CHAPTER I
INTRODUCTION

1.1 Background of the Study

In the countries where English is used as a foreign language (EFL), reading academic texts in English is necessary for students especially those at university level. Due to high-technology transfer from the West, new knowledge is primarily learnt through a medium of English so reading academic texts in English becomes a central means to learn new information. In order to keep up with rapid advancements in technology, for example, engineering students are increasingly assigned to read English texts which are relevant to their specialized fields such as textbooks, manuals and journals. The students are expected to possess the ability to read and to extract information effectively from different types of academic texts. As a result, classes of English for Academic Purposes (EAP) become the main sources for preparing EFL students to cope with the demand of reading such texts.

Although reading academic texts in English is a necessary skill for university students, it is often found in many EAP instructions that students' reading proficiency cannot be properly developed because of their inadequate vocabulary size. This problem is reported in a number of studies including Cob and Horst (2001) and Nurweni and Read (1999), who reported the problems of Omani and Indonesian students respectively. Before entering the universities, students are assumed to possess adequate general English proficiency, but in fact, they do not. Many of them are much less proficient in English than what is expected for students at undergraduate level. Similarly, in many Thai universities such as Rajamangala University of Technology Lanna (RMUTL), Tak Campus, engineering students had limited lexical knowledge, which was the main source of problems in developing their academic reading proficiency. To investigate the problem, in January 2004 a sampling group of RMUTL engineering students was measured on their overall vocabulary size. Vocabulary tests at three levels were administered with 127 undergraduate students randomly selected as samples of a population of about 1,000. The measures were published in Nation (2001) i.e. Nation's (1990) 1000 Word Level Tests; and

Schmitt, Schmitt and Clapham's (2000) 2000 and Academic Word Level Tests, as illustrated in Appendix A.

These tests were well researched and often recommended in several published papers such as in Nation (2001), Coxhead and Nation (2001), Schmitt (2000) and Read (1997) for measuring students' partial knowledge of words in order to estimate their overall vocabulary size. According to these papers, the selected three levels are considered as representative of around 3,000 word families from the established Wordlists regarded as a lexical critical basis for academic reading. These words frequently occur in various academic text types in all disciplines. The test developers suggest that the desirable scores at each level should be above 80% in order to justify an individual student being adequately able to command that level. Only the sufficient control i.e. above 80% scores of all three levels will be interpreted as sufficient lexical knowledge for being a basis for academic reading. The results of the tests conducted with a sampling group of RMUTL undergraduate engineering students revealed that their mean scores were approximately 56%, 24% and 18% at 1000, 2000 and Academic Word Levels respectively. This means that their lexical knowledge is really insufficient in all three necessary levels since their mean scores were much below a desirable criterion of 80% at each level.

Lexical knowledge is an indispensable part of reading comprehension. Students' limitation of vocabulary size certainly inhibits their understanding of the reading texts. To adequately understand a piece of text, readers must be familiar with most of the words used in that text. Previous studies (Nation, 2001; Cobb and Horst, 2001; Coxhead and Nation, 2001; and Schmitt, 2000) suggest that students need to be familiar with 95% of the words occurring in that text. They also indicate that just over 90% of the running words in academic texts can be constituted from around 3,000 high frequency word families in two of the most cited wordlists i.e. West's (1953) *General Service List of English Words (GSL)*, and either Xue and Nation's (1984) *University Word List (UWL)* or Coxhead's (1998) *Academic Word List (AWL)*. In the case of RMUTL students, their lexical knowledge was found to be far below the lexical threshold for academic reading, so the chance for them to properly understand the texts was consequently very low. As a result, their reading proficiency could not be well developed without a more adequate vocabulary. Students' vocabulary size is insufficient to provide a critical basis for effective reading skills and strategies such as

getting main ideas or guessing unknown words from context clues. To improve reading proficiency, students' lexical knowledge gap needs, first and foremost, to be bridged.

