new words is important in learning and using English.	4.65	.547	Strongly Agree
2. I want to learn new English words.	4.48	.676	Strongly Agree
3. I always have intention to learn new vocabulary.	3.98	.792	Agree
4. I learn new English vocabulary through practicing listening, speaking, reading and writing.	4.03	.758	Agree
5. I learn new vocabulary by memorizing.	3.77	.871	Agree
6. I learn new English words by looking up in the dictionary.	3.67	.601	Agree
7. I learn new words by talking with foreign friends via the Internet e.g. email and Facebook.	3.98	.676	Agree
8. I try to remember and learn new vocabulary.	3.58	.869	Agree
9. I try to learn new words in the English language.	3.73	.841	Agree
10. I am satisfied with the way of learning words (before learning from the program that researcher prepared).	3.65	.840	Agree
Total	4.09	.45	Agree

Results shown in Table 4.5 indicates that the students perceived vocabulary knowledge as a very important factor for improving their English ability and skills at the highest level   (item 1; x̄= 4.65; S.D. = .547; and item 2; x̄= 4.48; S.D. = .676).

Regarding the ways the students learn vocabulary, (items 4, 7, 8 and 10), all were rated at a high level ranging from 4.03 to 3.58. The two strategies they used at a higher level than other

strategies listed were: learning words incidentally when using the language (listening, speaking, reading and writing in English) and when talking to foreign friends via e -mail and Facebook (item 4; x̄= 4.03; S.D. = .758 and item 7; x̄= 3.98; S.D. = .676, respectively). Interestingly, the students stated that they learned vocabulary words by trying to memorize them vocabulary learning strategies they employed (item 8; x̄= 3.58; S.D. = .869). The students admitted at the "agree level" (item 10; x̄= 3.65; S.D. = .840) that they were satisfied with the learning strategies they used before joining the present study.

4.3.2 Students' Attitudes towards the Package

The second section of the questionnaire aimed at finding out the students' attitudes towards the package. The students' responses in the second part of the questionnaire were analyzed and presented in the Table 4.6.

Table 4.6 Students' attitudes towards the CAVL package

Statements	Mean	SD.	Levels of Agreement
1. The CAVL package is interesting.	4.18	.651	Agree
2. The lessons are easy to use.	4.38	.585	Strongly Agree
3. Instructions and explanations are clear and useful.	4.20	.755	Agree
4. The feedbacks are clear and appropriate.	3.87	.676	Agree
5. The lessons help me to develop my English skills.	4.18	.725	Agree
6. The lessons are helpful to learn new words.	4.35	.659	Strongly Agree
7. The word pronunciation helps me to practice accurate pronunciation.	4.20	.777	Agree
8. The text style helps me to understand	4.02	.748	Agree

explanations clearly.			
9. Style of this description is appropriate for studying teaching and learning process.	3.95	.811	Agree
10. Style of this description is interesting & stimulating in learning process.	3.87	.724	Agree
11. The lesson helps me to improve my English language skills.	3.83	.806	Agree
12. The lessons are suitable for learning vocabulary	3.98	.854	Agree
13. I like this CAVL package.	3.95	.852	Agree
14. I will use this package in the future if I can have one.	4.28	.783	Strongly Agree
Total	4.09	.45	Agree

Information in Table 4.6 show that in total the students had a positive attitude towards the CAVL package at a high level ($\bar{x}$= 4.09; S.D. = 0.45). The mean scores of the students' attitudes toward the package range from 3.83 to 4.38, which fall into the levels of "agree" and "strongly agree". It is reasonable to conclude that the students possessed the positive attitude towards the CAVL package.

Individual items showed that the students were satisfied with the CAVL package in items 2, 6 and 14 at the highest level. They strongly agree that the CAVL package were easy to use ($\bar{x}$= 4.38.; S.D. = .585), that the lessons were helpful in learning new vocabulary ($\bar{x}$= 4.35; S.D. = .659), and that they would study from this CAVL package in the future ($\bar{x}$= 4.28; S.D. = .783).

The rest of the students' attitudes toward the package was rated within the range of agree level ($\bar{x}$= 3.83-4.20). Among these , the students agreed that the instructions and explanation in the CAVL package are clear and easy to follow ($\bar{x}$= 4.20; S.D. = .755); the look -up option sound was helpful in practicing word pronunciation ($\bar{x}$= 4.20; S.D. = .777); and the lesson as a whole was interesting and helps them to develop their English skills ($\bar{x}$= 4.18; S.D. = .725).

4.3.3 Students' Attitudes about Features that assist them in Learning and Retaining Words

The last section of the questionnaire aimed at finding out the students' attitudes about features that assist them in vocabulary learning and retention of words. The students' responses of the last section of the questionnaire were analyzed and presented in Table 4.7.

Table 4.7 Students' Attitudes about Features that assist them in Learning and retaining new words

Statements	Mean	SD.	Levels of Agreement
1. Presentation of words to be learned [format, presentation, color, position]	4.37	.551	Strongly Agree
2. Word meaning in English	4.45	.502	Strongly Agree
3. Word meaning in Thai	4.07	.756	Agree
4. Word part of speech	4.43	.500	Strongly Agree
5. Pronunciation of words	4.13	.650	Agree
6. Synonym/Antonym of words	4.22	.691	Strongly Agree
7. Word family	4.13	.676	Agree
8. Contextual example of word use	4.00	.736	Agree
9. Translation of the sentences in English and Thai with pronunciation	3.98	.748	Agree
10. Exercise: Drag and drop words into the correct part of speech box	3.90	.817	Agree
11. Exercise: Match the English word with Thai meaning	4.15	.840	Agree
12. Exercise: Multiple choices	4.15	.732	Agree
13. Exercise: Fill in the blanks in an incomplete	3.88	.825	Agree

sentence with appropriate word			
Total	4.14	.41	Agree

From the above Table 4.7, the mean scores of the students' attitude about each word features assisting learning and retaining the new words range from 3.88 to 4.45 between the levels of "agree" and "strongly agree". The total average mean score was defined at the level of "agree" ($\bar{x}$= 4.14; S.D. = .41). This result indicates that the students were moderately satisfied with the lexical features given in the CAVL packages. It is reasonable to conclude that the students possessed a positive attitude to features of the CAVL lessons which help them learn and retain new vocabulary.

