

**ESL students' use of concordances and dictionaries in the transfer of  
academic word knowledge: A comparative study**

by

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This is to certify that the master's thesis of  
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Signatures have been redacted for privacy

To my parents,  
my husband, and my angels, Ajay and Alisha

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## LIST OF TERMS

<b>AWL</b>	Academic Word List – words that are common in academic texts
<b>BNC</b>	British National Corpus
<b>C</b>	Concordancer
<b>CALL</b>	Computer assisted language learning
<b>Camtasia</b>	Screen capturing software
<b>D</b>	Dictionary
<b>EPT</b>	English Placement Test- administered by Iowa State University to determine foreign students' level of English
<b>ESL</b>	Teaching English as a Second Language
<b>IELTS</b>	International English Language Testing System
<b>Interlanguage</b>	A language system created by learners
<b>L1</b>	First language
<b>L2</b>	Second language
<b>NNS</b>	Non-native speaker
<b>SLA</b>	Second language acquisition
<b>Technical words</b>	Words related to subject of text
<b>TOEFL</b>	Test of English as a Foreign Language
<b>2000 most frequent words</b>	Words that cover more than 75% of words used in academic texts

## ABSTRACT

Concordancing in the classroom is fairly a new approach which has emerged with the use of corpora in language learning. In a concordance, language is presented in a natural setting; learners are able to examine a key word in the context of a string of sentences which can exemplify the use of that particular word. Learners need not rely heavily on their teachers or their own intuition as they can explore specific language features from the vast amount of information in the corpora. Vocabulary knowledge acquired from a concordance can be transferred to novel texts (Cobb, 1999) to enhance student writing. This study examined if the use of an on-line concordance program together with an on-line dictionary by ESL undergraduates helped them acquire receptive word knowledge and if that word knowledge was transferred correctly to an academic writing task. The treatment and control groups did not refer to any tools during the pre- and posttest. However, when completing vocabulary activities, they had access to an on-line dictionary but only the treatment group had the opportunity of using an on-line concordance program. A comparison of pretest and posttest scores showed that the performance of the treatment group remained constant. The results indicate that while there was no acquisition of receptive word knowledge in the treatment group, there was transfer of vocabulary knowledge to the writing task. The results also showed a fairly strong correlation between participants' look-up behavior with the concordance program and the percentage of correct words in the posttest. However, it was inconclusive if the use of concordance affected productive word knowledge.

## INTRODUCTION

Progress in technology has revolutionized language learning strategies (Salaberry, 2001). Computer Assisted Language Learning (CALL) in particular, has added a new dimension to language learning by making the plethora of input easily accessible (Pennington, 1996) to learners. With the emergence of CALL, language learning has evolved from a static, strictly teacher-controlled approach to a self-discovery approach where students themselves control the learning experience, using the computer as a tool.

Subsequently, with the advancement in corpus linguistics, researchers and scholars have tried to find ways to use corpora for the purpose of language teaching and learning; a corpus is a large principled collection of texts. Analyzing a corpus is made possible with the availability of computers, which could otherwise be time consuming and error prone. A concordancer is “a tool for text analysis which can generate lists of words contained in a text or text collection” (Gabel, 2001, p. 269) that allows the search of a word used in a particular context. The most common form of concordance is the *Key Word In Context (KWIC) Concordance*, which shows the keyword surrounded by previously established co-text. However, in some concordance programs, whole sentences are not presented but only the middle of a line with words on both sides of the keyword. Software programs that are available on-line include Tom Cobb’s *Compleat Lexical Tutor*, <http://132.208.224.131/> (Figure 1.1) and *Collins Cobuild Concordancer*, <http://www.cobuild.collins.co.uk/form.html>. Concordancing for language learning began to be popular in the eighties with the production of smaller and more affordable personal computers and became even more significant when Goethals presented a paper at the International Association of Applied Linguistics (AILA) conference discussing the use of concordancing in CALL-based vocabulary materials (Stevens, 1995).

In the past, learners were expected to master vocabulary by memorizing lists of words which was a heavy burden on them. In a study conducted by Gu and Johnson, it was found

that Chinese university students who used “memorization and visual repetition of word lists” were the least successful in increasing their vocabulary size compared to those who used contextual guessing and dictionary skills (Gass & Selinker, 2001, p. 380). Although making reference to a dictionary is encouraged, a study with non-native speakers by Nesi and Meara (1994) found that misinterpretation of words were common because learners focused on “just one part of a definition” (Nation, 2001, p. 83). With the availability of concordance programs, learners do not need to rely heavily on their memory or the dictionary. A word searched in a concordancer will be shown in a context in which it is typically used as well as the other words that accompany the keyword both preceding and following it; the words that accompany the keyword are the collocations. It is important for L2 learners to have collocation knowledge to enhance writing fluency (Somogyi, 1996). Hence, second language learners will see the target word in an actual situation and in a great number of instances, unlike dictionaries where words are sometimes shown in isolation. Also, dictionaries do not exemplify the word in as many different contexts as a concordance program. With the use of a concordancer, learners can make conclusions on how, why, and where to use certain vocabulary. L2 learners will have the opportunity to discover for themselves how language is used in a certain manner, especially words and their collocations. One of the factors that contribute to native-like use of a target language is the correct use of collocations (Schmitt, 2000).

In SLA, knowledge of vocabulary occurs with frequent exposure and through a continuum from the initial stage of word recognition to the production stage (Gass & Selinker, 2001). Furthermore, the authors state that it is important for L2 learners to be able to use vocabulary in a manner consistent with the way it is used by native speakers. One of the main advantages of using a concordance to enhance productive skills is suggested by Hyland (2002):

L2 writers need to know what is typical rather than what is possible and a concordance can both suggest the appropriacy of using one word rather than another in specific circumstances and indicate the rarity of true synonymy among semantically related items. (p. 123)

Concordancing can benefit L2 learners because they can contrast their interlanguage with that of a native speaker and try to bridge the difference in performance by employing “the linguistic item in future text productions” (Gabel, 2001, p. 269).

Figure 1.1: *Compleat Lexical Tutor*: An on-line concordance program (<http://132.208.224.131/>)

**Online Concordancer**  
(v.3)

French For bigger corpus

Keyword(s): equal to

In corpus: Select corpus

☒ Yes ☐ No

With Controls: Sort Sortright  Default  Default  normal

---

**OPTION 1** With associated word:  ☒

Anywhere in string

☒ Right Range from keyword: Default

---

**OPTION 2** Collocates table: ☒ None ☐ Alphabetical ☐ Frequency

## **Purpose of the study**

The purpose of the present study was to analyze the effectiveness of using an on-line concordancer and dictionary compared to only the use of an on-line dictionary in acquiring new vocabulary from the academic word list by ESL college students. It also investigated if the use of a concordancer influenced the transfer of word knowledge to academic writing through a comparison of students' writing tasks. In addition, the study focused on how and to which extent ESL learners used the concordance program and if the use of concordance affected the receptive and productive word knowledge. This study consisted of a vocabulary pretest and posttest, questionnaires, and vocabulary activities as well as a writing task.

This comparative study is not to show that CALL is in any way superior to conventional classroom instruction but to emphasize the fact that certain aspects of CALL have the potential to enhance students' learning in ways that may not be feasible using traditional methods only. Thus, if and where appropriate, CALL can be integrated effectively in classroom applications (Allum, 2002).

## **Importance of this study**

Previous studies have shown the benefits of using computerized concordances by non-native speakers to define meanings of words and to assist in the transfer of word knowledge to novel texts (Cobb, 1999) and that the concordancing approach is more effective compared to conventional methods of teaching vocabulary to second language learners (Gan, Low & Yaakub, 1996). But those studies did not focus on academic vocabulary or the transfer of the word knowledge to an authentic writing task. The present study is important because of several key differences, such as focusing on specialized vocabulary, the transfer of word knowledge to academic writing and the influence of concordance use on the learner's receptive and productive word knowledge.

### **Specialized vocabulary**

The specialized vocabulary in this study is the academic vocabulary, which according to Farrell (1990) is known as semi-technical or as stated by Cowan (1974) as generally useful scientific vocabulary (as cited in Nation, 2001). Academic vocabulary is important for students in institutions of higher learning because it is commonly found in all academic texts and Nation (2001) concluded that students' ability to use academic vocabulary played an important role in their academic success. ESL learners may have encountered such vocabulary in other settings but at a very low frequency because it not commonly found in non-academic texts. Another reason to choose academic vocabulary as the focus of this study is that it is less known to learners compared to technical words. According to Nation, this is because some of the words are sometimes used with a technical and sometimes with a non-technical meaning and learners are not conscious of the difference. ESL learners enrolled in academic courses need to have a good grasp of academic words in order to convey their ideas correctly and precisely. Finally, academic vocabulary can be taught to ESL learners by the teacher because it is not technical or area specific. Academic vocabulary plays an important role for ESL learners pursuing higher education regardless of the student's area of specialization.

### **Transfer of word knowledge**

If ESL learners can master the 2000 most frequent words and the Academic Word List, they will know almost 90% of all the vocabulary found in academic texts (Nation, 2001). A wide range of vocabulary knowledge is necessary for ESL learners in an academic setting not only to read and understand academic texts but also to employ such words in their daily work. Receptive vocabulary knowledge, such as word recognition, is generally more easily increased compared to productive use of vocabulary knowledge. Hence, there is a need for reference tools for ESL learners to increase their productive word knowledge. In a study

of lexical acquisition involving advanced learners of French, Hulstijn, Hollander, and Greidanus (1996) found that if external sources of information are available, such as dictionaries, learners will look up the meaning of unknown words; with repeated exposure, the meaning of these words will be reinforced (Gass & Selinker, 2001). Based on this idea of availability of external sources and repeated exposure, the present study investigated if participants' use of a concordance program and an on-line dictionary helped increase their word knowledge. One's command of vocabulary influences the quality of writing and as stated by Corson (1997), it is important for writers of academic writing to have "productive written control" of the English vocabulary in order to be recognized as members of "academic writing community" (Nation, 2001).

