CHAPTER 3
RESEARCH METHODOLOGY

Chapter 3 mainly tackles the research methodology of the present study. It begins with the four research questions and some definitions of terms then continues by the subjects of the study, research instruments, pilot tests for the three instruments, data collection, and data analysis methods. Lastly, an overview of the study is presented.

3.1 Research questions (RQ)

(1) What are the relationships between learners' passive recognition (**PR**), active recall (**AR**) and free active written (**FAW**) vocabularies? Are these relationships similar or different in PSU and SCAU learning contexts?

(2) What are the differences between active recall (**AR**) and free active written (**FAW**) vocabulary scores of PSU and SCAU learners with the same passive recognition **(PR)** vocabulary scores?

(3) Do the relationships between active recall (**AR**) and free active written (**FAW**) vocabularies change with shifts in learners' passive vocabulary knowledge (**PR**)? Are these changes similar or different in PSU and SCAU learning contexts?

(4) What is the difference between the free active written (**FAW**) vocabularies of PSU and SCAU learners?

3.2 Definitions of terms

In this study, **passive recognition (PR)** of a word is defined as understanding its most frequent meaning.

Active recall (AR) of a word refers to writing an equivalent L2 translation of an L1 word.

Free active written (FAW) vocabulary knowledge is defined as spontaneous use of a word in a context which in this case is an e-mail writing assignment.

3.3 Subjects of the study

Subjects in this study were 142 first year students who had nearly finished the FEII course at PSU (57 PSU students) in Hat Yai, Thailand and at SCAU (85 SCAU students) in Guangzhou, China. Both PSU and SCAU are major comprehensive public universities located in the southern regions of their respective countries (see Figure 3.1). SCAU ranks about number 7 in Guangdong Province based upon the researcher's rough estimation and PSU ranks number 5 in Thailand but number 1 in South Thailand (www.psu.ac.th, 2004). All students, both in Thailand and in China, were Finance majors. The total numbers of Finance majors were 69 at PSU and 97 at SCAU, but only 57 PSU students and 85 SCAU students took part in the tests. Table 3.1 illustrates related information about the subjects.
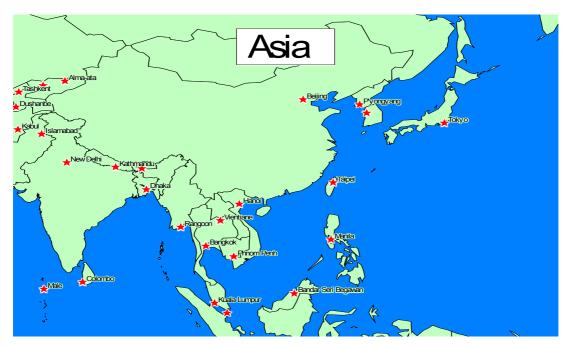

Figure 3.1   The locations of PSU and SCAU

Table 3.1 Information about the subjects at PSU and SCAU

	Age	Gender		Schooling of English
	Mean (year)	Male	female	Mean (year)
PSU students (n=57)	18.9	13	44	11.1
SCAU students (n=85)	19.6	28	57	8.5

*All students had been taught by English teachers from their own countries.

3.4 Research instruments

In the present study, the researcher constructed a bilingual test of **PR** and **AR** which was adapted from the monolingual VLT by Schmitt et al. (2001) versions 1 and 2 for both PSU students and SCAU students, and the target word list was based on the word list of Schmitt et al. (2001) versions 1 and 2. As the subjects were first year tertiary level L2 learners, the 10,000 level test was not used. Only the 2000, 3000, 5000 and the Academic Vocabulary levels of the VLT were used in this study.

The bilingual Vocabulary Levels Test was used instead of the monolingual test because the bilingual Vocabulary Levels Test had been shown to be more effective than the monolingual test in prior studies (Lado, et al, 1967; Laufer & Shmueli, 1997, cited in Nation, 2001:290) which indicated that using L2-L1 pairs was much more effective in vocabulary learning than using L2-L2 pairs. Moreover, the bilingual Vocabulary Levels Test had greater validity than the monolingual test. Schmitt et al. (2001) stated that the occurrence rate of knowing a word but not matching the correct option when he was validating the two versions of the test was 4% among ESL learners from different countries (Schmitt et al., 2001). Laufer and Goldstein (2004) gave a possible explanation for the difference between **PR** test results in the studies of the monolingual and the bilingual versions of CATSS. They suggested that choosing the correct L1 translation of a word in the bilingual version was easier than choosing the correct L2 definition in the monolingual version. These problems were primarily caused by not understanding the L2 options. Therefore, L1 translations provide a more efficient means of testing vocabulary both receptively and productively, and in recall and recognition items (Nation, 2001).