Looking at individual items, it was clear that the students were satisfied with the CAVL package lesson features in items 1, 2, 4 and 6 at the highest level. They strongly agree that the format, presentation, color and position of the look -up word well motivate them to learn new words ($\bar{x}$= 4.37; S.D. = .551), that the words meaning in English were very helpful in learning new vocabulary ($\bar{x}$= 4.45; S.D. = .502), that words' part of speech ($\bar{x}$= 4.43; S.D. = .500) and synonym and antonym of words ($\bar{x}$= 4.22; S.D. = .691) greatly helped them learn the word.

The rest of the students' attitudes towards the word features to be learned was rated within the range of "agree" ($\bar{x}$= 3.88-4.15). Among these, the students agreed that the exercise on matching the word and its meaning in Thai ($\bar{x}$= 4.15; S.D. = .840), the multiple choice exercises ($\bar{x}$= 4.15; S.D. = .732) and word pronunciation ($\bar{x}$= 4.13; S.D. = .676) were helpful in learning new words.

4.4 Relationship between students' attitudes towards the package and the Vocabulary Acquisition Level

Research question 4: Is there any relationship between the students' attitudes toward learning vocabulary using the CAVL package and their learning achievement?

The Pearson Correlation Coefficient was conducted to investigate the relationship between the students' attitudes and their scores on the learning achievement. The relationship between the students' attitudes in using the CAVL package and their learning achievement are shown in Table 4.8.

Table 4.8 The Correlation between students' attitudes towards the package and their Post-test Achievement Scores

Correlations	r	sig
Students' attitudes towards the package and their learning achievement	.023	.431
Students' attitudes to features that assist them in learning and retaining words and their learning achievement	.043	.371

Results shows that neither the students' attitudes towards the package (r = .023; p = .431) nor their attitude to features that assist them in learning and retaining (r = .043; p = .371) had a statistical influence on their acquisition of the newly learned words. This means that although the students held positive attitudes and high level of satisfaction towards the learning package and word feature options, this did not affect their acquisition.

In addition to quantitative data, qualitative information obtained from the open-ended questions in the questionnaire reveals the students' comments and suggestions about the CAVL package as follows. 35% of the students reported some difficulty in learning the word meaning in English and in the samples of English sentence containing the word to be learned. They commented that the meaning of the words should be given in a more simple way with more examples to define the word meaning which can help them to understand and remember the meaning of the learning words easily. 30% of the students criticized the male voice articulating sentences in Thai. They recommended that there should be a female voice, too. This may be because students are all female and they feel that with female sound they can hear the word pronunciation more accurately and clearly. 25 % of the students commented that the sentences to describe words are too long and therefore difficult to understand. They indicated that they would

learn better from shorter and simple sentences. Moreover, the students mentioned that they would use the CAVL in the future if it is available online.

4.5   Discussions of the research results

This section presents the discussions on the results of the four research questions. The results are discussed as follows:

4.5.1   Levels of Vocabulary Acquisition and Retention

4.5.2   Relationship between Look-up Behaviors and Vocabulary Acquisition Level

4.5.3   The Students' Attitudes towards Learning Vocabulary through the CAVL Package

4.5.4   Relationship between Students' attitudes towards the package and their Vocabulary Acquisition Level

4.5.1   Levels of Vocabulary Acquisition and Retention

This study investigated the extent of students' vocabulary acquisition and retention after using CAVL package. To measure vocabulary acquisition and retention level of the students, an immediate vocabulary test was administered after the students finished learning all the ten lessons. A delayed vocabulary test was used to measure vocabulary retention level of the students two weeks after the immediate vocabulary test.

With regard to vocabulary acquisition level, the findings show that immediately after all the treatments, the students acquired significantly more words comparing with the pre vocabulary test scores. It was found that the mean scores of post-test (See Table 4.2, p. 29) were significantly higher than that of the pre-test (See Table 4.1, p. 29). This means that after learning new words in the vocabulary package lessons, the learners' recognition and the use of the learned vocabulary increased at a statistical level.

Regarding vocabulary retention level, the findings show that the scores of the retention test, which was conducted two weeks after the learning sessions, were not significantly different

from the results of the immediate post-test. This means learning new words from the CAVL package not only enhances the acquisition of new words, but also strengthens retention them in a longer period of time. The students still maintain the knowledge of vocabulary that they have learned effectively in a long term.

According to the present study, the reasons why they did well in the immediate test might be because the learners were told in advanced that they were going to be tested on their knowledge of target words after finishing the vocabulary lessons. Firstly, the students had awareness and goals in learning so they might have more intention to learn new words and put more attention to the word information to be learned. These intention to learn and attention to the words to be learned enhance their vocabulary learning significantly (Hulstijn, 1992 & Mondria, 2003).   Secondly, they were attentive to learn new vocabulary and were aware of vocabulary learning because they strongly agreed that learning new words is important in learning and using English, so they want to learn more new words (see Table 4.6, p. 35). Thirdly, the CAVL package itself helps them learn new words because they strongly agreed that the lessons were easy to use and helpful, so they want to use this package in the future if they have one (see Table 4.7, p. 37). And lastly, lexical features to learn new words provided in the CAVL package enhance vocabulary learning. For them, providing words, meaning in English and Thai, part of speech, pronunciation, word family, synonym and, contextual example of word use and exercises asking them to match part of speech, multiple choices in both English and Thai, matching the meaning in English and Thai and filling in the gap are helpful for them to learn and remember the meaning (see Table 4.8, p. 39).

Results of this study confirm the results of several studies (Nation, 1990 cited in Waring, 1997; Hulstijn, 1992; Watanabe, 1992) which found that direct vocabulary learning is more effective than learning in context in terms of speed and in learning number of words as well.