### **Use of concordance**

Learners have their own distinct styles of employing and learning a new knowledge. This study also focused on the employment of an on-line dictionary and a concordance program by ESL learners to complete vocabulary tasks. ESL learners' interaction with the computer was recorded as process-data using a screen-capturing application. The process-data was used to examine if and to what extent learners used the on-line dictionary and concordance program. This descriptive data was used to make inferences about the influence of concordance use on receptive and productive word knowledge.

### **Research Questions**

The focus of this study is on the acquisition of the academic vocabulary by ESL learners through concordancing and the use of dictionary; nevertheless it also addresses issues related to productive word knowledge. This study is guided by the following four research questions:

1. Do ESL learners acquire receptive word knowledge better if they use an on-line concordancer and a dictionary compared to those who only use an on-line dictionary?
2. Is academic vocabulary used correctly in vocabulary tasks by ESL learners who have access to an on-line concordancer and dictionary compared to those using only an on-line dictionary?
3. Do ESL learners who learn vocabulary with an on-line concordancer and dictionary transfer the word knowledge correctly to their writing task as opposed to learners who learn only with an on-line dictionary?
4. Does an ESL learner's look-up behavior with an on-line concordancer influence his/her receptive and productive word knowledge?

## **Preview of the study**

Chapter 2, the Literature Review, provides background information and examines previous studies related to concordancing activities. This includes vocabulary acquisition and the use of vocabulary in novel contexts. Chapter 3, Method, describes how the test items and vocabulary as well as writing activities were designed while Chapter 4, Results, presents the results and discusses the implication of the results. Finally, Chapter 5, Conclusion, summarizes the findings of the study and gives suggestions for further research.

## **LITERATURE REVIEW**

According to Tribble and Jones (1990), concordances can be traced back as far as the 13<sup>th</sup> century when 500 monks produced a concordance of the Latin bible (Stevens, 1995). Beginning from the 1920's there was a trend to count most frequent words in texts and study the grammatical patterns of such words to be used for language teaching purposes. Thorndike's 4.5-million-word corpus, which was compiled manually, is one of the most prominent works for the basis of change in the teaching of English Language in the United States and also in other parts of the world (Kennedy, 1998). This chapter will discuss the importance of vocabulary in L2 writing, the role of concordancers in the development of academic vocabulary and the use of concordancers in previous studies.

### **The importance of vocabulary in L2 writing**

Most of L2 language acquisition is based on theories and research involving L1 learners and very little has been taken into consideration between the difference in language acquisition of these two distinct groups of learners (Schmitt, 2000). Adult L2 learners rarely reach the proficiency of native speakers although they may have been exposed to the target language for a number of years (Hinkel, 2004). Hinkel also mentions that even if an L2 has oral proficiency, it does not equal being proficient in academic writing in the target language. This is because formal writing in an academic setting requires L2 learners to have a strong linguistic foundation including a vast range of lexical skills. Timed essays such as Test of Written English, IELTS, and other placements tests administered by institutions of higher learning require learners to use specific vocabulary efficiently (Engber, 1995) in order to obtain a high score, and subsequent placement of L2 students in specific programs is based on these scores.

Native speakers of English learn new words all their lives through interaction with other speakers and exposure to the language in formal and informal situations, but L2 learners' exposure to and use of the target language is often limited. Furthermore, many English words used for academic purposes are drawn from Greek and Latin, which makes it difficult for L2 learners to master, especially for those who do not speak French or Spanish (Read, 2000). A study conducted by Corson (1997) showed that low socioeconomic status monolingual English learners had poor knowledge of Graeco-Latin words because those words are infrequent in everyday speech and also many of them refer to concepts that are abstract (as cited in Read, 2000). L2 learners who do not speak languages that originate from Greek or Latin, are in a similar situation as those English learners. In addition, producing academic essays is different from writing personal accounts because the former requires *transforming knowledge*; L2 learners have to be aware of how to process information and transfer it by using effective vocabulary (Hinkel, 2004). Therefore, if these learners do not have a broad range of productive vocabulary knowledge, they cannot produce the types of writings expected of them in an academic setting.

Some L2 learners resort to memorizing long lists of words, looking up the meaning in dictionaries, and asking the meaning of words from native speakers; however, these "shallow" approaches to vocabulary learning may be less effective (Schmitt, 2000). Furthermore, L2 learners seldom have opportunities to learn new or unfamiliar vocabulary in a context. This leads to experiencing lexical gaps when using the target language and the inadequacy of L2 learners to express ideas or concepts in the target language, which they may be able to do in their L1 (Read, 2000). Hence, L2 learners are not native-like when they carry out productive activities because they are impeded by their limited lexical capability.

Studies have shown that language instructors rate the lack of vocabulary knowledge as one of the most serious in students' writings and that L2 learners feel that the quality of their writing is influenced by their lack of vocabulary knowledge (Nation, 2001). Learners'

diction choices play a crucial role in presenting their ideas clearly in their academic writing to their readers. Poor linguistic control can lead to linguistic coherence problems and misinterpretation (Allison, 1995). Because the choice and correct form of vocabulary will affect the quality of writing, a reader's judgment about the writer's ability is also affected, as it was found in a study related to lexical proficiency and quality of writing: "... readers took lexical error into account when assigning a quality score." (Engber, 1995, p. 150). A study carried out by Vann, Meyer & Lorenz (1984) found that errors made by ESL learners which were not commonly made by native speakers of English were less acceptable by faculty members. Similarly, faculty members in interviews conducted by Johns (1991) stated that vocabulary was one of the problem areas in academic literacy for ESL learners. In another study by Rosenfeld, Leung and Oltman (2001), undergraduate faculty rated vocabulary skills as one of the top three criteria needed by non-native speakers to be successful in their writing (Hinkel, 2004). Duskova (1969) found that 23% of errors in essays written in English by Czech learners were lexical items; with the exception of articles, this was the most error-prone area (Schmitt, 2000).

Systematic instruction seems to play a predominant role in L2 learners' development of receptive and productive word knowledge as well as learners' production of academic texts (Hinkel, 2004). Laufer (1991) found that university students did not significantly increase their productive vocabulary when there was no systematic instruction to vocabulary learning: "There is a tendency for learners to favour simple, general and frequent words in production" (Goodfellow, 1993). Some may even resort to the avoidance or paraphrasing strategies in their writing by not using low frequency words (Read, 2000). The 2000 most frequent words of English are adequate for learners pursuing academic studies (Nation, 2001) but this alone will not allow them to use the target language to convey their ideas effectively in academic writing. With the acquisition of a wide range of vocabulary, including the *Academic Word List*, undergraduate ESL students will have the option of using and

experimenting with many different kinds of words when completing their writing tasks in an ESL setting and/or their area of specialization. With the advancement of technology in language learning, the use of concordance can aid L2 students in the acquisition of the much-needed vocabulary.

### **The role of concordance in vocabulary acquisition**

According to Stevens, concordancing is beneficial for language learning because the new or unfamiliar word will be seen in a context rather than in isolation (Stevens, 1995). He has proposed three main reasons for using this tool in language learning, which include authenticity, learner autonomy, and data-driven learning. Concordancers are immensely rich because they are based on a corpus made up of texts from various domains of writing and media, for example, informative writing on sciences and art and also imaginative writing; material from books, periodicals and other published or unpublished discourses ( Flowerdew, 1996). The concordancer is a tool for learners to search linguistic features and patterns commonly occurring in everyday speech or written discourse in real-world situations. As shown in Figure 2.1, the word “significant” is the search item and it is presented in the center of each line that is displayed on the computer screen. It is highlighted and in some concordances, learners can click on the word to see it in a complete sentence from the text it originated. L2 learners need to know how a word is most frequently used rather than the prescriptive rules of using it. They will see the vocabulary as used in a real-world, authentic context rather than “myths and distortions that are too easily perpetuated from one generation to another of dictionaries, grammar and coursebooks” (Johns, 1994, p.296).

Figure 2.1: A screenshot illustrating a sub-sample of the concordances found for the word *significant*

Show the nature and amount of any significant accounting adjustments by the combination party the item relates. For a significant acquisition disclose: profit or other method of accounting. For a significant acquisition disclose the following while education was the single most significant activity the employers of Advanced together with an explanation of any significant adjustments made where the merging has been adopted, explain any significant adjustments made to the amounts of mark, predation by lobsters may be significant. Adult lobsters have no difficulty that the Channel Tunnel will offer significant advantages to cross-Channel travellers therefore expected to devote a significant amount of air-time to the running of et al. (1984) have found that a significant amount of the immigration was from

Concordancing is advantageous because of the rich, systematic and open-ended supply of data that encourages learners to explore and discover the language patterns. L2 learners become autonomous learners when they examine the search item by themselves without relying either on their own or their instructors' intuition regarding the use of a certain vocabulary item. Furthermore, learners can select the word they are unsure of and study the rules of the word usage inductively, while experimenting with its use in their writings. Hence, the process of exploring and selecting encourages learners to become more independent learners and they will have a greater opportunity of choosing the most appropriate vocabulary required in the given situation. Based on constructivist learning theory, it is believed that learners are more likely to transfer knowledge gained through such experience, "... knowledge encoded from data..." compared to knowledge transmitted or taught to them by instructors (Cobb, 1999, p. 15). This is because the finding of a solution by an individual becomes an integral part of the individual whereas knowledge transmitted by others bears little connection to the individual's personal experience (Gruender, 1996). Knowledge of vocabulary acquired through definitions of words looked up in a dictionary or thesaurus cannot be transferred to productive use (Cobb, 1999) unless the learner is aware of the usage. ESL learners come across and are very often exposed to high frequency words in their daily tasks but time and opportunities are limited for them to improve their academic

lexical power in productive knowledge. This knowledge is essential for academic purposes and can be improved if learners are guided systematically by choosing the much-needed vocabulary and “in creating optimal conditions for the acquisition process” (Groot, 2000, p. 60) which is possible with the use of a concordancer.

In a study conducted on a group of students using adapted version of lexicographers’ activities, it was found that concordancing could replace lengthy and time-consuming contexts for learning and transferring of word knowledge (Cobb, 1999). While language learning is an on going process for native speakers of the target language, L2 learners do not have the privilege of learning the same amount of language in a short period of time. In addition, according to Cobb just as lexicographers have put together an immense amount of data for searching words or phrases and their meanings in a short span of time, L2 learners can use concordancers in the same manner. Thus, data-driven learning will make them autonomous learners and also provide them the opportunity to act as researchers. In addition, concordances can reduce the length of time needed to acquire the academic vocabulary.