1.2 Rationale for the Concordance-based Method

Although it is obvious that students' inadequate vocabulary size is the main obstacle to their reading skill development, remedial work on bridging this gap is not easily conducted because of time limitation. In most engineering programs, only a few EAP courses are provided and no courses specifically focus on vocabulary learning. In the present study, the vocabulary component is integrated into an existing reading course because the approach of '*learning vocabulary through reading*' seems to be the best practice at present and previous studies demonstrated its success in vocabulary instruction (Schmitt, 2000; and Coady, 1997). With this approach, reading can enhance vocabulary learning in various contexts and make possible for some encounters of particular words. As a result, increasing vocabulary size has to be conducted simultaneously with developing reading proficiency in one academic semester. In order to expand students' vocabulary size for academic reading, a concordance-based method is proposed in the present study because of its potential in language learning (Cobb, 2001, 1999a and b, and 1997 a and b).

The concordance-based method is adapted from the method prominently used in language analysis in the fields of lexicography and linguistics (Kennedy, 1998). It involves corpus compilation from authentic texts and a concordancing program called a '*concordancer*'. In brief, a *corpus* is a collection of texts compiled for linguistic study whereas a *concordancer* is computer software which is used to access the information in the corpus and then display the output in a concordance format. Basically, most concordancers are used for counting the number of words in the corpus as well as the frequency of each word's occurrences. In addition, a concordancer can search particular words to be studied and then sort and display data in a way in which word behaviors in various contexts can be observed easily. The corpus outputs are typically displayed in concordance lines and this type of display is often called a KWIC (keywords-in-contexts) format. For example, the following

illustration is the corpus output from searching the word '*current*' in eleven concordance lines. In a KWIC format, the keywords '*current*' are displayed in the center whereas the immediate contexts of each word are on both sides as illustrated in Figure 1.1.

Figure 1.1: Example of concordance output of '*current*' in a KWIC format

For electronics,	**current**	may also be measured in mA.
Every electric	**current**	produces a magnetic field.
The electron 'flow' is called an electric	**current**	the electrical force is called voltage.
The metal parts of the torch must conduct electric	**current**	if the torch is to function.
The electron drift in random directions until the	**current**	starts to flow.
Microsoft Word is the dominant word processor in	**current**	use.
For instance, many	**current**	machines use 64-bit buses.
Three	**current**	waveforms are produced.
The earth wire can carry enough	**current**	to blow a fuse.
When measuring high	**current**	value, refer to resistor self-heating.
The	**current**	version is AutoCAD 2005.

The concordance-based method was introduced to the area of language education a few decades ago (Steven, 1995; and Fox, 1998). At the beginning, however, it was applied exclusively among developers of curricula, syllabuses and materials (Fox, 1998; Willis, 1998; Carter, Hughes and McCarthy, 1998; Thurstan and Candlin, 1998; Flowerdew, 1993; Stevens, 1991a; and Tribble and Jones, 1990). Recently, this method has increasingly been applied directly to language classrooms since John (1991) introduced the new learning approach of '*data-driven*'. Its positive influences on language learning are often reported such as those published in Aston (2001), Wichmann, Filgelstone, McEnery, and Knowles (1997), and Johns and King (1991). However, the application of the concordance-based method in previous studies were mostly conducted as referential tools (Chan and Liou, 2005), parts of the courses (Sriphicharn, 2002; Todd, 2001) or tutorial programs (Cobb, 1999a and b; and 1997a and b). Therefore, empirical studies on using the method as the main method in the whole regular courses were very rare. In addition, concordance facilities in previous studies were web-based or specifically designed programs which might not be practical in most academic situations. Moreover, previous studies were mostly conducted with one group of students without a control group (Hadley, 2001 and

2002; and Todd, 2001). As a result, the comparisons between the outcomes of the concordance-based method and other teaching methods are still lacking.