In brief, the findings of the present study show that the students acquired significantly more vocabulary words after learning from the CAVL package (p<0.01). After learning new words in the vocabulary package lessons the students' recognition of the learned vocabulary increased at a statistically high level. Moreover, the scores of the retention test which was conducted two weeks after the learning sessions was not significantly different from the results

of the immediate post-test. With respect to the result of retention test scores showing that the students can retain the word knowledge for a longer period of time, it is evident that learning new vocabulary from the online word-list lesson is effective as is found in the other previous studies (Opasruttanakorn, 2005). This confirms that learning new words from the CAVL package not only enhances acquisition of new words, but also strengthens the retention of them in a longer period of time. It helps the students still maintain the knowledge of vocabulary that they have learned in their long-term memory. The retention of the newly learned words in the present study might be resulting from the repetition of word knowledge and word use in several exercises at the end of each lesson. Forgetting words seems to be an unavoidable process; unless the students repeated the words they have learned (Moras, 2001). Thus repetaton or recyclingof words are vital for learning and retaining the words. Moreover, Tierney & Pearson (1994), states that it is important to stress that intentional vocabulary instruction is only effective when it is tied directly to the students' needs or interest. In this study the words to be learned are words in nursing and health science area so they are relevant to the subjects' discipline and may contribute positive results. This is, therefore, the reason supporting the effectiveness of the CAVL package was used as the experimental instrument in this study.

4.5.2   Relationship between Look-up Behavior and Vocabulary Acquisition Level

The result with reference to the second research question involving the relationship between look-up behavior of the students and the level of vocabulary acquisition will be discussed in two phases: 1) the frequency of look-up options, and 2) the relationship between the frequency of looking ups and the vocabulary acquisition.

According to the findings in the relationship between students' look-up behavior and their level of vocabulary acquisition, the records of look-up behavior in log files show that even though a variety of look-up features was available, most students opted for word pronunciation function to learn the word as well as meaning in Thai. It may shed more light on why the students clicked mostly on the word sound and Thai meaning features to learn target words. That is, intermediate EFL nursing students need to know the exact meaning in their first language (L1) and the word sound to practice word pronunciation accurately so they can remember the meaning

of words and use the word orally in their work. The students might think the meaning in Thai aided their understanding and use of the word than do other word features offered in the package. From this finding, it could be said that to facilitate comprehension in English vocabulary, students prefers the meaning in the first language (L1) to English definition. Although Thai students have been trained to use monolingual dictionaries in high school and in the university levels, they might prefer English-Thai dictionaries to learn new words. The subjects in this study are nursing majors, so they may want to know the meaning of the word in their L1 because it is important for them to get the exact meaning of the word and they feel that getting words form a bilingual dictionary is an easy and convenient way for them to find out the meaning. The finding is consistent with Schmitt (1997), Waemusa (1993), Suthiwartnarueput (2004), and Mongkl (2008) who revealed that EFL learners mostly used bilingual dictionaries to get word meaning. In accordance with this research result, Lyman-Hager and Davis (1996) also suggest that accessing word meanings in the native language is a key factor in comprehension. In addition, Martinez (2008), in her survey which employed 60 Pre-Basic English students, reported that they would rather use the bilingual dictionaries than the monolingual dictionaries in English classes. They disliked the use of the monolingual dictionaries for three simple reasons: it took longer to look-up words, it was boring to look-up words, and it was a nuisance to the eyes during look-up.

Second, there was a weak correlation between the frequency of looked ups and the vocabulary acquisition (Total Clicks = 48,354; r = -.182; p = 0.082). This current result was consistent with the result of Laufer and Hill (2000) who found the significant but low correlation between the number of words looked ups and the immediate vocabulary test scores in Israeli group. The possible factors might be different in terms of learning behavior and their performance in the test. The result of the current study proves that the CAVL package provided students with an opportunity to learn unknown word at any time. Although this current study found that the students' clicks on the word learning options to learn the unknown words did not influence their vocabulary acquisition at a statistical level, these findings could be explained in terms of the students' attempts and intention to learn the new words. The students may feel that the new words are important and worth learning and therefore attracted their attention. There must be more attempts from the students' part or more deliberate design from the lesson

designers or constructors' part to make a better way to assist better learning from the online vocabulary packages.

According to the findings in the relationship between students' look-up behavior and their levels of vocabulary acquisition and retention, the records of look-up behavior in log files showed that even though a variety of look-up features was available, most students opted for word pronunciation function to learn the word and as well as meaning in Thai. It may shed more light on why the learners clicked mostly on the word sound and Thai meaning features to learn target words. That is, intermediate EFL nursing students need to know the exact meaning in their first language (L1) and the word sound to practice word pronunciation accurately so they can remember the meaning of words and use the word (orally in their work). The students might think the meaning in Thai aided their understanding and use of the word than do other word features offered in the package. From this finding, it could be said that to facilitate comprehension in English vocabulary, students prefers the meaning in first language (L1) to English definitions. Although Thai students have been trained to use monolingual dictionaries in high school and in the university level, they might prefer English-Thai dictionaries to learn new words. The subjects in this study are nursing majors, so they may want to know the meaning of the word in their L1 because it is important for them to get the exact meaning of the word. In accordance with this research result, Lyman-Hager and Davis (1996) also suggest that accessing word meanings in the native language is a key factor in comprehension.

Although there was a large number of the students' look-up clicks on the word features in the CAVL package to learn new words, it seemed that this large number of look-ups did not affect their vocabulary test scores. Statistical analysis showed no significant relationship between test-scores and the frequency of word look-up features. This finding validates Chun and Plass (1996) and Laufer and Hill (2000), where they proved that the frequency of clicks did not correlate very well with word acquisition.

In summary, in terms of the relationship between look-up behavior of the students and their levels of vocabulary acquisition and retention, the current study found that the students who tended to look-up more word meaning of unfamiliar words from the vocabulary learning package

does not influence their levels of acquisition. In addition, it is found that the Thai nursing students at PSU Hat Yai campus were likely to see word meaning in Thai rather than in English and to hear the sound to remember the pronunciation of words.