Table 2.1 below, presents a summary of past studies related to the use of concordance programs for language learning. Studies 1, 3 and 4 are related to vocabulary learning while studies 2 and 5 address issues on self-directed learning and grammar rules, respectively. All of the studies on vocabulary learning had positive outcomes. The participants were either foreign language or second language learners and they were all college students.

Although the present study was based on past studies where a concordance program was used to teach vocabulary, it is different in many respects, such as type of vocabulary, group treatment, and data collection. First, there was no specially designed concordance program for this study, but instead the on-line *Compleat Lexical Tutor* concordance program and the academic word list was used. Second, both the groups had access to an on-line dictionary but only the treatment group had the availability of the concordance program

when they were engaged in the vocabulary tasks. And finally, process data was used to examine the extent of concordance use by the participants.

The summary of the studies (Table 2.1), suggests that concordancing does benefit NNS in the acquisition of new vocabulary (e.g., Gan, Low & Yaakub, 1996) and the transfer of this knowledge to novel texts (e.g., Cobb 1999). The participants in these studies were treated with vocabulary based on a specific corpus, such as students' reading materials (e.g., Cobb, 1997) and students' written texts (Turnbull & Burston, 1998).

Table 2.1: Overview of studies related to the use of concordance

Study/Author	Rationale/Research Questions	Method	Result/Conclusion
1. Breadth and depth of lexical acquisition with hands-on concordancing By Tom Cobb (1999)	EAP requires students to learn a wide range of vocabulary in a short time	Experimental group used a modified concordance interface, while the control group used dictionaries.	Students using the corpus-based tutor could define the words and transfer the knowledge to novel texts.
2. Towards independent concordance work for students: Lessons from a case study By Jill Turnbull and Jack Burston (1998)	Learner autonomy and integration of methods	Students did corrections for English expressions using the concordancer	Different learning styles influence the degree of success, thus guidance is recommended. Concordancing and corrective feedback can be integrated.
3. Is there any measurable learning from hands-on concordancing? By Tom Cobb (1997)	Are concordances from a computer screen beneficial if the task is to learn new words?	Students used a modified concordance to complete 5 activities and learned 20 new words per week.	Multi-contextual learning from the text and screen enhances vocabulary learning and encourages transfer of word knowledge.
4. Modeling teaching with a computer-based concordancer in a TESL preservice teacher education program By Siowck Lee Gan, Freddie Low and Noran Fauziah bte Yaakub (1996)	Comparing the effectiveness of computer-based concordancing exercises and the conventional instructional	Participants were divided into 2 groups following either a computer-based concordancing activities or the conventional approach.	The data shows that the concordancing approach is more effective than conventional methods of teaching vocabulary
5. Concordancing in the language classroom By Irene F.H. Wong, Dorothy Cheung and Lai Phooi Ching (1992)	A concordance-based approach on discovering the patterns of English grammar	L2 learners used Tim John's Micro-Concord to focus on forms, articles or both.	Concordance is not effective for all types of grammatical items

In the present study, no particular corpus was used to determine the words to be taught, but instead words that are relevant to students' academic writing from the *Academic Word List* were chosen for all the activities. The pretest and posttest in the study by Gan, Low & Yaakub (1996) were based on instructional objectives, which included 22 multiple-choice, fill in tables and fill-in-the-blank format items, but in the present study the pretest and posttest consisted of 30 multiple-choice items which were used to determine if participants would improve their receptive knowledge of the academic vocabulary.

Previous studies that answered research questions related to vocabulary acquisition in an ESL and EFL setting (e.g., Gan, Low & Yaakub, 1996; Cobb 1997, 1999) did a comparison study by using a specially designed concordance program and no-concordance program treatments. In contrast to this design, the eighteen participants in the present study were enrolled in an ESL academic writing course; the control group had access to an on-line dictionary while the treatment group had the opportunity of using the on-line dictionary in addition to Tom Cobb's *Compleat Lexical Tutor* concordance program based on the British National Corpus (BNC). This concordance program was used because it had a built-in section that was based on a written corpus. Thus, it was appropriate for the participants to examine how certain words were used in writing. The goal of this treatment was to see if participants were able to use the headwords correctly in the vocabulary and writing tasks.

Most of the past studies in Table 2.1, except for the study carried out by Gan, Low & Yaakub (1996), did not mention learner training in using a concordance. In the present study, participants in both the control and treatment groups were trained for two class sessions in the use of the concordance program. The rationale for it was to give the treatment group an opportunity to familiarize themselves with concordance strategies and "to achieve optimal results" (Flowerdew, 1996, p. 112) when using the concordance program.

While the study by Turnbull & Burstn (1998) investigated both the independence of the learner and corrective feedback, the present study looked at the extent of concordance

use. It also focused on the influence of the concordance use on learning outcomes. Interaction between participants and the concordance program was recorded in the study by Cobb (1997), which suggested that the number of interactions was lower when there was a concordance to read. The present study was both product- and process-oriented because it focused not only on the development of vocabulary but also the process participants went through to achieve the scores in the posttest and vocabulary tasks. The improvement in the posttest scores would determine if participants improved their receptive word knowledge. The scores in the vocabulary task and participants' ability to use the word knowledge appropriately in the writing task would provide information on the benefits of using a concordancer; this was product-oriented and was to answer research questions number 1, 2, and 3. Interaction between the computer and participants was recorded by Camtasia software to see if the participants did indeed use the concordancer at all and if they did, was it used exclusively or together with the information from the dictionary or in a different manner. In this way it was also a process-oriented study and the information on interaction was to answer research question number 4.

## **METHODS AND MATERIALS**

In this chapter, I will provide explanation of the participants that were involved in the study, the development of the vocabulary list, the design of the activities, and the procedures used to collect and interpret the data. A pilot study of the research materials was conducted in the summer of 2003 which informed changes in the assessment tools and learner training.

### **Participants**

There were 18 participants in this study and they agreed to participate after being informed that all the activities would be carried out during their regular class time. All of them had TOEFL scores of 180 to 250. They were undergraduate students who had previously sat for the English Placement Test (EPT) that tests the ability of international students to understand and use the American English in an academic setting as required by Iowa State University. One of the requirements in passing the test is the use of appropriate vocabulary. Since the participants had demonstrated an inadequacy in the level of the language needed in composition writing, they had to enroll in the writing course for ESL undergraduates (101C) for a semester to help them improve their writing ability.

The participants, 11 males and 7 females, were mainly from Korea, Indonesia, Malaysia, and Hong Kong. Three each were from Thailand, Mexico and Norway. Their English language learning experiences varied because some had begun learning it as early as the age of three while some began much later. Most of them learned the English language in their elementary and middle school, but four of the participants – three from Hong Kong and one from Malaysia – started their language acquisition at the ages of three and four. The English language was learned mainly as a subject in school.

Although their TOEFL scores ranged from 180 to 250, the participants' current proficiency in writing academic texts in English was basically similar because they were placed in the 101C course based on the results of the EPT. From the post-questionnaire, it

was evident that the students in this study had had no experience with using a concordance except for one participant from Korea. But their responses also indicated that they felt competent in using computers to surf the Internet for pleasure and/or academic purposes.

## **Materials**

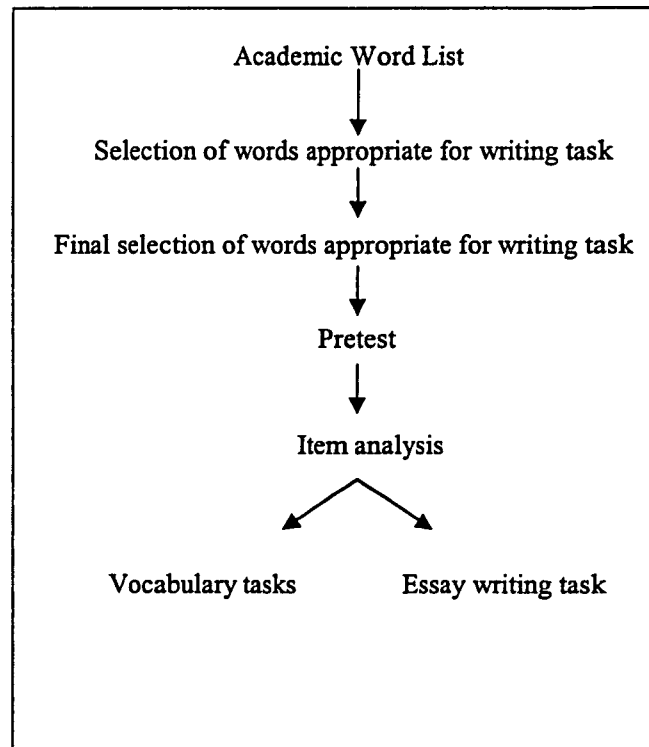
The materials used in the present study consisted of computer software and printed materials. The printed materials were a vocabulary list, a questionnaire, a pretest, a cloze activity, a sentence-building task, a writing task, a posttest, and a post-questionnaire while the software included a concordance program, an on-line dictionary and a screen capture software application, Camtasia.

### **Vocabulary list and Concordance**

All the words used in this study were selected from the *Academic Word List* by Coxhead (2000). The *Academic Word List* is a list of 570 word families taken from a 3,500,000 word corpus of four different groupings which are Arts, Science, Law, and Commerce, that occur frequently in academic texts. The fourth writing assignment for 101C students is “Analyzing an Issue”, which requires students to write objectively on a controversial topic. This particular assignment was used as part of the writing task in the present study. The selection for vocabulary to be used in the present study was done step by step by first selecting the most appropriate vocabulary needed to do the writing task, “Analyzing an Issue”. It was carried out by three language professors and the investigator who had had the experience of teaching the 101C course. Figure 3.1 shows the process flow chart. From the 570 words, words that were judged to be beneficial for the fluency of the writing task by at least three of the instructors were chosen; they totaled 73 words. Finally, to further improve the inter-rater reliability, another instructor with 15 years experience of teaching ESL including the 101C course was asked to select 30 words from the list of 73 that

were most likely to be used and most appropriate to complete the writing task. These 30 words (Appendix A) were the basis of all the activities carried out in this study.