3.4.1 PR test

The **PR** test was adapted from version 1 of Schmitt et al.'s (2001) VLT, except that the explanations of the target words were in L1. The format was the same as the version by Schmitt et al. (2001). Compared with a depth test, the **PR** test was a practical test to determine the students' weakest point in vocabulary knowledge. Below is an example of a set of items in Schmitt et al.'s (2001) VLT:

1 business

2 clock   _____part of a house

3 horse   _____animal with four legs

4 pencil   _____something used for writing

5 shoe

6 wall

The definitions "part of a house", "animal with four legs", and "something used for writing" were in students'L1 (Chinese for Chinese students and Thai for Thai students). Students were asked to choose three correct options from the six options on the left to match the equivalent L1 words on the right side (see examples of the Thai and Chinese versions below). (See Appendix-A for Thai version PR test and Appendix-D for Chinese version PR test.)

1   business

2   clock   _____ ส่วนหนึ่งของบ้าน

3   horse   _____สัตว์สี่เท้า

4   pencil   _____สิ่งที่ใช้เขียน

5   shoe

6   wall

1   business

2   clock   _____墙

3   horse   _____马

4   pencil   _____铅笔

5   shoe

6   wall

3.4.2 AR test

The target word list of the **AR** test was adapted from the parallel version test, version 2, of VLT in Schmitt et al.(2001). Students were asked to translate a word from L1 to L2, with the beginning letter of the L2 target word given. For example, for the definition "not easy", students were expected to complete the target word "difficult" in writing. (See Appendix-B for Thai version AR test and Appendix-E for Chinese version AR test.)

Not easy   d_____

The Thai and Chinese versions follow:

ย า ก   d _____

困难的   d _____

All translations of the bilingual tests of **PR** and **AR** in this study were first done by graduate students of Applied Linguistics, and then checked by at least two Thai or two Chinese professors who teach English in Thailand and China respectively.

3.4.3 FAW test

For the **FAW** vocabulary test, the students were supposed to write an e-mail to get to know a foreign pen-pal. The topics were about their country, their university life and their hobbies. They were quite familiar with these kinds of topics (See Appendix-C for Thai version FAW test and Appendix-F for Chinese version FAW test).

3.5 Pilot tests for the three instruments used in the study

24 PSU students and 32 SCAU students majoring in Accounting with similar proficiency estimated by their previous English grades[2] to the subjects took the pilot tests. All the students (both in the pilot test and formal test) were informed of two main

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[2] Most PSU Accounting and Finance students got B or C grades; most SCAU Accounting and Finance students got 70-80 scores.

benefits before the beginning of the project to encourage them to join the project. That is, all students involved were informed that they would be able to:

(1) know their scores on vocabulary size;

(2) get to know a foreign pen-pal to practice their English and establish international friendship.

The pilot test on PSU students was conducted on the14th of January 2005 in students' spare time. The pilot test on SCAU students was conducted on 28th of April, 2005 in students' spare time. Students were informed to finish the tests within two hours. Two examiners supervised the tests. Dictionaries or any related English books were not allowed during the tests. In the pilot tests, PSU students spent 80 to 110 minutes and SCAU students spent 70 to 90 minutes finishing the three instruments in the classroom. After the pilot tests, all the instruments were revised and the reliabilities of the **PR** and **AR** tests were calculated.

In adapting the test, the target words were first checked in order to exclude those words that were very specifically influenced by the respective cultures. Some words have their Thai equivalent words, but some people, specifically the educated, tend to use the English pronunciation directly, such as "technique" and "slender". For this kind of words, the definitions were translated in the L1 meaning, not in the L2 pronunciations in the Thai test. After the **PR** and **AR** tests were piloted, the L1 translation was revised for those items on which students did poorly hopefully to help testees retrieve the target words better. In the **AR** test, more clues for some items were added such as providing more initial letters and indicating the total number of English letters in the target word. For example, the Thai translation of the target word "slight" was revised from "เล็ก" to "เล็กน้อย" and two initial letters were given instead of one so

that testees would not come up with the word "small". For another example, for the target word "manufacture", many students wrote "make" because the word also begins with the English letter "m" and has the similar L1 definition. If one more initial letter "a" was added, it was very possible that students would write "make" again because "make" and "manufacture" both begin with letters "ma". Therefore, the clue "11 English letters in total" was offered for the target word "manufacture". Since parts of speech were reflected in the Thai translation, in Thai version of the **AR** test, parts of speech were not indicated. On the contrary, since some Chinese words can either be

used as a noun or a verb such as "介绍" in "介绍经验" and "经验介绍", in order to make the translation more accurate, in the Chinese version of the **AR** test, parts of speech were indicated for some words in the Chinese translation.

