CHAPTER TWO

REVIEW OF LITERATURE

The review of related literature describes two major topics: theoretical views of vocabulary learning and related research on the effect of technology on L2 learners' achievement. The theoretical framework includes those of vocabulary acquisition and retention and the potential of using computer in L2 learning. The second part, the review of related research, consists of utilizing the computer in language learning and the computer in vocabulary acquisition and retention.

Theoretical Framework

Vocabulary is the first foundation of learning languages. People learn language by acquiring words to form sentences. According to Krashen (1989), learners should be encouraged to make their own lexical associations when they are actively learning new vocabulary. They should attempt to guess the unknown words or to check the meaning of reference sources by associating forms with meanings. Learning the meanings

and use of the words broadens their knowledge in language communication. Perhaps learners have to consult the dictionary before being brave enough to attempt to use it themselves. The important point is that learning words is a recursive process and does not occur instantaneously (Schmitt, 1998). Paribakht and Wesche (1993) stated that there are five stages to develop vocabulary knowledge: noticing unfamiliar words, discerning familiar words with negligence of the meanings, beginning to translate words into the native language, using the appropriate words in a sentence, and applying words accurately in both semantic and grammatical terms.

Furthermore, Krashen (1989) stated that incidental vocabulary learning had better results than intentional vocabulary learning. For the last few years, there was a little difference of the studies between incidental and intentional vocabulary acquisition. Traditional studies of incidental learning referred to studying only the reading comprehension passage without focusing on vocabulary; on the other hand, the recent incidental case included reading tasks such as looking up new words in dictionaries for comprehension, recalling or retelling what is read (Joe, 1998). Thus, the trend of incidental vocabulary learning through reading and listening is not only plausible but also one of the strategies for

vocabulary development. But, this strategy seemed to be more effective for native speakers and intermediate to advanced L2 learners who already have at least a basic knowledge in reading and listening (Yongqi, 2002).

However, the main problem for incidental vocabulary learning is that word meaning is often not inferable from context, or learners sometimes make wrong inferences (Duquette et al, 1998). Schmitt and McCarthy (1997) and Groot (2000) mentioned the limitation of successful incidental acquisition according to the level of language proficiency, the level of L2 language, strategic knowledge of inferencing process, and rich content with the cues.

Furthermore, for modern language learning, the computer has been adopted to facilitate learners and teachers in order to improve not only the skills in language learning, but also in vocabulary acquisition. After learners acquire vocabulary, the second step helps learners to apply the language in different contexts.

According to Nation (2001), there are three important processes that may lead to a word being remembered. These consist of noticing, retrieval and generative use. Noticing encourages learning by giving attention to an item. Learners need to notice the word, and be aware of a useful language item. Noticing may be

affected by several factors, including the distinct words in the text or conversation that the word fills in a gap in their knowledge of the language (Ellis, 1990). In addition, motivation and interest are important conditions for noticing. Without the involvement and aroused attention of the learners, there can be little opportunity for other conditions to affect noticing.

Retrieval is likely to be the retrieval of ideas stored from previous events and the retrieval of content and information from present events. It will be better if the word is subsequently retrieved during the task because the memory of that word will be strengthened. Retrieval does not occur if the form and its meaning are presented simultaneously to the learner. Bradley (2001) suggested that each retrieval of a word strengthened the linkage paths between form and meaning. It made subsequent retrieval easier. In case of long-term retention, a memory of the previous events with the words remained, the present encountered can add to and strengthen the memory. There are two factors involved in vocabulary retention: learners' vocabulary size and the length of time that the memory of a previous word lasts.

First, the more words learners know, the less difficult will be the occurrence of the next word they need to learn. For example, Francis and Kucera (1982)

figure the frequent word count. Learners who know 1,000 different words would have to read or listen to 10,000 running words in order for a word at 1,000-word level to be repeated and remembered. The repetition enhances language learning and leads to vocabulary development.