Figure 3.1: Selection of words for the tasks



The on-line concordancer chosen for this study was Tom Cobb's *Compleat Lexical Tutor* which has the ability to query the BNC written corpus. A written corpus was necessary because the present study focused on academic word knowledge and the transfer of the word knowledge to academic writing. Selection criteria for texts in the BNC written corpus is according to the domain, medium, and time (<http://www.hcu.ox.ac.uk/BNC/>). Domain is largely based on informative writing from fields such as sciences, art and world affairs and a small portion is based on imaginative writing; medium includes books, periodicals and other published and unpublished material; most of the texts are from the same period.

*Dictionary.com* was the on-line dictionary used in the study.

## Questionnaire

All the participants were handed a consent form after the study had been approved by the Human Subjects Committee at Iowa State University. They were asked to complete a questionnaire (Appendix B) to find out their years of exposure to the English Language, about their vocabulary learning strategies, and experience with concordancing. One of the questions asked was if participants try to use in their writing a new or unfamiliar word that interests them. This question tried to find out students' reaction toward new vocabulary. Another question was based on students' perception of the influence the lack of vocabulary knowledge had on their writing. This would affirm if participants were aware that vocabulary knowledge had an effect on writing skills.

## Pretest

The pretest (Appendix C) included all thirty words. Each item had four sentences, only one of which used the headword correctly. Participants were asked to choose the sentence that used the headword most correctly. Most of the options for each item were about the same length and used similar word forms to refrain from giving "unintentional clues" (Brown, 1996, p 55). Each option had enough context for participants to understand the meaning of the word but not too much for them to be able to guess the correct answer without actually having any receptive knowledge of the word (refer to Appendix K for task justification). This pretest was used to test the receptive academic vocabulary knowledge of the participants, which according to Nation, for example, with the word "underdeveloped" includes:

- being familiar with its written form so that it is recognized when it is met in reading
- knowing what the word means in the particular context in which it has just occurred
- knowing that there are related words like *overdeveloped*, *backward*, and *challenged*.
- being able to recognize that *underdeveloped* has been used correctly in the sentence in which it occurs

- being able to recognize that words such as *territories* and *areas* are typical collocations

(Nation, 2001, p. 26)

The pretest was to determine the words participants could recognize and which words from the total of the selected 30 would need to be focused on in the vocabulary tasks.

### **Cloze**

An item analysis was conducted on the scores of the pretest to determine if the items were well written so that they tested the required content (Brown, 1996). Based on item difficulty (IF) and item discrimination (ID), 23 items were selected for the cloze.<sup>1</sup> It was necessary to select the items in such a manner as to retain the reliability of the test items and to have a fair distribution of items for the low, intermediate, and high achievers.

The cloze activity was based on the cloze used in the pilot study during the summer of 2003. A study done by Nist and Olejnik (1995) found that the average item difficulty for multiple choice questions was more than 8.0 while it was 0.63 for sentence completion (Nation, 2001). The reason for having both the sentence completion and multiple choice format in the cloze task was to minimize the difference between participants' learning preferences (Appendix D). Some students may be able to do better by relying on their previous knowledge and testing their hypotheses while others may prefer to have a wide range of choices to infer from, and look for collocations as in the case of the multiple choice items. The distractors for the cloze were all from the same word list, the academic word list, from which the items had been selected (Read, 2000).

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<sup>1</sup> IF refers to the percentage of participants who answer an item correctly and ID is the level where an item divides the high achievers and the low achievers. The higher the IF, the easier the item and vice versa. ID helps to discern the students who perform well from those who do not. The 23 items selected for the cloze through item analysis had IF of 0.2 to 0.85 while the ID ranged from 0.2 to 0.8.

### **Sentence-building**

The sentence-building task (Appendix E) consisted of the same 23 words determined through the item analysis. This activity was a control-free productive task where participants had to construct a sentence containing the headword. They were also asked to write the word form of the word in the sentence. This step was to ensure the participants were consistent in the meaning of the word used in the sentence. Although composing a sentence with the target word is not the best way to investigate if participants actually understand the target vocabulary (Read, 2000), it must be noted that in the present study, this was a vocabulary learning activity and not a test. The rationale for doing this activity, as stated by Read, was that participants could demonstrate their understanding of the meaning, the collocation of the target vocabulary and if they could use it productively. Furthermore, this activity would allow participants to practice the target vocabulary to prepare them to use those words in the following activity, the essay writing task.

### **Writing Task**

In order to allow participants to demonstrate their productive knowledge, they were handed the list of the 23 academic words and encouraged to use them in their essay, on the topic “Analyzing an Issue”. Participants were asked to explain an issue from both viewpoints in about 550 words and to use at least four published sources as reference (Appendix F). Example topics such as , “Is the age of 18 an appropriate legal drinking age?” and “Advantages and disadvantages to children using the Internet” were given to the participants. They were also shown transparencies of examples of “Analyzing an Issue” written in the past by other 101C students: “Toxic or Tonic” and “Speed Limit on the Highway.” The participants were free to choose any topic that could stimulate a debate or discussion among students. This essay is part of the 101C syllabus and was not specially designed for the present study. In this way, it was a very authentic task for participants; they were under no pressure from the instructor or researcher to use the words or the dictionary

and/or concordancer. The academic vocabulary chosen for the present study was relevant to the writing task in that depending on the topic, at least some of the 23 words could be used to enhance the essay. This writing activity was to investigate the transfer of the academic word knowledge that they had acquired through the past two vocabulary tasks, the cloze and sentence-building. According to Schmitt, when participants produce the vocabulary knowledge on their own accord, only then is “productive mastery” demonstrated (Schmitt, 2000, p. 169).

### **Post-questionnaire**

The post-questionnaire (Appendix G) consisted of 10 questions requiring participants to elaborate their experience with computers, whether the concordancer or/and dictionary was beneficial in completing the vocabulary tasks and if the participants made use of the dictionary and/or concordancer in writing the essay. Responses to this questionnaire were to facilitate the research data and understand the participants’ feelings towards using the concordancer in all the vocabulary and essay writing tasks and also in the future.

### **Procedure**

The activities of this study were conducted during the participants’ regular class time; every week the participants met twice in a regular classroom and once in a computer lab. As presented in Table 3.1 below, the training session and questionnaire were conducted by the 101C instructor in the computer lab to which they were assigned once a week, while the vocabulary tasks were conducted by the investigator in another computer lab. Participants completed the pretest and posttest and were handed the essay assignment sheets in their regular classroom. The essay writing task was completed by participants outside of class-time although they regularly met the course instructor for guidance.

Table 3.1: Overview of Procedure

Date	Activity	Location	Facilitator
Oct. 17, 2003	1. Filling in consent form 2. Completing questionnaire 3. Introduction to concordancer	Computer lab 073 Ross	1. Course instructor 2. Investigator
Oct. 22, 2003	Pretest	Classroom	Course instructor
Oct. 31, 2003	Activity to familiarize with concordancer	Computer lab 073 Ross	Course instructor
Nov. 7, 2003	Cloze task: 1. Treatment group 2. Control group	Computer lab 312 Ross	Investigator
Nov. 14, 2003	Sentence building task: 1. Treatment group 2. Control group	Computer lab 312 Ross	Investigator
Nov. 17, 2003	Essay writing task, <i>Analyzing an Issue</i> , is handed to the participants	Classroom	Course instructor
Dec. 3, 2003	Posttest	Classroom	Course instructor
Dec. 5, 2003	Collection of essay writing task through e-mail	N/A	1. Course instructor 2. Investigator

For the training session, after a brief introduction to the present study, participants were introduced to the concordancer and dictionary on-line. In the first session, participants were given a step-by-step account on how to use the Compleat Lexical Tutor; they were also provided instructions that were posted on the instructor's webpage (Appendix H). Words such as "memorial" and "memorable" were looked up on the concordancer and a demonstration investigation showed how they were indeed different in meaning and collocation. During the second session, students were asked to carry out a vocabulary search activity by using the concordancer and dictionary on-line (Appendix I). They were asked to choose any two words and to guess the meaning of these words from the string of sentences in the concordancer. Then they had to compare their guesses with the meanings found in the dictionary and construct a sentence each. Another activity involved words that the instructor had found to be problematic for the students based on their previous writing assignment. In this activity, students looked for collocations and patterns of usage for the words: "capable" and "able"; "a lot of" and "any of". Some of the questions asked were:

- Which word follows “capable” a majority of the time?
- Is this word ever used immediately after “able”?

Unlike the training session, during the pretest and posttest, participants were instructed by their teacher not to refer to each other, any dictionaries, or the concordancer. All of the participants were given 40 minutes to complete the pretest and posttest, respectively. During the vocabulary activities, participants met with the researcher in a different computer lab. The computers were tested and set up with the required programs, concordancer and/or dictionary, by the researcher three quarters of an hour before the activity began. Every participant was assigned to a computer; the number of the computer was written on their vocabulary sheets. After a brief introduction, participants completed the cloze task in 30 minutes. The treatment group was aided by Tom Cobb’s *Compleat Lexical Tutor* and *Dictionary.com* but the control group had only the availability of the on-line dictionary to complete the cloze activity. Both groups completed the tasks at separate times on the same day. The sentence-building task was conducted a week after the cloze activity, following the same procedure and time limit as before. Participants were not restricted on the word form and were encouraged to get ideas on the use of the headwords in sentences found in the concordance and dictionary but were cautioned against plagiarism.

Following the completion of both the vocabulary tasks, the course instructor administered the writing task, “Analyzing an Issue”, during the regular class time. The students brainstormed on topics that would be of interest to them and then they were assigned to groups that were interested in writing about the same topic; the essays were written individually and not during class time. Similar types of essays written by former 101C students were shown on transparencies to give the participants an idea of how to write the essay. Participants traded their essays with people outside of their groups to do peer review. Likewise, they also traded their essays within their groups but did not do a written peer review; they just carried out a discussion on what they had written to get feedback from their

fellow members. The list of the 23 academic words that the researcher was investigating was given and the course instructor encouraged the participants to use them in the essay. Prior to handing in their papers to the instructor, the participants presented their essays orally to the class. From the 18 participants, 13 sent the essays by e-mail attachments while 5 handed the essays in hard copies to the researcher. After that, participants completed the post questionnaire administered during their regular class time.