4.5.3   The Students' Attitudes Towards Learning Vocabulary Through the CAVL Package

With reference to the data derived from the questionnaires, the results revealed that the students realized that vocabulary learning is important. Moreover, they have awareness of vocabulary learning and the intention to learn vocabulary. Furthermore, they have a positive attitude towards the CAVL package. Also, all lesson features provided in the package were found helpful for them to learn and retain vocabulary knowledge. The questionnaire results were discussed as follows:

For vocabulary learning, the students demonstrated that they had both awareness of vocabulary learning and intention to learn more vocabulary (See Table 4.7, p. 37). The current results confirmed a survey done by Krajangsirisin (2001). Krajangsirisin (2001) found that first year students at Prince of Songkla University, Hat Yai campus perceive that the vocabulary was an essential factor in learning English. The possible reason might be the lexical information is directly related to their learning field. So, they are aware of learning new words.

In terms of attitudes towards learning package, the students said that they were satisfied with the package they used in terms of new words which could help them a lot in their profession. The provisions of various types of lexical features (i.e. sound, synonym/antonym, word sentences, etc.) helps them to understand the meaning of the word in many ways while learning unfamiliar words. They believed that learning words using this package is more convenient and faster than using a conventional dictionary. Thus, they stated that they wanted to use this package for self-access learning again in the future.

With regard to the attitudes towards lesson features provided in vocabulary learning package, it is remarkable that all the lesson features in the package were helpful to them in learning and retaining vocabulary. From the collected data the students show that they were

satisfied with the word meaning in English because their target learning language was English but data recorded in the computer log tracking file (See Table 4.4, p. 31) show that in reality the students preferred to see the meaning in Thai rather than in English. The possible reason to choose meaning in Thai might be they found difficult to understand the meaning in English, so they tend to see the definition in Thai. That might help them to learn and retain new vocabulary. This result supported the study done by Phetmunee (2004) who found that the learners opted to study the meaning of a word in Thai definition rather than in English. Furthermore, Tierney & Pearson (1994), states that it is important to stress that intentional vocabulary instruction is only effective when it is tied directly to the learners' needs or interest. In this study the words to be learned are words in nursing and health science area so they serve this tie to the subject of this study since they are nursing students. This is, therefore, the reason supporting the effectiveness of the CAVL package used as the experimental instrument in this study

Moreover, it is remarkable to say that the word pronunciation; look-up word features like format, presentation, color and position, part of speech of word, synonym/antonym; matching Thai with English meaning exercise; and multiple choices both in Thai and English exercise were equally helpful and motivating. The word pronunciation among other lexical information was found more frequently clicked because the students' likes to hear the pronunciation of the word when they try to learn new words survey carried out by Phetmunee (2004). The possible reason for selecting the pronunciation was that it helped them to retain word meaning. Additionally, the students' general attitude towards the CAVL package was positive (See Table 4.8, p. 39). The students think that they will use this learning package in the future to learn more words if they have one or can get an access online. The possible reason might be they feel more comfortable with less anxiety and more independent to learn new words when using the package. They understand the meanings of the words easily without resorting to other help or referring to other sources. Thus, it can be concluded that they were overall satisfied with the CAVL package in terms of learning and retaining new words.

Regarding comments on the CAVL package, the students suggested that if the English definition of the word is simple and with adequate examples, it will be easier for them to understand. The reason might be due to the long defining sentences in which they found difficult

to understand and to get the real meaning. Additionally, they like to see more examples in fewer words in order to understand the new words and store them in their memory. Thus, they indicated that they would learn better with shorter and simple definitions.

In sum, results from the current survey show that manipulation of the CAVL package in language classes does help students to develop positive attitudes towards language learning, similar to the findings found by Warschauer (1996) saying that students project positive attitudes when using computers in language classes. Similarly, Greenfield (2003) found that 84% of the students who were included in her study indicated a preference for learning English with computers in their interview responses. Elangsegaran, Zanariah & Krishnasamy (2005) state Internet technology has the potential to motivate students to learn English with less pressure and anxiety, and moreover, with CAVL package, students can control their learning. Their observation shows that CAVL package offers students' better involvement and participation, and hence, increases their motivation in language learning. They add that internet technology also gives positive impact in changing students' attitude towards language acquisition.

4.5.4 Relationship between Students' Attitudes towards the Package and their Vocabulary Achievement Level

The fourth research question about involves the investigation of the relationship between students' attitudes towards the package and their achievement level. The current study found that there was an inverse correlation between their attitudes to learn words and their post-test scores. However, a negligible correlation was found between attitudes and scores. A similar finding was reported by Graff (2003) who stated that there was no correlation between students, attitude toward using computers and their performance in task types they were assigned. Similarly, another study by Davies and Graff (2005) in an e-learning context found that online engagement had no statistically-significant impact on test performance. Furthermore, Hoisington (2000) explored whether there was a relationship between learning styles and nursing students' comfort in using the Internet/world wide web. He found that there was no statistically significant relationship between students' scores and the perceived Internet comfort and their learning

styles. Similar to study by Hoisington and McLaughlin (2001) also found no correlations between the learning styles of graduate nurses taking web based instructions and their perceived satisfaction with the course delivery method. In a study of 18 physical therapy assistant students, Thompson (1987) found no significant correlation between student learning styles and attitudes towards computer assisted learning. This is similar to the results obtained in this study where the subjects' attitudes and their test scores did not interrelate with each other. This clarified that although the students held a positive attitude and a high level of satisfaction towards the package, the study shows that this affects their acquisition of the words. One reason might be due to the students' different method of learning and acquisition process of words. Another might be while learning words with the CAVL package they feel fun and click more lexical information to get the meaning but in terms of acquisition of word they find easy to recall the learned words. Furthermore, it is generally agreed that the all the students do not learn in the same way.

Based on the results of this study and the support gained from the literature, it can be declared that most of the understanding with CAVL is individual, and its results depend on so many backgrounds and even personal factors. Thus, the results can be tentative rather than conclusive.

CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This chapter provides a summary of research findings, pedagogical implementations for vocabulary acquisition and teaching and recommendations for further research.