Second, repetition can only be effective when learners regularly repeat words. There must be some memory of the previous encounter with the word. A crucial factor, which affects the memory, is the length of time. Delayed post-tests of vocabulary learning indicates that memory for words can last several weeks. Elley (1998) found that the memory for the new word remained after three months. A more sensitive delayed post-test of about two and a half months after the treatment was also used and showed that the learning was still retained (Elley, 1998). The estimated vocabulary retention is at least about one month. This estimation of the length of time that word memorization will remain must be very inexact as there are numerous factors affecting such a memory, including the quality of the meeting with a word.

Generative processing is an important factor in both L1 and L2 vocabulary learning. Generative processing occurs when previous words meanings are used in different ways.

Apart from the three processes facilitating vocabulary retention, repetition is one of the important procedures that is closely related to vocabulary retention. Nation (1999) stated that repetition was only one of the factors affecting vocabulary learning and the correlation between repetitions and learning words. Moreover, Kachroo (1962) found that a word repeated seven times or more in his coursebook were known by most learners. And learners differed greatly in the time and number of repetitions required from five to seven times for learning. Similarly, Nation (1990) reported that large numbers of words were learned directly and given sufficient repetition they were retained. However, Chun and Plass (1996) found that retention of a word's meaning in incidental learning tasks were low.

A clear principle which emerged was that the more the words are analyzed, or are enriched by imaginative and other associations, the more they would be retained. The technique linking form, meaning and structure through cues facilitates a combination of productive and receptive senses to vocabulary retention.

Thus, the vocabulary can be retained by several processes: noticing, retrieval, generative use, and repetition.

Related Research

The application of computer technology in language learning has been very influential in the development of language skills and vocabulary acquisition and retention. The following studies concern mainly computer in language learning and computer in vocabulary acquisition and retention.

Computer in Language Learning

There is a lot of research exploring the effectiveness of using computers in teaching and learning the English language. Dunkel (1990) pointed out that the possibilities of computer as a tool could include increasing language learners in terms of self-esteem, language proficiency and overall academic skills. Moreover, educators were particularly interested in technology's interactive capabilities, such as providing immediate feedback and increasing learner autonomy. In addition, the interactive capabilities of technology simulated real-world situations via audio, video and graphics (Chun, 1994). The benefits of the computer include the exploration of the application of certain technologies in specific language areas. Hypermedia

technology with its linking and interactive capabilities was determined to be a tool to enhance vocabulary learning (Liu, 1994). The use of computers to assist learners in their language studies has increased over the past decade (Bailey, 1996). The growth number of English Language Teaching (ELT) and foreign language L2 programs are incorporating CAI into their curricula for pronunciation training. For example, the use of a CALL tool that utilizes acoustic data in real time to help Japanese L2 learners improve their perception and production of English consonants (Liu, 1994).

Hoffman (1995), however, stated that computer technology is new. Many language educators agree to its use as an essential component in language teaching. Computers enable learners to perform multiple tasks and are more than simply text processors. The computer can organize, select and present multiple sensory components. It facilitates learning and teaching for the new generation by abolishing the inferior factors of traditional teaching.

Apart from benefits of the computer in office work, the computer was brought into education especially in the language field. The computer helps to improve the skill of language development. For instance, in terms of reading, Stine (1993) compared the effectiveness of whole

language reading instruction with and without interactive CD-ROM, computer-based books with second graders eligible for Chapter 1 remedial programs. Students who used the CD-ROM books demonstrated significantly greater gains in vocabulary and reading comprehension than students who did not.

Besides reading skill, writing is another area of the study, which was mentioned in terms of using computer technology in skill development. Green (1991) explored the effects of three different approaches to writing instruction on achievement in reading for inner city, Mexican-American third graders. A writing process approach with word processing resulted in significantly higher reading achievement than a similar approach without word processing or a grammar-oriented approach to writing.