## Analysis

The data collected from the pretest and posttest, the vocabulary activities, and the essay were analyzed through descriptive and inferential statistics employing a t-test. Table 3.2 gives an overview of the analysis. The analysis of each research question is discussed in greater detail below.

Table 3.2: Research questions and analysis of data

Research question	Data	Analysis
1. Do ESL learners acquire receptive word knowledge better if they use an on-line concordancer and a dictionary compared to those who use only an on-line dictionary?	Pretest and posttest scores	Participants' receptive vocabulary knowledge Descriptive and inferential (t-test) statistics
2. Is academic vocabulary used correctly in vocabulary tasks by ESL learners who have access to an on-line concordancer and dictionary compared to those using only an on-line dictionary?	Cloze and sentence building scores	Correctness of academic words in vocabulary tasks Descriptive and inferential (t-test) statistics
3. Do ESL learners who learn vocabulary with an on-line concordancer and dictionary transfer the knowledge correctly to their writing task as opposed to learners who learn only with an on-line dictionary?	Percentage of correct word use in the essay writing	Participants' transfer of word knowledge to academic writing Descriptive and inferential (t-test) statistics
4. Does an ESL learner's look up behavior with an on-line concordancer influence his/her receptive and productive word knowledge?	Posttest scores Score of words used correctly in the essay Recordings of interaction with the computer	Participants' scores and interaction with the on-line dictionary and concordance program

### Research Question 1

Participants answered the 30 items of the pretest and posttest on the question paper itself by circling the best answer from the options marked, “A”, “B”, “C”, and “D”. A score of “1” was allocated for the correct response and “0” for an incorrect answer. Then, the tests were scored again to eliminate the 7 academic words which were not included in the vocabulary tasks and writing task based on the item analysis following the pretest. This new score was rated upon 23 and was the overall score which was taken into account to compare the performance of participants in the pretest and the posttest.

The significance of difference in the mean of pretest and posttest scores were measured with a t-test. This was utilized to see if there was a significant difference in the performance of the pretest and posttest of the treatment and control group.

### Research Question 2

There were two vocabulary activities, the cloze and the sentence-building task. For the cloze, one point was allocated for each correct response; the total score was 23 points. The sentence-building task had an overall score of 46 points; each sentence was graded for grammaticality and meaning (Table 3.3) adopting the criteria Read used for vocabulary assessment (Read, 2000).

Table 3.3: Rating criteria for sentence-building task

Score	Reason	Example
0	If participants indicate that they do not understand the word or confuse the word with a word similar to the target word	Our proposal of the event has been <b>justified</b>
1	If participants indicate that they understand the meaning but there is a problem with form or grammatical structure	Water pollution <b>affect</b> marine life
1	If grammatical structure and form is correct but the context is inappropriate	Most people <b>conduct</b> morally
1	If sentence is too short and there is not enough context that demonstrates the participant's knowledge	That is the <b>valid</b> number
2	If participants indicate that they know the meaning, the word is in a correct context, and grammatical structure	His <b>interpretation</b> of the sentence is not the same as ours

The sentences were first graded by the investigator, followed by the course instructor<sup>1</sup>. A Pearson product moment correlation coefficient was used to calculate the inter-rater reliability. Both the cloze and vocabulary scores were added to conduct a t-test<sup>2</sup> to see if there was any significant difference between the mean score of control and treatment group.

### Research Question 3

Data was collected on the number of words used by each participant in the essay, “Analyzing an Issue.” Two raters, the investigator and the course instructor, were assigned to grade the sentences which contained the target vocabulary in order to maintain reliability of the score. The criteria used were the same as for the sentence-building activity. Inter-rater reliability was calculated by using correlation. Following that, a third score was derived by eliminating scores which were not consistent between the two raters by allocating a “0”, and 1 point to sentences that had consistent scores. This was the overall score and inferential statistics were used to analyze it by using a t-test.

### Research Question 4

Recordings with the Camtasia software (Figure 3.2) were used to investigate the interaction of the treatment group with the on-line dictionary and the concordance program, *Compleat Lexical Tutor*. The cursor tool was highlighted in yellow to track the movement of a student’s interaction with the computer. The look-up behavior of each participant was examined to see if the words referred to in the concordance program and on-line dictionary during the vocabulary tasks corresponded with the words answered correctly in the posttest and if these same words were integrated correctly in the writing task, “Analyzing an Issue.”

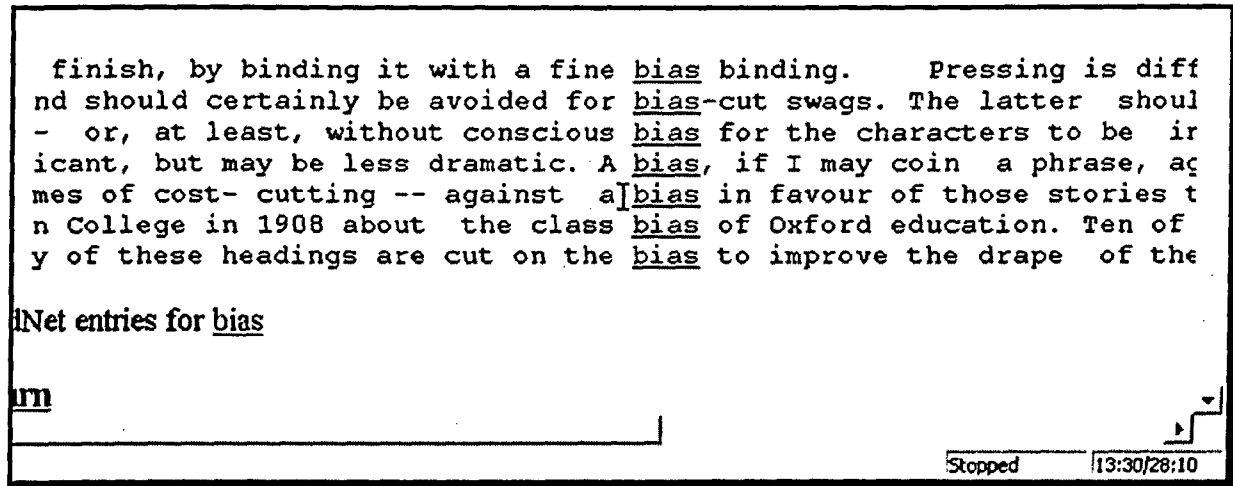
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<sup>1</sup> The mean for scores allotted to the treatment group by the investigator was 27.2 (SD=7.48) and by the instructor was 32.6 (SD=5.88). For the control group, it was 27.4 (SD=11.3) and 33.3 (SD=8.6), respectively.

<sup>2</sup> The investigator is aware that conducting multiple t-tests can lead to Type I error whereby the null hypothesis is mistakenly rejected.

This was to establish the influence of concordance use on receptive as well as productive word knowledge.

Figure 3.2: Screen shot with Camtasia software



I have outlined the development of the materials and the methods of the present study in this chapter. The procedures to collect and analyze the data were also presented. In the following chapter, results obtained from this study will be presented and discussed.

## RESULTS AND DISCUSSION

The research questions in this study focus on the acquisition of academic word knowledge and the transfer of the knowledge to academic writing through the use of concordancers. In the previous chapter, I presented the research materials needed, the methods involved and the procedure to analyze the data. Now, I will present and discuss the data obtained in the study. The first research question investigates the benefit of using a concordance program in vocabulary acquisition. The next question compares the correct use of words in vocabulary tasks between the two groups while the third question examines the transfer of word knowledge to academic writing. The final question investigates the influence of concordance use on learning outcomes.

### Research Question 1

The main question of this study compares the acquisition of academic word knowledge of ESL learners who used the concordance and a dictionary with those who used only a dictionary to learn the words. This question was answered by comparing the mean scores of the pretest and posttest of both the treatment and control groups.

Table 4.1 below shows the mean scores of the pretest and posttest for the treatment and control group. The average score for the pretest of the treatment group was 16.89, while for the control group it was 14.78. For the posttest, the average score for the treatment group remained the same but it increased to 16.89 for the control group. While the treatment group remained consistent in its scores, the participants in the control group improved their scores in the posttest with an overall increase of 19 points. But a one-tailed t-test showed that there was no significant difference in the improvement.

Table 4.1: The pretest and posttest scores

Treatment			Control		
Participant	Pretest	Posttest	Participant	Pretest	Posttest
1	19	19	10	20	19
2	19	19	11	16	16
3	14	13	12	8	11
4	13	14	13	15	18
5	15	14	14	17	20
6	19	18	15	20	19
7	21	20	16	15	18
8	17	19	17	11	16
9	15	16	18	11	15
Total	152	152	Total	133	152
Mean	16.89	16.89	Mean	14.78	16.89
SD	2.76	2.67	SD	4.12	2.76

Although the participants were randomly assigned to the treatment and control group, the control group participants had a lower achievement in the pretest. Again, a one-tailed t-test was conducted based on the pretest scores, to see if the participants in both the groups were in fact different to begin with. But the t-test results suggested that this was not the case as there was no significant difference between the treatment and control group in the pretest scores.

This research question was based on the claim that the more exposure and interaction there is in looking up a new or unfamiliar word the better the acquisition of the word will be on the part of the learner. During the cloze and sentence-building activities, participants would have interacted with the words and text to generate intrapersonal interaction (Ellis, 1999). Since the treatment group was given an extra tool, a concordancer, it was expected that their performance in the posttest would improve significantly compared to the control group. The reason was that the participants would have had more opportunities to look up the meanings of the words in isolation, in the dictionary, and in context by using the concordance. Surprisingly, the treatment group did not make any gains from the pretest to the posttest mean score. This is contrary to my hypothesis which was that the increase of

exposure to the words during the vocabulary activities through the concordance and dictionary would further improve the group's receptive knowledge of the academic words.

One of the possible reasons for the mean score of the treatment group remaining constant may be that the participants had to divide their time between the concordance and dictionary while completing the vocabulary activities, and the cloze and sentence-building tasks. So, the time spent for looking at the words in context in the concordance was limited; participants did not browse deeper into the concordance sheets to see each word in the whole sentence and paragraph. This means their intrapersonal interaction with the word was minimal which led to no increase in the posttest performance.