To extend knowledge and insights derived from these previous works especially Cobb's studies (1999a and b; and 1997a and b), the present study attempts to fully integrate the hands-on concordance-based method with the whole course as the main method to increase students' vocabulary knowledge for academic reading. The concordance facilities used in the study are simple and can be in-house developed in order to make the implementation practical and compatible to most learning situations. Furthermore, conducting the concordance-based method in comparison with the conventional teaching method can provide empirical evidence in this area of research. Findings from the present study will expand insights derived from those in Cobb's studies (1999a and b; and 1997a and b) in the area of increasing two vocabulary types: definitional knowledge and transferable knowledge. The present study is different from his studies in many other aspects including the focuses and the implementation. Firstly, it focuses on vocabulary for academic reading in general whereas Cobb's studies focus on vocabulary for Cambridge Preliminary English Test (PET). Secondly, the concordance facilities are simple and in-house developed whereas Cobb's experimental concordancing programs – PET 2000 and PET 200 – are sophisticated. Finally, in the present study, the effects of the concordance-based method are studied in comparison with those of the conventional method of teaching vocabulary through reading. In contrast, those in Cobb's studies are compared with the methods of using another version of software (1999a) and using a wordlist with a dictionary (1999b). Therefore, classroom-based details of the present study bridge the gaps of research in comparing the effects of classroom concordancing with those of another teaching method with unique implementation.

To summarize, the concordance-based method is proposed in the present study since many previous studies suggest its potential in vocabulary learning. The effects of the hands-on concordance-based method are used as the main method in comparison with the conventional teaching method on vocabulary learning in the whole regular course. The application of a simple concordancer and a small in-house developed corpus can provide a practical framework for most EFL academic situation, especially with engineering students. The findings of the study originally provide details abut the effects of using the hands-on concordancing method in Thai

classroom contexts. Accordingly, these findings of the study contribute to the area of teaching EAP in providing useful implications as well as empirical evidence in the areas where research is lacking.

1.3 Research Questions

The present study is aimed at investigating both quantitatively and qualitatively the comparative effects of the concordance-based method and the conventional teaching method. The focuses are on three main areas of vocabulary learning: learning effects, learning processes and learners' attitudes. Accordingly, five research questions are proposed. On the one hand, the first three questions are concerned with quantitative investigation in measuring learning effects on students' vocabulary size, ability to transfer lexical knowledge to new reading contexts, and retention of such knowledge. These learning effects of both methods are compared. On the other hand, the last two questions were more concerned with qualitative study in exploring students' learning processes and attitudes in dealing with the concordance-based method. Learning processes are examined in terms of students' performances in dealing with a computer concordancing program as well as concordance input whereas learners' attitudes are dealt with students' opinions on the usefulness of the concordance-based method, its level of difficulty and students' degree of preferences to the method. These questions are as follows.

1. Is there a significant difference between the effects of the concordance-based method and the conventional teaching method on students' average scores on the measure of their vocabulary size?

2. Is there a significant difference between the effects of the concordance-based method and the conventional teaching method on students' average scores on the measure of their ability to transfer vocabulary knowledge to new contexts?

3. Is there a significant difference between the effects of the concordance-based method and the conventional teaching method on students' retention rates of vocabulary knowledge?

4. What are the processes used by the students while dealing with the concordance input?

5. What are students' attitudes towards the application of the concordance-based method?

1.4 Objectives of the Study

The objectives of the study are summarized as follows.

1. To compare the effects of the concordance-based method and the conventional teaching method on vocabulary learning in the following areas.

1.1. Students' vocabulary size.

1.2. Students' ability to transfer vocabulary knowledge to new contexts.

1.3. Students' retention of vocabulary knowledge

2. To explore students' learning processes in dealing with the concordance input.

3. To explore students' attitudes towards the application of the concordance-based method.

1.5 Statements of Hypotheses

In most previous studies, the positive influences of the concordance-based method are usually found. However, a problem of its difficulty level of the concordance texts was also reported (Hadley, 2001 and 2002) and significance differences between the method and other teaching methods were not always found (Chan and Liou, 2005; and Sriphicharn, 2002) although students' positive attitudes towards the concordancing method were still maintained. Accordingly, the effectiveness of classroom concordancing over other methods is still uncertain. It is still questionable whether the concordance-based method can increase higher learning effects than the others. Therefore, in the present study, three non-directional hypotheses are formulated in conforming to the first three research questions concerning only quantitative study of learning effects.

Hypothesis 1: Students' scores on the measure of vocabulary size in the experimental group are significantly different from those in the comparison group.

Hypothesis 2: Students' scores on the measure of students' ability to transfer lexical knowledge to new contexts are significantly different from those in the comparison group.

Hypothesis 3: Students' retention rates in the experimental group are significantly different from those in the comparison group.