The research areas in speaking and listening skills, however, were few. For speaking, Scrase (1998) reported that the effects were multi-sensory for teaching literacy skills that featured a speaking computer. Children and adults using the Starcross Indirect Learning (SIL) system listened to sentences dictated by the computer, then typed the sentences as the program read the letters. Correct typing was displayed, while asterisks replaced incorrect typing. Research findings demonstrated that

students improved both their reading and their spelling by six months or more for each month in the program.

The last skill, which was presented for computer in language learning, was listening. Brett (1997) examined the usefulness of multimedia technology over simple audio and video equipment in promoting listening skills and concluded that multimedia could appeal to different sensory and different learning styles.

In conclusion, the studies of the computer in language learning indicated the tendency of positive outcomes in all four skills of language development.

The Computer in Vocabulary Acquisition and Retention

Since the achievement of the computer in language learning in skill development was widespread, the computer was also adopted to be used in vocabulary acquisition and retention, which was called Computer Assisted Vocabulary Learning (CAVL). In general, CAVL focuses on vocabulary contents, the presentation of materials and monitoring of a learner's performance. Burling (1983) states that the basic information on frequency level should be provided to learners so that they can decide whether to spend time on a particular word or not. Well-designed programs need to draw on

frequency information and also have flexibility for teachers and learners to select the vocabulary to be focused on.

CAVL can be set up effectively in three vocabulary learning factors: noticing, retrieval and generative use. Noticing can be encouraged through the use of colored, highlighted or flashing text. Retrieval can be encouraged through the use of delay and providing the clues. Generative use is encouraged through meeting the vocabulary in a variety of contexts and in a variety of forms (Nation, 2001).

There are several reasons which make CAVL a successful tool for both language teaching and learning. For English teachers, the computer may be one tool for varying vocabulary instruction and heightening student interest. The lesson and technology integration are not intended to solve problems of vocabulary instruction, but they may offer varieties of instruction along with other innovative lessons necessary to promote increased learning and retention. Becker (2000) states that lessons utilizing pictures within the computer program has the potential to increase student attention, motivation, and critical variables in student learning. In addition, Chapelle (1990) also supports the idea of teaching vocabulary by the computer. For English

learners, Ritter (1993) gave a positive attitude toward technology use by the students. For instance, he reported that 92% of the students preferred learning new vocabulary using a computer program since they considered it fun and 88% regarded it as a good addition to more traditional ways of vocabulary acquisition. Students' anxiety levels were reported to be lower when they used the technology. When their anxiety level was lowered, students became more active participants in the learning process.

Incidental vocabulary learning through an L2 reading comprehension task was the focus of a study by Chun and Plass (1996). Three types of multimedia annotations were tested: text, text plus image, and text plus video. One hundred sixty American students studying the German language were introduced to *Cyberbuch,* a hypermedia application for reading German texts containing a variety of annotations such as those just mentioned. Their results showed incidental learning of 25% accuracy in production tests and 77% in recognition tests.

To accelerate the learning process, educational software is a tool to push learners to achieve the goals. There are various kinds of software, which are produced to help students to improve language learning. Mostly, software produced results remarkably well in two skills:

reading and writing. However, due to the importance of vocabulary knowledge, which is the foundation of language learning, the researchers tried to determine the potential of a program for developing vocabulary in language learning. For instance, Rollinghoff (1993) described a lexical program developed by using HyperCard and adapted to several languages including French, English, German and Spanish. HyperCard was the most often cited tool among software researcher (Nagata, 1998). Padilla (1990) stated that HyperCard was very easy to use and could be directly applied to many aspects of instruction that occurred in every day life. Similarly, Donaldson and Morgan (1994) found that HyperCard was the most cost-effective authoring tool for educators because of its low price and easy usage.

Furthermore, there were many research studies concerning vocabulary improvement after using CALL as a tool. Avent (1993) studied students in beginning German classes who completed CALL courseware units created by the researcher instead of going to the language laboratory. German students who studied CALL courseware scored significantly better on grammar and vocabulary than those who used only the textbook. The mean score on the final examination for students who completed the CALL

units was 82.2 for grammar and 79.9 for vocabulary (out of 100), compared to 73.4 and 70.0 for the control group.