Another possible reason is the treatment group participants were asked to specifically use the concordance together with the dictionary to complete the vocabulary activities. This does not mean that they were pressured to use the concordance; some participants referred to it more than the others but the "requirement" of using this tool may have made them feel constrained and to lose the novelty of using the concordance program. Thus, the lack of improvement in their receptive vocabulary knowledge.

Furthermore, there were more low achievers in the control group when compared to the treatment group. These participants, mainly participants 12, 17, and 18, made more gains from the pretest to the posttest than the other participants within the group. Their gains contributed to the overall score of the group's posttest score. In a study done by Knight (1994), it was found that low achievers made more gains by looking at the dictionary than did participants who were high achievers (Read, 2000).

From this finding, it cannot be concluded that learners who use a concordancer and a dictionary can acquire academic vocabulary better than those who only use a dictionary. However, there is also no evidence that those who refer to a dictionary can acquire the vocabulary better because the gain in the posttest by the control group was not significant.

## Research Question 2

The second research question investigates if ESL learners who had access to the concordancer and an on-line dictionary used the words correctly in the vocabulary tasks compared to those who used only the on-line dictionary. To do this, the cloze and sentence-building scores of both the groups were compared. It was to investigate if accessibility to concordances and dictionaries influenced the correctness of academic words used in vocabulary tasks in comparison to the use of dictionaries alone. Table 4.2 shows the mean scores of the cloze and sentence-building activities for both the groups.

Table 4.2: Cloze, sentence-building and combined scores of vocabulary activities

Treatment				Control			
Participant	Cloze	Sen-build	Combined	Participant	Cloze	Sen-build	Combined
1	23	39	62	10	13	28	41
2	21	41	62	11	17	13	30
3	9	20	29	12	11	14	25
4	13	25	38	13	17	29	46
5	21	30	51	14	19	37	56
6	21	30	51	15	19	42	61
7	22	34	56	16	18	38	56
8	22	35	57	17	17	28	45
9	16	19	35	18	12	26	38
<b>Total</b>	168	273	441	<b>Total</b>	143	255	398
<b>Mean</b>	18.67	30.33	49	<b>Mean</b>	15.89	28.33	44.22
<b>SD</b>	4.87	7.81	12.12	<b>SD</b>	3.06	10.01	12.94

Participants in the treatment group outperformed the control group in each of the tasks and also in the overall performance as is shown in Table 4.2. The treatment group had a total of 168 points in the cloze activity and 273 in the sentence-building task as compared to the control group who scored 143 points and 255 points for the cloze and sentence-building tasks, respectively. The data show a difference of 43 points in the total score of the vocabulary activities between both groups. To establish whether the difference in achievement was statistically significant, a one tailed t-test was conducted on the mean of the total scores. However, it was found not to be significant ( $p = 0.208$ ).

But it cannot be assumed that those who were in the treatment group made full use of the concordance (C) and/or dictionary (D) during the completion of the vocabulary activities. All participants had only 30 minutes to complete each activity. The treatment group participants had limited time to refer to the concordance program and also the on-line dictionary. This is consistent with the findings in a study by Cobb, where he found that students in the experimental group had a lower number of interactions with the concordance program but they made a larger gain (Cobb, 1997). The control group in the present study had more opportunity to make optimal use of the on-line dictionary compared to the treatment group whose time was divided between the two different tools. It is also possible that the treatment group did not use the concordance to look up words in context as much as they were expected to do. This was because they were more familiar with the on-line dictionary compared to the concordancer. To elaborate this further, recording of the interaction of each group with the on-line tools can be examined. Table 4.3 presents the data on look-up behavior of participants in relation to the concordance and dictionary.

Table 4.3: The use of concordance and dictionary by both groups, ordered by achievement level

Level	Participant (Treatment)	Total Score	The use of C	The use of D	The use of C & D	Participant (Control)	Total Score	The use of D
High	1	62	13	16	29	15	61	26
	2	62	7	7	14	14	56	1
	8	57	2	8	10	16	56	18
Average	7	56	6	2	8	13	46	9
	5	51	6	4	10	17	45	23
	6	51	6	23	29	10	41	11
Low	4	38	13	13	26	18	38	17
	9	35	7	6	13	11	30	5
	3	29	7	16	23	12	25	12
Mean			7.44	10.56	18			13.56
SD			3.50	6.86	8.66			8.19

Overall, participants in the treatment group referred to the dictionary more than they did the concordance; the average use of the concordance was 7.44 (SD = 3.50) as opposed to the dictionary, which was 10.56 (SD = 6.86). Each participant made use of the reference tools at varying degrees except for participants 1, 2, 4 and 9 whose number of interactions with the concordance and dictionary were quite close. Participant 1 referred to the concordance program 13 times but he looked up the on-line dictionary 16 times while engaged with the vocabulary tasks. But participant 8, whose total vocabulary score was 57 points, interacted with the concordance program twice and 8 times with the on-line dictionary. Similarly, the dictionary look-up behavior of the control group participants was also varied; there was no correlation between the overall score and the number of interactions with the dictionary.

My hypothesis was that treatment group participants who used the concordance together with a dictionary would perform better in the vocabulary activities because they had a wide choice of examples to follow. Although these participants scored higher scores than the control group, their achievement was not statistically significant. One possible reason for this result could be that since the concordancer was not fully exploited by the treatment group, generalizations regarding the influence of concordance in the correctness of word use in vocabulary activities cannot be made.

### **Research Question 3**

The third research question addressed the transfer of academic word knowledge to academic writing by both groups. This research question attempted to find out if the use of concordance and dictionary by the treatment group in completing vocabulary tasks had led the students to transfer the word knowledge correctly to their writing task as compared to the control group. Participants did not complete the writing task during class time although they were guided by their instructor through feedback and class discussion during every class

session for two weeks. Every participant was given the list of words they had practiced in the vocabulary tasks and were encouraged to use those words to lend fluency to their essays. The research question was answered by comparing the number of academic words used correctly in the writing assignment, "Analyzing an Issue," by both groups.

The sentences containing the target words were graded by the researcher and the course instructor independently by following a rubric. Two points were allocated for words that were correctly used and one point if there was either a grammatical or usage problem. No point was allocated if it was wrongly used. Pearson product moment correlation coefficient was used to calculate the inter-rater reliability; the overall reliability was 0.68. Finally, an agreement was reached on both the scores and a total set of scores was derived by awarding only one point for the correct use of word in each sentence and zero for that that was wrong.

Table 4.4: Number of target words attempted by both groups

Group	Words Attempted	Mean	SD	Correct Words Used	% of Correct Word Use	Mean	SD
Treatment	36	4.00	4.64	28	78 %	3.11	3.59
Control	33	3.66	2.34	22	67 %	2.44	2.50

Note. N = 18 \* P < .05

Both the groups attempted to use the words in their writing task but the treatment group made more attempts and had more correct words compared to the control group. As presented in Table 4.4 above, the mean of words used was 3.11 (SD = 3.59) for the participants in the treatment group, whereas it was 2.44 (SD = 2.50) for the control group. In a second language situation, learners need to encounter the target vocabulary in a variety of contexts to enable them to use it correctly (Gan, Low & Yaakub, 1996). The treatment group had the availability of the on-line concordancer as well as the dictionary when completing the

vocabulary activities. The use of concordance is argued to encourage discovery learning (Nation, 2001) which may contribute to the transfer of word knowledge to writing. Similarly, the percentage of correct word use by the treatment group was higher than the control group's.

A one-tailed t-test compared the percentage of correct word use by the participants in the treatment and control groups. The treatment group significantly outperformed the control group. This result suggests that the application of the concordance program together with the on-line dictionary by participants in the treatment group while completing the vocabulary tasks did have some impact in the transfer of academic word knowledge. The treatment group made more attempts and also had a higher percentage of correct word use compared to the control group.

When attempting the vocabulary activities, the treatment group looked up the definitions of words in the on-line dictionary and also had the opportunity to see the target vocabulary in the concordance as it is commonly used. They internalized the meanings of the words and also the use of them in context; the experience of interacting with both the tools and seeing the words in varied contexts helped them build a connection with some of the words. On the other hand, the control group has access only to the on-line dictionary to see the definition of the target word during the vocabulary activities. Word knowledge learned from definition is difficult to be transferred to new contexts because the knowledge usually remains "inert" (Cobb, 1999).

Nation (2001) concludes that while it is relatively easier to improve one's vocabulary knowledge, it is not an easy task to use this word knowledge productively. According to Laufer, encouragement and suitable tasks are some of the key elements that can help to push students' receptive knowledge into "active use." The treatment group participants were encouraged to use the concordance program in order to complete the vocabulary activities and also to use the list of academic words in their writing task. It must be noted that the essay

writing task was not specially designed for this study, but was a required writing assignment in the course participants were enrolled. Thus, participants has the opportunity to apply their word knowledge by producing it in an authentic task.

#### Research Question 4

The final question involves descriptive and process data (Chapelle, 2003, p.163). It was aimed at finding out whether the use of concordance influenced the productive and receptive word knowledge. To answer this question, data of posttest scores and the writing assignment of the treatment group were taken into consideration. In addition, recordings of interaction with the computer during the completion of vocabulary tasks were also examined. The recordings informed if and to what extent the participants referred to the concordance program during the vocabulary activities. The correlation coefficient between the posttest scores and the percentage of words participants had answered correctly was 0.69. The correlation is fairly strong and suggests that the use of C and CD did influence the posttest scores. This can be attributed to the fact that learners had made use of sources that were available to them and with repeated exposure, improved their word knowledge (Gass & Selinker, 2001). This can further be examined in Table 4.5 below.

Table 4.5: Percentage of correct words in posttest

Participant	1	2	3	4	5	6	7	8	9
Words looked up with C and CD	10	7	7	12	5	6	4	2	7
Percentage of correct words in posttest	90%	86%	57%	75%	20%	100%	75%	100%	71%
Posttest Score	19	19	13	14	14	18	20	19	16

Participants 1, 2, 6, and 8 had the highest percentage of correct words. These are the words they had looked up using the C and CD while completing the vocabulary activities and which they had also answered correctly in the posttest. Interaction with the concordance and dictionary may have helped them internalize some of the words and thus, they could answer correctly items containing those words in the posttest. The use of concordance and dictionary is complementary because participants looked up the meaning of a word in the dictionary and then referred to the concordance to see how it was used in a context. For example, participant 1 made use of the dictionary and concordance to look up words like “analysis” and “conducts.” He got both of these words correct in the posttest. It can be concluded that the concordance use does have an effect in improving receptive word knowledge.