5.1 The Summary of Research Findings

This study aimed to investigate the effectiveness of a computer-assisted vocabulary learning (CAVL) package on vocabulary acquisition of nursing students and their learning attitudes. The research findings can be concluded as follows:

5.1.1 The relationship between the pre- and post-test, and between the post-test and the retention test found in this study can be summarized in the following aspects:

    5.1.1.1 After the students learned vocabulary through CAVL package, they acquired significantly more vocabulary words (p<0.01) immediately after the treatment. It can be said that learning vocabulary through the CAVL package helps increase vocabulary knowledge.

    5.1.1.2 When the same test was administered to the students two weeks after the learning session, it was found that there the vocabulary acquisition and retention levels (Refer to Table 4.2, p. 29) are generally the same. That means there was no loss in vocabulary retention even after the gap of two weeks. Thus, it can be said that CAVL package facilitates long-term memory of vocabulary.

5.1.2 The relationship between looking ups behavior and the levels of vocabulary acquisition found in this study can be summarized in the following aspects:

    5.1.2.1 In terms of frequency of looking ups lexical information, the computer tracking log in record shows (Refers to Table 4.3, p. 30) that the learners tried to find the meaning of words mostly in Thai (Total Times Clicks = 8955) with the English word pronunciation (Total Times Clicks = 9562) and word structure sentences (Total Times Clicks = 6697). This result proved that the learners from the

nursing field think that the meaning in Thai promoted their understanding. In other words, it proved that using the first language of target learners could be effective in terms of acquire and retain words.

5.1.2.2 There was a weak negative relationship between the frequency of look-up and the level of vocabulary post- test scores (Refer to Table 4.4, p. 31). It is quite obvious that look-up type does not influence acquisition of word meanings.

5.1.3 The students' attitudes towards the package and lessons features provided in CAVL package are summarized into the following aspects:

5.1.3.1 For vocabulary information, it was found that the students knew the importance of vocabulary learning and wanted to increase their vocabulary. Additionally, they had both awareness and intention to learn unfamiliar vocabulary directly related to their field. Vocabulary strategies used by them were using dictionaries, memorizing strategies and talking with foreign friends via internet.

5.1.3.2 For attitudes towards the CAVL package, it was found that they liked the package because the words are directly related to their learning field, besides containing enjoyable lessons that promote vocabulary learning and retention. In addition, they felt that CAVL package was motivating, and helpful for developing independent learning so they had an intention to use this CAVL package in the future.

5.1.3.3 For attitudes towards the lesson features provided in CAVL package, it was found that the lexical features in all the lessons were helpful for learning and retaining vocabulary. In addition, they were satisfied with learning of new words by seeing part of speech, synonym/antonym doing matching and multiple choice exercises.

5.1.4 The relationship between students' attitudes towards the package and their vocabulary achievement level found in this study can be summarized in the following aspects:

5.1.4.1 For the relationship between students' attitudes towards the package and their post- test scores, it was found that there was no statistically influence of learning attitudes over their scores even though there were positive attitudes.

5.1.4.2 For relationship between learners' attitudes about the lesson features and their post- test achievement scores, it was found that there was no relationship between attitudes to the features that assist them in learning and retaining words and their test scores.

5.2 Implications for Teachers and CAVL Designers

Based on the findings of the study, there are four major implications for teachers and CAVL designers. The implications from this study are stated as follows:

5.2.1 Firstly, this study indicates that providing opportunity to learn unfamiliar nursing vocabulary in a form of wordlist through CAVL package enhances vocabulary acquisition and retention. Thus, in encouraging EFL students' vocabulary acquisition and retention, it may be suggested that the EFL teachers should teach new vocabulary by presenting new words in wordlist. In addition, teachers must consider using CAVL package both in and out of the class to assist learners to learn on their own. Furthermore, teachers can enhance students' motivation by helping students gain knowledge and skill about using computers, giving them ample opportunity to use electronic communication, and carefully integrating computer activities into the regular structure and goals.

5.2.2 Secondly, from this study it was found that learning vocabulary intentionally motivates learners in both acquisition and retention level. Hence, language teachers should be aware that having the intention to learn new words is an effective factor for students' vocabulary development and teachers should promote intentional vocabulary learning to acquire and retain more words. Therefore, language teachers must encourage and enhance learners to learn new words intentionally.

5.2.3 Thirdly, the result of this study shows that all the provided lexical features, especially Thai meaning, sound and matching exercise stimulates learners to learn and retain

more words. Thus, language teachers and computer-based designers are suggested to take this into their consideration while designing and constructing computer-based vocabulary learning in future studies.

5.2.4 Lastly, another important factor for motivating students to learn more new words was instant feedback with answer key provided in the exercise to check the answer. From this study the study felt satisfied and motivated when they heard the feedback after clicking the answer and can check their performances after finishing each exercise. An immediate feedback with an explanation style is suggested since it makes the lesson user-friendly, especially when praise and feedback are offered.

5.3 Limitations and Recommendations for further studies

On the basis of this study, some recommendations for further research are:

1. The present study was designed as a one-group pre and post-test experimental study. An experimental and controlled group design should be done to compare or ascertain the results.

2. This study used only questionnaires as the research instruments to obtain information about learners' attitudes towards the CAVL package. It is suggested that in-depth interviews or other types of qualitative procedure in collocating this type of attitudinal responses such as think-aloud protocol should be employed for additional findings and to triangulate the existing quantitative findings.

3. Due to the limited access to university subjects, the current study was conducted within two months. It could be recommended that future research conduct a longitudinal study to track learners' success over a longer period.

4. It is suggested that comparing female learners versus male learners should be conducted for further studies to see the effectiveness and their look-up behaviors.

5. According to the students' opinions about CAVL package which helped them to learn new words, to find out how the learning package helps them to learn vocabulary, it is recommended that the researchers should conduct the further in-depth interviews.

6. It would be useful to conduct more empirical research on intentional vocabulary learning using the computer or internet technology with the students from various levels of English proficiency and different age ranges or genders or nationalities to see whether these

ethnical or personal variables affect the learning outcome and learning preference of the on-line or computer-based intentional vocabulary lessons.

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Appendix A

Ten Wordlist

Instruction: Please mark √ in the column that implies your agreement.