1.6 Scope of the Study

The present study is in the area of teaching English for Academic Purposes (EAP) focusing on vocabulary for academic reading at an undergraduate level. The study is confined to the following areas.

1. The focus vocabulary includes academic words necessary for a critical basis for academic reading in the field of Engineering. Academic vocabulary, in this case, includes word families from the two established wordlists of West's (1953) *General Service List of English Words (GSL)* and Coxhead's (1998) *Academic Word List (AWL)*. The combination of both lists is regarded as the lexical knowledge base for reading in any academic domain.

2. The present study is aimed at tracking two levels of vocabulary knowledge i.e. definitional and transferable knowledge. '*Definitional knowledge*' refers to students' knowledge of word meaning or their ability to connect a word form to its meaning. On the other hand, '*transferable knowledge*' refers to students' knowledge at a deeper level sufficient for effective interpretation of general academic texts i.e. students' ability to recognize and retrieve new learned words for interpreting unseen texts. Apart from gaining such knowledge, its retention rate is also explored.

3. Linguistic items and examples in concordance-based lessons are confined to the compiled corpus of around 500,000 running words. In addition, language analyses in students' practice are kept only at the basic levels of analyzing word parts, grammatical functions and collocations.

4. The population of the study consists of around 1,000 undergraduate engineering students at RMUTL, Tak Campus. As a result, the findings emerging

from the present study are generalizable to the population although they may be relevant to other similar settings.

1.7 Assumptions of the Study

The study is based on the following assumptions.

1. The students in the study are familiar with the use of computers as they are engineering students.

2. They accurately recall the mental processes used during the application of the concordance-based method and reflect their opinions and feelings in students' logs, questionnaires, and interviews.

3. They fully attempt to do all the tests and tasks.

1.8 Definitions of Terms

The key terms used in this study are defined as follows.

Lexical thresholds to academic reading

Minimum requirements of lexical knowledge as a critical basis for reading academic texts in English. These thresholds include around 3,000 word families from the lists of the GSL (West, 1953) and the AWL (Coxhead, 1998).

Academic vocabulary

Vocabulary frequently found in different written academic text types such as textbooks, handouts, manuals, articles and research abstracts. It includes 480 target words in the study. These target words refer to high frequency words in the Engineering Corpus, which are also high frequency words in general English texts (the GSL) and in academic texts of all disciplines (the AWL).

Vocabulary / lexical knowledge

Receptive knowledge of vocabulary used for interpreting the academic texts. Two levels of vocabulary knowledge are studied: definitional knowledge and transferable knowledge.

Definitional knowledge of vocabulary / vocabulary size

Knowledge of at least one meaning of each word. Such knowledge is regarded as the breadth of knowledge i.e. vocabulary size or the number of known words. Definitional knowledge, which is the minimum knowledge of a word, is used as a measure for quantitative gain of vocabulary size. In the present study, the definitional knowledge is measured by students' ability to connect a particular word form to its meaning. In other words, it is represented by students' average scores on the Definition Part of the test.

Transferable knowledge of vocabulary

Knowing a particular word so well that such knowledge can be transferred to other contexts. Transferable knowledge relates to the depth of knowledge. This knowledge involves perceiving the form of a word while reading, and retrieving its meaning for interpreting the reading text. In this study, transferable knowledge is assessed by students' ability to transfer vocabulary knowledge to new contexts i.e. the ability to recognize and retrieve words to reconstruct or replace them properly in different contexts. This knowledge is represented by students' average scores on the Cloze Part in the test.

Retention rate of vocabulary knowledge

Vocabulary knowledge which is retained about a month after the study. The retention rate in this study refers to the difference between the average scores on both the Definition Part and the Cloze Part in the immediate posttest and those in the delayed posttest within the same group represented by percentage and the differences between the average scores on both parts in the delayed posttest of both groups.

Learning processes

Students' performances in dealing with the concordance input to acquire concordancing skills and vocabulary knowledge. Learning processes are examined in terms of students' performances in dealing with a computer concordancer and those in dealing with concordance information. Dealing with a computer concordancer refers to students' abilities to operate a concordancer to find corpus information, display and manipulate concordance output for facilitating the observation of word behaviours in various concordance contexts. On the other hand, dealing with concordance information is concerned with students' abilities to utilize the concordance facilities for enhancing their vocabulary learning by identifying various aspects of words to interpret texts and deduce word meaning. Learning processes are assessed by relevant data from teacher's field notes, students' logs, questionnaire and interview.