To investigate whether the use of concordance affects productive word knowledge, the percentage of correct word use in the writing assignment and the interaction with the concordancer and dictionary during vocabulary activities were examined. Table 4.6 below, presents the data. The number of words participant 1 looked up in the C and CD during the vocabulary tasks was six but he used only four words correctly. There were altogether seven words looked up in the D and six were used correctly in the essay. Participant 4 looked up three words in the C and CD and used them all correctly in the essay. Similarly, she looked up only one word in the D during the vocabulary tasks and used that one word correctly in the essay. However, participants 2, 3, and 7 did not use any of the vocabulary in their essays. There was very little difference between the total number of words looked up in the C and CD during the vocabulary tasks and used in the essays correctly and between the words looked up in the D during the vocabulary tasks and used correctly in the essays; the total was twelve and ten words, respectively. Another way to investigate the concordance and dictionary usage is by examining each word used by every participant in all the activities (Appendix J).

From this data, it is inconclusive if concordance use in vocabulary learning will influence productive word knowledge. However it must be taken into consideration that this was a control-free writing task and students were encouraged but not required to use the target words. It is interesting to note that many students preferred to use “Moreover” or “In addition” in place of “Furthermore” in the writing task when the last was one of the 23 words that was selected for students to practice. In fact, “furthermore” is one of the most common linking adverbials in academic prose (Biber, Conrad, Leech, 2002). According to Hinkel (2003) it is common for second language learners to employ elements from conversational discourse instead of academic prose.

Table 4.6: Frequency of interaction and correct word use

Participant	1	2	3	4	5	6	7	8	9	Total
<b>1. Words used in essay</b>	13	0	0	5	3	10	0	2	3	36
<b>2. Words used in essay that were looked up in C and CD during vocabulary tasks</b>	6	0	0	3	1	3	0	0	2	15
<b>3. Number of words used correctly in essay</b>	4	0	0	3	1	2	0	0	2	12
<b>4. Words used in essay that were looked up in D during vocabulary tasks</b>	7	0	0	1	0	6	0	0	0	14
<b>5. Number of words used correctly in essay</b>	6	0	0	1	0	3	0	0	0	10

There is also a possibility that those who did not use any target words in the writing task, such as participants 2, 3, and 7, may not have found the target words necessary to

produce a fluent essay. Given that the selected vocabulary was not emphasized by the course instructor or investigator, these participants did not see the importance of using such vocabulary in their writing task.

## CONCLUSION

While this study did not find a significant effect of using an on-line concordancer together with a dictionary on acquiring receptive word knowledge, the results do give an indication that concordancing influences the transfer of word knowledge to academic writing. Transfer of word knowledge is beneficial for ESL learners to produce fluent academic writing. The findings in this study are also informative for future research. In this chapter, I will present the summary of the results, outline the limitations of this study, and give recommendations for incorporating the concordance in the classroom for vocabulary learning and give suggestions for future research in this area.

### Summary of results

The primary research question addressed the effect of using an on-line concordancer together with a dictionary in the acquisition of receptive word knowledge among ESL undergraduates. Pretest and posttest scores of both the groups showed that while the treatment group remained constant in its scores, the control group made an increase of 19 points. But the results indicated that the improvement in scores by the control group in the posttest was not significant. It is inconclusive if the use of an on-line concordancer together with a dictionary or using the on-line dictionary alone helps learners acquire receptive word knowledge .

The second research question asked whether access to a concordancer and dictionary would affect correct word use in vocabulary activities compared to only the availability of a dictionary. Again, the treatment group who had access to the concordance and dictionary outperformed the control group but the results suggested that this difference was not significant.

The third research question investigated if vocabulary learned with the use of concordance and dictionary would be transferred correctly to writing tasks in contrast to

vocabulary learned with a dictionary. Although both groups attempted to transfer the word knowledge to their writing task, the treatment group made more attempts and had a higher number of correct word use in the writing task. The results are significant and they indicate that ESL learners who have access to both the on-line concordance and dictionary when practicing vocabulary are likely to transfer the word knowledge correctly to their writing task.

The final research question made use of process data to determine if the use of a concordance program does influence receptive and productive word knowledge. There was a correlation between posttest scores and percentage of words answered correctly by students who had used the concordance and concordance together with the dictionary to look up those words. The results suggest that the use of concordance does affect receptive word knowledge. However, there was no conclusive evidence of the influence of concordance usage on productive word knowledge. The difference between the total number of words used correctly in the essay in contrast to whether the participants had looked up those words in the concordance and concordance together with the dictionary, or referred only to the dictionary during the vocabulary tasks, was minimal.

### **Limitations of the study**

This study is far from ideal and there are many factors contributing to it such as time constraint, lack of training, instruction of academic words, the use of an on-line concordance program, the monitoring of the writing task, and inter-rater reliability. Only 30 minutes were allotted for each vocabulary activity. This was mainly due to the fact that the activities were carried out in a different computer lab than where the participants usually met for the 101C course because this computer lab had the software for screen shots which was needed to capture the participants' interaction with the computer. Although they knew the location, some participants had other courses prior to the investigation session which caused them to

be late in arriving at the lab. This led participants to complete their activities in a hurry and in isolation without interacting with their friends. It would have been ideal if they had had more time to interact with the concordancer and on-line dictionary and also with their friends during the vocabulary activities.

The second limitation was that participants were trained in using the concordance only twice during their 101C class time. During the first training session, time was spent in filling in the consent forms and questionnaire, so that did not leave much time for the instructor and investigator to train the students in using the concordance. But during the second session, the instructor had structured the lesson carefully for the students to make optimum use of the concordance in completing some exercises. Because of the time constraint during the first session, participants did not get enough practice in familiarizing themselves with the concordance program and also did not have enough insight in exploring words in a concordance.

Another limitation was that learners were never taught the 23 words used in the vocabulary activities and writing task by the course instructor or investigator; they may or may not have known those words and the words were only practiced when they completed the cloze task and sentence-building task.

Yet another limitation was that the concordance program used was not a software program but an on-line program which was sometimes affected by Internet access problems. A number of participants became less motivated when they tried to look up a word in the concordance because the page was not displayed. These students seldom tried searching for that particular word again and switched to the on-line dictionary.

The fifth limitation is related to the writing task. The final writing of the task was done out of class time, although participants had to show their drafts to their instructor from time to time. It would have been appropriate if students could have been given access to the

concordance program and on-line dictionary and were monitored in completing the writing task.

The final limitation is about inter-rater reliability. The sentence-building task was graded based on a rubric by the investigator and course instructor; the instructor saw the grades awarded by the investigator before she graded the sentences. Then, both of them discussed the grades each of them had awarded and gave a final grade to each sentence. The inter-rater reliability between the investigator and instructor was very high. It may be possible that the instructor could have been influenced by the grades allotted by the investigator. The instructor, however, was more lenient in grading the sentences and gave a higher grade compared to the investigator.

### **Implications for vocabulary instruction**

Findings from this study supply valuable insights in planning and using the concordance as a research tool in vocabulary learning for ESL students. Many learners are unmotivated by vocabulary learning activities because they find them dull (Goodfellow & Laurillard, 1994) and data from concordances can be overwhelming for L2 learners. From the recorded interaction in the present study, it was observed that many participants used the dictionary more frequently than the concordance. Learners need comprehensible input for language acquisition to occur (Ellis et al. 1999) and if learners are to acquire vocabulary, the information provided should be accessible to them. Goodfellow and Laurillard also suggest that preparing concordancing materials should not be time consuming for instructors or uninteresting for the students. In addition, activities designed for vocabulary learning must be related to the students' experiences and needs. A major setback in selecting concordance material is the distortion of authentic data. It can be avoided if language teachers do not randomly select material and must have adequate knowledge of the required material and if there is distorted data, then students should be informed (Johns, 1994).

Self-evaluation is a key element in learner autonomy, which enables learners to monitor their progress and improve their skills. This is supported by one of the seven hypotheses needed in multimedia CALL which is for learners to notice errors (Chapelle, 1998) in their interlanguage. The act of producing output in the target language can lead learners to notice their shortcomings (Swain, 1998) either by comparing with the target language or just by themselves. According to Levenston, (1971, as cited in Gabel, 2001, p. 271) when learners produce linguistics patterns which are inconsistent with patterns of native English speakers, they are either using certain strategies to over indulge or it could be an avoidance strategy. In the present study, learners were not given the opportunity to examine their output. It would have better suited the needs of the participants to have them reflect on their writing through interpersonal or intrapersonal interaction and provide opportunities for them to use the reference tools to improve their essays. According to Chapelle (p. 24), it is necessary for learners to have someone attend to their output so that they try to “use the language to construct meanings for communication rather than solely for practice.” Luomo and Tarnanen (2003) created a self-rating instrument for L2 learners. They suggest that although such tools cannot replace feedback received from teachers, they are beneficial in helping students practice writing and reflect on their work. Students can be guided to evaluate themselves objectively to examine their interlanguage and how to improve in areas that they are weak in (Gabel, 2001; Hyland, 2002).

### **Suggestions for further research**

I will discuss several suggestions for future research in regard to the use of concordance in vocabulary learning for L2 learners such as time constraint and learner training, instruction of words, concordance program, and monitoring students. Table 5.1 presents suggestions that can be used to overcome the limitations in the present study.

Table 5.1: Suggestions for limitations found in the present study

<b>Limitation</b>	<b>Suggestion</b>
1. Time constraint and lack of learner training	Students should be given optimum opportunities to practice with the concordancer and ample time to complete the activities.
2. No instruction of academic words	Instruction is necessary for learners to see the importance of the words.
3. On-line concordance	Special program based on selected concordance data.
4. Writing task not monitored	Learners need guidance and motivation
5. Reliability	Be cautious when scoring written tasks

First, time constraints in the present study caused learners to have limited time in the completion of the vocabulary tasks and also lack training in making optimum use of the concordance. Although participants' responses from the post-questionnaire indicated that they had adequate time to complete the vocabulary tasks, 30 minutes is too short a time for participants to interact with on-line tools in order to answer all the questions. Participants should be given time to become familiar with tools to be used in a study to minimize any discrepancy that may arise due to lack of familiarity with the tools; students were more familiar with the on-line dictionary compared to the concordance program. Furthermore, participants should be made comfortable by lowering their affective filter to maximize output and learning to take place. This can be done by providing adequate time to complete the activities, a familiar surrounding, and opportunities for them to interact with each other.