Levels of agreement are as follows:
1. Never seen.
2. Seen but do not know the meaning.
3. Seen and know the meaning in Thai only but do not know the meaning in English.
4. Seen and know the meaning in Thai and English.

Wordlist 1

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Therapies						
2	Capacities						
3	Posture						
4	Concerns						
5	Psychotherapy						
6	Exercises						
7	Hypnosis						
8	Stress						
9	Reduce						
10	Prevent						
11	Recovery						
12	Surgeons						
13	Patient						
14	Nausea						
15	Illnesses						
16	Symptom						
17	Response						
18	Discharge						
19	Circulation						
20	Migraine						

Wordlist 2

S/N.	Terms / คำศัพท์	Levels of Agreement				Meaning in Thai / ความหมายในภาษาไทย	Meaning in English / ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Emotionally						
2	Psychologically						
3	Spirit						
4	Relaxation						
5	Applied						
6	Demonstrate						
7	Hypertension						
8	Anxiety						
9	Concentration						
10	Focus						
11	Exhalation						
12	Deep						
13	Endocrine						
14	Immune						
15	Focus						
16	Environment						
17	Mental						
18	Physical						
19	Attitude						
20	Position						

Wordlist 3

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	**2**	**3**	**4**		
1	Attitude						
2	Underfed						
3	Equipment						
4	Employ						
5	Monitor						
6	Awareness						
7	Biofeedback						
8	Signals						
9	Accurately						
10	React						
11	Thought						
12	Feelings						
13	Function						
14	Temperature						
15	Measuring						
16	Perception						
17	Influence						
18	Control						
19	Frequencies						
20	Response						

Wordlist 4

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Pressure						
2	Concepts						
3	Alternative						
4	Holistic						
5	Energy						
6	Flow						
7	Healing						
8	Spiritual						
9	Healers						
10	Emotional						
11	Initiation						
12	System						
13	Transmission						
14	Source						
15	Effectiveness						
16	Examining						
17	Compulsive						
18	Treating						
19	Practitioner						
20	Essential						

Wordlist 5

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Affect						
2	Holistic						
3	Recognizes						
4	Identify						
5	Dimensions						
6	Believing						
7	Achieved						
8	Instrument						
9	Facilitator						
10	Process						
11	Experience						
12	Beliefs						
13	Expertise						
14	Intuition						
15	Encourages						
16	Responsibility						
17	Reflection						
18	Enhance						
19	Permits						
20	Facilitate						

Wordlist 6

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Curing						
2	Signs						
3	Symptoms						
4	Disease						
5	Indicators						
6	Treated						
7	Ignored						
8	Ensue						
9	Exist						
10	Surgery						
11	Process						
12	Recipients						
13	Intended						
14	Eliminated						
15	Inability						
16	Reduce						
17	Healing						
18	Facilitate						
19	Fostering						
20	Conscious						

Wordlist 7

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Perceiving						
2	Sensation						
3	Allergic						
4	Fatal						
5	Wound						
6	Sterilize						
7	Swelling						
8	Syringe						
9	Vein						
10	Diagnose						
11	Distress						
12	Psychotic						
13	Ward						
14	Prescribe						
15	Supplement						
16	Aching						
17	Consultant						
18	Deficiency						
19	Disorder						
20	Device						

Wordlist 8

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Circulation						
2	Mindfulness						
3	Inquiry						
4	Aesthetic						
5	Indicate						
6	Ethic						
7	Spiritual						
8	Reflection						
9	Intention						
10	Anxiety						
11	Concern						
12	Ability						
13	Avoid						
14	Vibration						
15	Factor						
16	Exchange						
17	Clarify						
18	Express						
19	Measure						
20	Demonstrate						

Wordlist 9

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Effect						
2	Identity						
3	Encourage						
4	Manage						
5	Diagnose						
6	Observe						
7	Risk						
8	Flow						
9	Genetic						
10	Deficient						
11	Procedure						
12	Complex						
13	Capacity						
14	Conscious						
15	Depression						
16	Maintain						
17	Absorption						
18	Exhalation						
19	Inhalation						
20	Trauma						

Wordlist 10

S/N.	Terms คำศัพท์	Levels of Agreement				Meaning in Thai ความหมายในภาษาไทย	Meaning in English ความหมายในภาษาอังกฤษ
		1	2	3	4		
1	Recover						
2	Urgency						
3	Critical						
4	Intensive						
5	Extensive						
6	Disorder						
7	Determine						
8	Reaction						
9	Encourage						
10	Stroke						
11	facilitate						
12	Intimacy						
13	Enhance						
14	Issue						
15	Consultant						
16	Intuitive						
17	Precaution						
18	Bias						
19	Endurance						
20	Nurture						

Appendix B

Selected 120 words in ten lessons (12 words each)

(Lesson 1)

capacity	circulation	concerned	hypnosis
posture	prevent	psychotherapy	recovery
reduce	response	symptom	technique

(Lesson 2)

anxious	attitude	concentration	conscious
demonstrate	emotional	focus	hypertension
intimacy	mental	physical	psychological

(Lesson 3)

accurate	aware	biofeedback	employ
equipment	frequency	influence	monitor
perception	react	signal	underfed

(Lesson 4)

alternative	compulsive	effective	essential
examining	healer	healing	holistic
initiate	practitioner	spiritual	transmission

(Lesson 5)

affect	biofield-therapy	dimension	encourage
enhance	expertise	facilitator	instrument
intuition	permit	reflect	responsible

(Lesson 6)

acupuncture	cure	eliminate	emerge
expression	foster	inability	indispensable
indicate	intended	recipient	stability

(Lesson 7)

allergic	consultant	deficiency	device
diagnostic	distress	fatal	perceive
psychotic	prescribe	supplement	swelling

(Lesson 8)

aesthetics	avoid	clarify	disturbance
ethical	express	factor	intention
mindful	predict	suppress	vibration

(Lesson 9)

absorption	attention	capacity	deficient
exhale	faint	inhale	maintain
medication	motivation	procedure	trauma

(Lesson 10)

|			
counselor	critical	determine	endurance
extensive	intensive	issue	nurture
opportunity	precaution	urgency	womb