Learning development

A trend of learning gains at different stages from the beginning through the end of the study. It is assessed by average total scores on all measures of vocabulary knowledge i.e. the pretest, four reviewed tasks, the immediate posttest and the delayed posttest.

Learners' attitudes

Students' opinions towards the application of the concordance-based method in terms of its usefulness, level of difficulty and students' degree of preferences to the method. Such attitudes are assessed with the data from students' logs, questionnaire and interview.

Concordance-based method

A teaching/learning method concerned with concordances in the forms of both paper-based and hands-on activities for students to learn vocabulary by doing language analysis on word parts, grammatical functions and collocations through the contexts in concordances. Then, students are trained in utilizing such lexical knowledge for interpreting texts and/or deducing word meaning. The term a '*concordance-based method*' is used interchangeably with a '*corpus-based method*' or a '*classroom concordancing*' in this study.

Conventional teaching method

A traditional teaching/learning method for students to learn vocabulary through reading. With this method, various aspects of words i.e. word parts, functions and collocations are taught through the contexts of normal paper-based reading in short passages in order to enable students to utilize such lexical knowledge in dealing with unknown words in new reading contexts.

1.9 Significance of the Study

The present study is significant in providing a practical framework for teaching EAP as well as extending insights in the areas of vocabulary research on integrating the hands-on concordancing with the whole course to increase students' vocabulary knowledge for academic reading. It is distinctive from other related studies in terms of its implementation design. The concordance facilities are simple and a specialized corpus can be in-house developed to be fully used in word selection as well as designs of concordance-based materials and activities. These practices are integrated with the benefits from other familiar teaching techniques to explicitly teach vocabulary through reading either in concordances in the experimental group or in short reading passages in the comparison group, and engineering contexts familiar to the students are also used to enhance vocabulary learning. This design of concordance lessons is rarely found in previous studies and can make the method more practical in normal classrooms.

In addition, the present study is significant in expanding insights and evidence in using classroom concordancing in Thai contexts. So far, only two classroom-based studies of Sriphicharn (2002) and Todd (2001) have been conducted in Thai educational settings and their applications were used as supplementary of the courses in the forms of paper-based concordances or hand-concordancing respectively. Unlikely, the present study applies hands-on concordancing as the main method to solve a problem of Thai low-proficiency students' limitation of vocabulary size. If the results turn positive, it will indicate the contribution of the concordance-based teaching method to the teaching English for Academic Purposes in general and vocabulary instruction in particular.

1.10 Outline of the Dissertation

This chapter describes the background of the study concerning the importance of academic reading in EFL countries and students' reading problems due to their limited vocabulary size. Therefore, the concordance-based method is proposed in the study with the aim to compare its learning effects on vocabulary learning with the conventional teaching method; as well as exploring students' learning processes and attitudes in dealing with the concordance-based method.

Chapter II reviews the underlying principles that lend support to the application of the concordance-based method to vocabulary learning. The chapter starts with the classification of vocabulary followed by the description of lexical thresholds for academic reading and vocabulary assessments. Then, two focused lexical knowledge types are described and the incremental nature of vocabulary acquisition and retention is discussed in order to identify learning principles that promote vocabulary acquisition. Next, the background of vocabulary instruction in ESL/EFL contexts is presented to highlight the role of vocabulary in language acquisition and various approaches to vocabulary instruction are reviewed. Finally, the concordance-based method is discussed, including its inherent learning approach as well as its application. Chapter 3 deals with the research methodology of the study which includes the research design, all research materials and instruments as well as the methods of data collection. The pilot study is also presented together with proposed changes for the main study. In Chapter 4, data analyses and findings are presented, focusing on three main areas of the study i.e. learning effects, learning processes and learners' attitudes in dealing with the concordance-based method. In Chapter 5, a summary of the present study is provided prior to the discussions on the findings of the study, its implications for vocabulary instructions and learning, suggestions on the application of the concordance-based method, and the recommendations for further research study.