For **PR** and **AR** tests, Cronbach's Alpha formula in SPSS 13.0 was used to calculate the reliability.

Table 3.2 Reliability coefficients of PR test and AR test

	Cronbach's Alpha	
	Bilingual **PR** test	Bilingual **AR** test
Thai version reliability coefficients	.93	.89
Chinese version reliability coefficients	.90	.92

PSU students n=24;   SCAU students n=32

In the pilot test of the **FAW test**, the students were required to write an e-mail draft in the test without using computers. Only 7 out of 24 (30%) PSU students could write about 250 words. Therefore, the test was revised to encourage them to write more by adding more parts and more specific questions. For example, for part 1) **"*Talk about Thailand. What is the most popular tourist attraction?*"** many PSU students seemed to answer the "what" question directly with a short answer without stating more supporting ideas. Therefore, a "why" question was added to the original part: **"*Why do many people like to travel in Thailand? Is it because of the food, people, etc.?*"** Since several students wrote about Thailand to be a "smiling" country, and many wrote about the special way that Thai people greet each other. Part 3) **"*Why is Thailand called a "smiling" country? How do Thai people say "hello" to each other especially to your teachers or to people who are older than you?*"** was added to the Thai version **FAW** test.

As for SCAU students, since 85% of SCAU students in the pilot test could write more than 250 words, more guided questions were not necessary.

3.6 Data collection

The data was collected about one month before the FE II teaching ended at both PSU and SCAU. Collecting data from PSU students was implemented on the 21st of January, 2005 in students' spare time. As students in different sections had different spare time, the second and third time data collections were carried out on the 4th and 8th of February, 2005. Collecting data from SCAU students was implemented on the 17th and 19th of May, 2005 in students' spare time.

The students were required to finish the three tests within two hours. However, PSU students spent 80 to 110 minutes[3]; SCAU students spent 70 to 90 minutes finishing the three tests in the classroom[4]. The length of testing time was considered appropriate as PSU students and SCAU students usually take two to three hours mid-term and final examinations every semester. Two examiners supervised the tests. Dictionaries or related English books were not allowed during the tests.

3.7 Data analysis

3.7.1 Scoring method of PR and AR tests

For the **PR** test, students would gain one score (raw score) for each correct answer. The full score for one word level was 30 (raw score) and for the whole set of test was 120 (raw score). Then the raw scores were computed in SPSS 13.0 according to the vocabulary size formula.

While scoring the **AR** test, the researcher held a "meaning focus" and "word family" principle. Small misspellings which did not distort the word form were scored as correct such as "introduse" instead of "introduce" while small misspellings which changed the meaning of the word were scored as wrong such as "angle" instead of "angel". Answers which belonged to the same word family of the target word were treated as correct such as "development" instead of "develop". The norm to decide

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[3] The first PSU student spent 80 minutes on the tests and handed them to the researcher. The last student spent 110 minutes on the tests;

[4] The first SCAU student spent 70 minutes on the tests and handed them to the researcher. The last student spent 90 minutes on the tests

whether the words belonged to the same word family or not depended on the results of the VocabProfile. However, the Off-list words (words that did not belong to the three word levels: 1-1000 level, 1001-2000 level and Academic Vocabulary level) were not classified as "word families" by the VocabProfile. Therefore, in the present study, Off-list words were classified as "word families" according to the definition of word family by Nation (2001), that a word family consists of a headword, its inflected forms, and its closely related derived forms. Students would gain one raw score for each correct answer. The full raw score for one word level was 30 and for the whole set of test was 120. Then the raw scores were computed in SPSS 13.0 according to the vocabulary size formula.

3.7.2 Calculation formula of PR and AR vocabulary sizes

The figures of **PR** and **AR** vocabulary sizes are approximations of the actual vocabulary size. The 1,000 word level and the 2,000 word level were assumed to have the same score with one point raw score for each correct item (Laufer, 1998). This was mainly because target words from the 2,000 word level were sampled at 1:2 ratios from the 1,000 word level and the 2,000 word level (Schmitt et al., 2001). This means the 2,000 word level test in fact has tested the 1,000 word level and the 2,000 level words. On the other hand, the words at 1,000 word level of the General Service List are usually those with a frequency higher than 332 occurrences per 5 million words, including months, days of week, numbers, titles and frequent greetings such as "Mr, Miss, Hi, Hello etc." while 165 of the word families are function words such as "and", "the" and "to" which were not considered to be suitable for the target words by Schmitt et al. (2001). Reflecting the distribution of these words in English, the words from the stratified samples tended to fall into a 3 (noun): 2 (verb):1 (adjective) ratio. Target words were normally the headwords of the word families (Schmitt et al. 2001). The test represented a size of 4,570 word families with 4,000 word families in the 1,000, 2,000, 3,000 and 5,000 word levels and 570 word families in the Academic Vocabulary level. The formula based on Laufer's (1998) for the calculation of the vocabulary size was as follows:

V1=(Score of 1000 word level + score of 2000+ score of 3000 +score of 5000)×4000 word families

30 items at each word level × 4 levels

V2= the score of Academic Vocabulary level $\times$ **570 word families**

30 items of the Academic Vocabulary level

The **PR** (or **AR**) vocabulary size "V" is: **V=V1 +V2**

3.7.3 Scoring method of the FAW test

Data of the **FAW** vocabulary in this study came from the analysis of the subjects' writing from VocabProfile which included 1-1,000 level, 1,001-2,000 level, Academic Vocabulary level and Off-list level. Words from the first 3 word levels: 1-1,000 level, 1,001-2,000 level and Academic Vocabulary level were classified as "word families" by the VocabProfile. Off-list words (words that did not belong to the first, second thousand words or Academic Vocabulary level) shown from the VocabProfile were classified as "word families" according to the definition of word family by Nation (2001). The total number of the word families from all levels represented the free active vocabulary size they used in their writing.

While entering the **FAW** data into the computer (in order to use the VocabProfile, the Text Lex Compare or the FreqList), the following modifications were made: spelling errors that did not distort the word were corrected in order to make the word recognizable by computer and proper nouns were omitted because they were not considered as belonging to the lexis of a given language. Moreover, words that were semantically incorrect such as wrong meaning or wrong collocations were omitted as well since they could not be regarded as known by the learners (Laufer, 1998).

SPSS 13.0 was used to calculate the quantitative results such as **PR**, **AR** vocabulary sizes and the totals. VocabProfile (Laufer & Nation, 1995, with the UWL replaced by AWL. Also called Lexical Frequency Profile. Retrieved from T Cobb's website: www.lextutor.ca) was used to analyze the **FAW** data. The Text Lex Compare and the FreqList (Retrieved from T Cobb's website: www.lextutor.ca) were especially used to compare the **FAW** vocabulary knowledge between the PSU and SCAU parallel groups.

3.8 Overview of the study

Table 3.3 The design of the present study

Purpose	To compare the passive and active vocabulary knowledge of PSU and SCAU EFL learners.
Research questions	**(1)** What are the relationships between learners' passive recognition (**PR**), active recall (**AR**) and free active written (**FAW**) vocabularies? Are these relationships similar or different in PSU and SCAU learning contexts? **(2)** What are the differences between active recall (**AR**) and free active written (**FAW**) vocabulary scores of PSU and SCAU learners with the same passive recognition **(PR)** vocabulary scores? **(3)** Do the relationships between active recall (**AR**) and free active written (**FAW**) vocabularies change with shifts in learners' passive vocabulary knowledge (**PR**)? Are these changes similar or different in PSU and SCAU learning contexts? **(4)** What is the difference between the free active written (**FAW**) vocabularies of PSU and SCAU learners?
Subjects	Subjects in this study are 142 first year students majoring in Finance who had nearly finished (about one month before the teaching ended) the FE II course at PSU in Thailand and at SCAU in China.
Methods	• Quantitative. • Qualitative. • Purposive sampling.
Instruments	**(1)** Bilingual passive recognition VLT (adapted from Schmitt et al.2001 monolingual VLT version1) **(2)** Bilingual active recall VLT (adapted from Schmitt et al.2001 monolingual VLT version2) **(3)** A guided e-mail writing for the writing test.

Table 3.3 (Continued)

Data analysis	• VocabProfile • The Text Lex Compare • The FreqList • SPSS Version 13.0
Pedagogical implications	**(1)** Knowledge of students' vocabulary size provides implications of a realistic goal of a lexical syllabus and offers information for new curriculum design. **(2)** Recognizing the existence of gaps between passive and active vocabulary knowledge, reasons for the gaps could be established, and solutions could be found. **(3)** Knowing about the changes of passive and active vocabulary knowledge among students with different vocabulary sizes, some insight can be gained into the development of vocabulary learning process. **(4)** Through a comparative study between EFL learners at the tertiary level in different countries under different curricula, it is hoped that we, English teachers and students, can learn from each other.