Appendix C

กลุ่มคำศัพท์ ก่อนการทดสอบ

ทำทั้งหมด 4 ส่วน

1. กรุณาเติมคำศัพท์ต่อไปนี้ลงในหมวดไวยากรณ์ให้ถูกต้อง (ส่วนของการพูด): 10 Items

capacity	indicate	responsible	holistic	perceive
maintain	perception	womb	focus	deficient

Noun	**Verb**	**Adjective**

2. จับคู่คำภาษาไทยให้ตรงกับความหมายภาษาอังกฤษ : (10 Items)

1. เข้มข้น
2. มีจรรยา / ตามหลักจรรยา
3. (แพทย์) บำบัดรักษา
4. การฝังเข็ม
5. เพิ่มพูน / ทำให้ดีเพิ่มขึ้น
6. การให้ความสนใจ/การมีสมาธิ
7. ผู้ชี้แนะ / ที่ปรึกษา
8. ไร้ข้อผิดพลาด / ถูกต้อง
9. ซึ่งบีบบังคับ / เป็นเชิงบังคับ
10. ซึ่งขาดไม่ได้ / ซึ่งจำเป็น

a. accurate
b. acupuncture
c. compulsive
d. concentration
e. conscious
f. consultant
g. enhance
h. exhalation
i. ethical
j. healer
k. indispensable
l. intensive
m. precaution
n. prevent
o. response

3. เลือกคำตอบที่ถูกต้อง**:** (10 Items)

   3.1. เลือกคำในภาษาไทยที่มีความหมายเหมือนคำภาษาอังกฤษที่ขีดเส้นใต้

1. She had an **<u>intuition</u>** that her mother wasn't very well.

   a. การสะกดจิต
   b. ผลสะท้อน
   c. สีหน้า
   d. การรู้โดยสัญชาติญาณ

2. Victims require **<u>emotional</u>** support and reassurance.

   a. ความเจ็บปวด
   b. ใจจดใจจ่อ
   c. ทางอารมณ์
   d. การดูแลเอาใจใส่

3. A good sunscreen will help **<u>prevent</u>** sunburn.

   a. ป้องกัน
   b. รู้สึกตัว, ตระหนักรู้
   c. กังวล
   d. การรักษา, รักษาไว้

4. She remained **<u>conscious</u>** throughout the operation.

a. ซึ่งให้ความสนใจ

b. มีสติ, ที่รู้สึกหรือคิดได้

c. ให้ความสนใจ, สนใจ

d. เชื่อถือได้

5. The teachers seem to have a very relaxed **attitude** to discipline.

a. ซึ่งบีบบังคับ, เป็นเชิงบังคับ

b. ซึ่งวางแผนเอาไว้, ซึ่งเตรียมการเอาไว้

c. สมรรถภาพ, ความสามารถทางร่างกายหรือจิตใจ

d. ทัศนคติ, ความคิดเห็น

3.2. เลือกคำภาษาอังกฤษที่มีความหมายตรงกับคำในภาษาไทยที่ขีดเส้นใต้

6. ผลการตรวจเลือดทำให้เขารู้สึก**กังวล**เป็นอย่างมาก

a. responsive
b. indicative
c. sensational
d. concerned

7. เขามี**ความตั้งใจ**ที่จะลดน้ำหนักอย่างจริงจัง

a. attitude
b. response
c. intensive
d. intention

8. ผล**การวินิจฉัย**ให้ผลเป็นลบ

a. aware
b. psychological

c. diagnostic
d. extensive

9. ปัจจุบันหมอมีความสามารถในการบันทึกกระบวนการ<u>ทางจิต</u>ได้มากขึ้น

a. emotional
b. mental
c. holistic
d. deficient

10. คุณต้อง**<u>ตระหนักถึง</u>**ความรับผิดชอบของคุณเสมอ

a. mindful
b. conscious
c. prevent
d. focus

4. เติมคำลงในประโยคให้สมบูรณ์ : 10 Items

symptom	nurturing	fostered	distress
	responsible		
factor	determine	instrument	precaution

1. The delicate plants need careful _____.

2. Vomiting is a _____ of eating disorder.

3. Studies have established that smoking is a risk _____for cancer.

4. The patient showed no obvious signs of _____.

5. People should be allowed to _____ their own future.

6. He let his breath out in a long _____ of relief.

7. When driving, she always wears her seatbelt as a _____

8. Everybody must be _____ for their own future.

9. The guitar was his favorite musical _____

10. The school has carefully _____ its progressive image.

Appendix D

Questionnaire in Thai Version

แบบสอบถามวิชาการเรียนรู้คำศัพท์และทัศนคติต่อบทเรียน

คำแนะนำ: กรุณาตอบแบบสอบถามตามความเป็นจริงข้อมูลที่ได้ทั้งหมดนี้ใช้สำหรับเพื่อการศึกษาเท่านั้นและผลการตอบแบบสอบถามเป็นเพียงการนำเสนอข้อมูล ไม่มีผลกระทบใด ๆ ต่อการเรียน

แบบสอบถามประกอบด้วย 4 ส่วนคือ:

ส่วนที่ 1: ข้อมูลทั่วไปเกี่ยวกับนักศึกษา

ส่วนที่2: วิธีการเรียนรู้คำศัพท์ของนักศึกษา

ส่วนที่3: ทัศนคติของนักศึกษาที่มีต่อบทเรียน

ส่วนที่4: ความพึงพอใจต่อส่วนประกอบต่างๆ ของบทเรียน

ส่วนที่ 1: ข้อมูลทั่วไปเกี่ยวกับนักศึกษา

กรุณาทำเครื่องหมาย √หน้าคำตอบ

คุณเคยเรียนภาษาอังกฤษจาก Internet หรือโปรแกรมคอมพิวเตอร์ หรือไม่? ☐ ใช่   ☐ ไม่ใช่