Within the same year, Liu (1993) found the benefit of using CAI in classroom teaching and learning. He stated that hypermedia software designed to permit exploitation of semantic networks can help international college and graduate students (non-native English speakers) in English vocabulary development. These led to the adoptation of Computer Assisted Instruction (CAI) lessons used in language classrooms at present. Wood (2001) stated that in today's classrooms, vocabulary instruction is increasingly supplemented by software products. In brief, software is an effective tool for vocabulary learning. It was designed to help learners to develop vocabulary knowledge, which links to vocabulary development.

Besides the effectiveness of software products in vocabulary acquisition, vocabulary retention is another field, which was interesting. Therefore, several software companies tried to produce software to support vocabulary retention. For example, PCI educational publishing created software to help students learn commonly used words heard in everyday life. The 800 picture words have full-color illustrations and are taught in groups of five to increase comprehension and

retention. Subcategories within the main categories taught and reviewed the picture words to increase long-term retention (Huagen-Mc-Lane, 2003).

Moreover, the words in the *Wordly Wise 3000 series*, a vocabulary program that spans grades 2 through 12, expand the vocabulary of today's students (Mountain, 2000). Children learn words best by meeting them many times in many different contexts. The structure of lessons in the *Wordly Wise 3000* helps increase retention, since repeated engagements with a new word can lead to deep processing of the meaning (Rosenbaum, 2001). Throughout the *Wordly Wise 3000 series*, learners receive multiple exposures to each word. They meet the word again and again in the lesson in a variety of reading and writing situations.

Stahl (1999) agreed that multiple exposures helped a child to learn a word. However, there was not much research, which studied the method of vocabulary retention with the computer. Koren (1995) studied the tests of retention of two types of words, words that have to be inferred and words glossed in a text in TEXTFUN. An interactive program was designed on the internet for practicing reading skills for academic purposes. The results showed that retention of the inferred words was much higher than that of the glossed words.

In brief, according to the achievement of technology in language learning, the computer is adopted not only for improving language skills, but also for vocabulary acquisition and retention. Because of the importance of vocabulary in language learning, CAI software is continually being created to promote the learning of individual words. In addition, CAI has a multiple impact on students by enhancing self-confidence, improving comprehension and retention and increasing motivation (Denny & Gartner, 2000). Therefore, it is crucial to provide the appropriate technological tools for students because technology has increased the opportunities to access, evaluate and communicate knowledge (Rings, 1994). Moreover, CAI software not only foster excitement about learning, but also provide parts of a foundation for advance learning (Denny & Gartner, 2000).

Thus, CAI software is a tool, which goes beyond the traditional classroom and can help students to bridge the gap and benefit language learning. In addition, the reviews pointed out the successful use of the computer in language teaching in terms of speaking, listening, reading and writing skills, grammar and vocabulary. However, there are no studies to prove the capability of the CAI language lesson towards the development of the vocabulary learning. Most studies focused on language

instruction more than language learning. The negligence of studying vocabulary acquisition and retention in the research field and the achievement of the computer's role in language learning resulted in an attempt to compare the efficiency of computer on EFL learners' vocabulary acquisition and retention to that of a printed text.

Summary of the Chapter

The theoretical view stated the process of vocabulary acquisition and retention. Former, there are five stages to acquire vocabulary: noticing unfamiliar words, discerning familiar words with negligence of meanings, beginning to translate words into the native language, applying words in a sentence and applying words accurately in both semantic and grammatical terms. Later, the vocabulary can be retained by several processes: noticing, retrieval, generative use and repetition. In addition, there are two types of vocabulary learning: intentional vocabulary learning (direct learning) and incidental vocabulary learning (indirect learning). Furthermore, the related research mentioned mainly into two parts: the importance of vocabulary in language learning and the achievement of using technology such as CAI, CD-ROM, multimedia etc. in

language learning and vocabulary acquisition and retention.