คุณเคยเรียนจากแหล่งใด   ☐ 1. เรียนจาก ระบบ PSU LMS

☐ 2.   เรียนจากบทเรียนภาษาอังกฤษออนไลน์บนเว็บ

☐ 3. เรียนจากบทเรียนภาษาอังกฤษเชิงพาณิชย์

☐ 4. เรียนจากที่อื่น (โปรดระบุ)_____

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ส่วนที่ 2: ข้อมูลเกี่ยวกับวิธีการเรียนรู้คำศัพท์ของนักศึกษา

กรุณาทำเครื่องหมาย ✓ ลงในช่องที่ตรงกับความคิดเห็นของท่าน

5 = เห็นด้วยอย่างยิ่ง   4 = เห็นด้วยมาก   3 = เห็นด้วยปานกลาง

2 = เห็นด้วยน้อย   1 = เห็นด้วย น้อยที่สุด   0 = ไม่เห็นด้วย

| รายละเอียด	ระดับความคิดเห็น					
	5	4	3	2	1	0
1. การเรียนรู้คำศัพท์ใหม่ ๆ มีความสำคัญในการเรียนและการใช้ภาษาอังกฤษ						
2. ฉันต้องการเรียนรู้คำศัพท์ภาษาอังกฤษใหม่ๆ						
3. ฉันมีความตั้งใจที่จะเรียนรู้คำศัพท์ใหม่ ๆอย่างสม่ำเสมอ						
4. ฉันเรียนรู้ศัพท์ภาษาอังกฤษใหม่ ๆ จากการ ฟัง, พูด, อ่าน และ เขียนภาษา						
5. ฉันเรียนรู้คำศัพท์ใหม่ๆ โดยการท่องจำ						
6. ฉันเรียนรู้คำภาษาอังกฤษใหม่ๆ โดยการค้นหาจากพจนานุกรม						
7. ฉันเรียนรู้คำศัพท์ใหม่ๆ จากการพูดคุยกับเพื่อนผ่านเครือข่ายอินเตอร์เน็ต เช่น เฟสบุ๊ค แชท ฯลฯ						
8. ฉันพยายามจดจำและทบทวนคำศัพท์ที่เรียนรู้ใหม่						
9. ฉันพยายามใช้คำศัพท์ที่เรียนรู้ใหม่ในการใช้ภาษาอังกฤษ						
10. ฉันพอใจกับวิธีการเรียนรู้คำศัพท์ที่ทำอยู่นี้(ก่อนเรียนจากสื่อที่ผู้วิจัยผลิต)						

ส่วนที่3: ทัศนคติของนักศึกษาที่มีต่อบทเรียน (Computer Assisted Vocabulary Learning)

รายละเอียด	ระดับความคิดเห็น					
	5	**4**	**3**	**2**	**1**	**0**
1. โครงสร้างและการออกแบบบทเรียนนี้น่าสนใจ						
2. บทเรียนนี้ง่ายต่อการใช้						
3. คำแนะนำและคำอธิบายแสดงชัดเจน						
4. การแสดงผลตอบสนอง (Feedback) ที่ได้ชัดเจนและเป็นที่พอใจ						
5. บทเรียนนี้สามารถช่วยในการพัฒนาความรู้และการใช้คำศัพท์						
6. บทเรียนนี้มีประโยชน์ในการเรียนรู้คำศัพท์ใหม่						
7. ฉันฟังการออกเสียงในบทเรียนนี้เพื่อฝึกการออกเสียงได้อย่างถูกต้อง						
8. ฉันชอบรูปแบบของคำอธิบายที่ใช้ในบทเรียนเพราะเป็นคำอธิบายสามารถเข้าใจได้ง่าย						
9. รูปแบบของคำอธิบายเหมาะสำหรับการเรียนการสอนและกระบวนการเรียนรู้						
10. รูปแบบของคำอธิบายเป็นที่น่าสนใจและกระตุ้นให้เกิดการเรียนรู้						
11.บทเรียนนี้ช่วยให้ฉันสามารถพัฒนาทักษะภาษาอังกฤษได้ดีขึ้น						
12. บทเรียนนี้เหมาะสำหรับการเรียนรู้คำศัพท์อย่างเป็นอิสระ						
13. ฉันชอบเรียนบทเรียน CAVL นี้						
14. ฉันสามารถนำบทเรียนนี้ไปใช้ในอนาคตได้						

ส่วนที่ 4: ข้อมูลเกี่ยวกับระดับความพึงพอใจต่อส่วนประกอบต่างๆของแบบเรียน

รายละเอียดของบทเรียน	ระดับความคิดเห็น					
	5	4	3	2	1	0
1. คำศัพท์ [รูปแบบ, การนำเสนอ, สี, ตำแหน่ง]						
2. ความหมายภาษาอังกฤษ						
3. ความหมายภาษาไทย						
4.ลักษณะการพูด						
5. ลักษณะการออกเสียง						
6. คำที่มีความหมายเหมือน/ต่างกัน						
7. กลุ่มคำที่เกี่ยวข้องกับคำศัพท์หลัก (word family)						
8. ตัวอย่างการใช้คำศัพท์ในบริบท(ประโยค)						
9. การฟังตัวอย่างประโยคที่เป็นภาษาอังกฤษและภาษาไทย						
10. แบบฝึกหัดโยงคำในช่องการออกเสียงที่ถูกต้อง						
11. แบบฝึกหัดจับคู่คำภาษาอังกฤษและภาษาไทยที่มีความหมายเหมือนกันจากแบบฝึกหัดบทที่1-10						
12. การเลือกคำตอบแบบปรนัย มากกว่า 1 อย่าง จาก แบบฝึกหัดบทที่ 1-10						
13. การเติมคำลงในช่องว่าง จากแบบฝึกหัดบทที่1-10						

กรุณาให้ความคิดเห็นเพิ่มเติมต่อสิ่งที่คุณชอบหรือไม่ชอบเกี่ยวกับบทเรียน สิ่งที่ชอบ

1. _____
_____
_____

2. _____
_____
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3. _____
_____
_____

4. สิ่งที่ไม่ชอบ(ต้องการให้ปรับปรุง)

5. _____
_____
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6. _____
_____
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7. _____
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***ขอขอบคุณสำหรับการให้ความร่วมมือเป็นอย่างดี ***