Second, learners need to be informed on the importance of vocabulary that is required to enhance the fluency of their writing. Explicit systematic instruction by language instructors will guide L2 learners acquire such vocabulary and with the aid of concordance

programs, learners can explore the use of words in their writing. In a study on L2 relativization by Doughty (1991), the findings indicated that there was a significant positive effect of instruction on the treatment groups. If instructors want learners to focus on particular vocabulary, there needs to be intensive teaching of those words for learners to be able to use them productively (Nation, 2001).

A program based on selected concordance data will be more accessible to ESL learners compared to an on-line concordance which is immensely rich with information and overwhelming for some ESL students who are unfamiliar with the tool. In this study, although the vocabulary was carefully selected, no particular software was designed for students to refer. In fact, they used an on-line concordance program whereby the data was not filtered to cater to their needs. Furthermore, a specially designed concordance program will motivate and encourage learners to refer to authentic data compared to “words in isolation, or in the sentence level receptacle” that is less valuable (Clarke, 1992, p. 143).

Furthermore, motivation and learner behavior need to be considered because some students can perform well with ‘unsophisticated’ methods as found by O’Malley et al. (1985, as cited in Fan, 2003, p. 224). It is found that learners are not consistent in employing tools when left on their own to complete the tasks (Chapelle, 2003). Similarly, in the present study, the essay writing task was completed out of class time and responses from post-questionnaire indicate that learners made little, if any use of the concordance program on their own. It is also inconclusive if the use of a concordance program for vocabulary learning will affect productive word knowledge. Research related to the use of tools need constant monitoring of participants in completing their activities to examine the impact of such tools in productive word knowledge.

Finally, there must be reliability for results to be valid and to be used in making decisions. Although in research question 2, the use of concordance in using words correctly

in vocabulary tasks was not significant, caution should be taken so that scores that are not valid do not influence the results.

Further research is needed in regard to the effect of concordancing on vocabulary acquisition. Tools, motivation, and time constraints are some of the elements that need to be considered.

**APPENDIX A****List of Academic Words**

1. accommodate
2. affect
3. analyze
4. assume
5. concentrate
6. conduct
7. confirm
8. data
9. deny
10. document
11. evaluate
12. exploit
13. focus
14. furthermore
15. identify
16. illustrate
17. interpret
18. investigate
19. issue
20. justify
21. outcome
22. perspective
23. predict
24. reject
25. reveal
26. significant
27. specify
28. statistic
29. sufficient
30. valid

## APPENDIX B

### Questionnaire

Name: \_\_\_\_\_ (Male/Female) Country of origin: \_\_\_\_\_

Please answer the question and/or circle the answer that is applicable to your situation.  
You may choose more than one answer.

1. How old were you when you first began learning English?

\_\_\_\_\_

2. What was your TOEFL score?

\_\_\_\_\_

3. Are you familiar with the use of concordance in learning new vocabulary?

A. Yes

B. No

If your answer is "No" in question 3, skip the next question and go to question number 5.

4. Do you find concordancing helpful in learning new vocabulary?

A. Yes

B. No

5. How have you been learning new vocabulary?

A. With the help of dictionaries/thesauruses

B. Memorization

Other techniques (please specify): \_\_\_\_\_

6. Has the method you chose/wrote in No.5 been effective?

A. Yes

B. No

7. What is your problem in the process of learning new/unfamiliar vocabulary?

A. Using the new word in spoken language

B. Using the new word in writing activities

C. Others (please specify): \_\_\_\_\_

8. When you find a new word that interests you, do you try to use it in your writing?

A. Yes

B. No

Why?

\_\_\_\_\_

9. Is the lack of knowledge in using new/unfamiliar words a major obstacle in developing your writing skills?
- A. Yes
  - B. No
10. Do you think that your writing would improve greatly if you had a good grasp of new/unfamiliar words?
- A. Yes
  - B. No

## APPENDIX C

### Pretest

#### A vocabulary quiz

Name: \_\_\_\_\_

Instruction: Choose the sentence that uses the given word most appropriately. Then circle the best answer.

1. affect

- A. Studies show that a good education can **affect** students to look for jobs.
- B. Parents should **affect** their children to strive for excellence.
- C. The war in Iraq will **affect** the youngsters emotionally.
- D. Mosquitoes can **affect** us with the West Nile disease.

2. accommodating

- A. Last week, they began working on the **accommodating** project for the hotel.
- B. She is liked for her tolerant and **accommodating** nature.
- C. **Accommodating** scientists can conduct the research more precisely.
- D. He lost his investments because of his **accommodating** finances.

3. analysis

- A. I did an **analysis** in the apartment to search for my watch.
- B. Following the accident, John lost his mind **analysis**.
- C. During a tournament, an **analysis** of the participants will determine the winner.
- D. Your **analysis** of the manager's role in curbing white-collar crimes was enlightening.

4. assumption

- A. The underlying **assumption** of this theory is that all people are equal.
- B. Yesterday, a group of professionals began the **assumption** of a new seminar.
- C. There is evidence that some people have an **assumption** of their future.
- D. The government plans to improve the economic **assumption** of the society.

5. conduct

- A. We need volunteers to **conduct** the new program.
- B. Can you **conduct** the machinery in the basement?
- C. During a test, the sprinklers may not **conduct** efficiently.
- D. **Conduct** the computer safely.

6. confirmation

- A. An excellent performance is **confirmation** for a good job in the future.
- B. They received **confirmation** that the cargo had arrived safely.
- C. The supervisor made **confirmation** to the workers to quickly complete the project.
- D. Good food is **confirmation** to a healthy life.

## 7. concentration

- A. There is a strong **concentration** among people to believe in superstition.
- B. I received a low **concentration** on this essay.
- C. There is a **concentration** of wind in the room.
- D. There is a high **concentration** of drug addicts in this area.

## 8. data

- A. He is poor in his math skills because he does not know the **data**.
- B. This theory is not supported by any relevant **data**.
- C. We store picture **data** in a photo album to remember the good times we had.
- D. Her money **data** is forty dollars and ninety cents.

## 9. deny

- A. They must **deny** papers to print.
- B. **Deny** your car in the parking lot.
- C. We cannot **deny** reality anymore.
- D. He will **deny** his book at home.

## 10. documentation

- A. The increase in violence has led to the **documentation** of our responsibilities.
- B. The **documentation** of this room is 12 feet by 10 feet.
- C. We can sing loudly if we have the **documentation**.
- D. All the **documentation** for the trip must be filed.

## 11. exploit

- A. Children like to **exploit** new toys.
- B. When you **exploit** your siblings, they will appreciate you.
- C. The company plans to **exploit** the island's natural resources.
- D. Artists should **exploit** their art brushes to get the effect they want.

## 12. evaluate

- A. The salesperson plans to **evaluate** her skin; then she will buy the cream.
- B. Mother will **evaluate** her face because she has missed her so much.
- C. Farmers always **evaluate** insects with pesticide.
- D. Miners usually **evaluate** all the semi-precious stones into a large heap.

## 13. furthermore

- A. The valley is a hundred miles **furthermore** the railroad.
- B. **Furthermore** is the scenic countryside after the lake.
- C. The patient has recovered; **furthermore**, he is still ill.
- D. Our old school needs renovation; **furthermore**, the enrollment has increased.

## 14. focus

- A. Before the guests arrive, **focus** the dining table with the salads and dessert.
- B. Since he cannot find the file in the office, he will **focus** for it at home.

- C. The instructor also advised his students to **focus** on their weaknesses.
- D. The bold heading will not **focus** any problem to the elderly.

## 15. identify

- A. I **identify** that there is no future for them together.
- B. Later, the victim was able to **identify** the attacker in a lineup.
- C. I am going to **identify** my friend when I call her.
- D. He was skillful but the manager refused to **identify** him.

## 16. interpretation

- A. Games are a healthy **interpretation** for youngsters in this college.
- B. A wrong **interpretation** of the results can have dire consequences.
- C. **Interpretation** of the food is in the recipe book.
- D. Is there an **interpretation** among the leaders of the country?

## 17. illustration

- A. An **illustration** of such a case can be seen in this diagram.
- B. An obvious **illustration** is cotton because it falls into soft folds.
- C. The stuntman gave a live **illustration** of his skills.
- D. An educator should be a good **illustration** to his/her colleagues and students.

## 18. investigate

- A. I will **investigate** how to bake the cake from the chef.
- B. He plans to **investigate** \$2000 a year to prepare for his retirement.
- C. Whales **investigate** and eat krill in the ocean.
- D. Some experts **investigate** the psychological impact of war on children.

## 19. issue

- A. The discussion this week will include the **issue** of safety for refugees.
- B. His baby is teething; the **issue** is making the baby irritable.
- C. In every culture, a wedding celebration is a fun-filled **issue**.
- D. The accident **issue** has left him handicapped.

## 20. justify

- A. **Justify** the vase of lilies on the corner table.
- B. The new secretary is very dedicated; her colleagues **justify** her all the time.
- C. You handled the situation well and need not **justify** your actions to others.
- D. **Justify** the messy room before your mother returns.

## 21. outcome

- A. Our employer does not want us to spend our **outcome** unnecessarily.
- B. The government's decision had no **outcome** on the public
- C. Large windows give a bright **outcome** to this room.
- D. Everybody accepted the **outcome** of the discussion.

## 22. perspective

- A. When in doubt do not panic but look at the problem from a different **perspective**.
- B. This diamond is prettier because it is cut in a different **perspective** from the others.
- C. She got her **perspective** filled at the pharmacy.
- D. Animals are a **perspective** of jungle life.

## 23. predictable

- A. What is the **predictable** hotel that we plan to spend the night at?
- B. The series of murders show a clear and **predictable** pattern.
- C. Where did the engineer store the **predictable** plan for the bridge?
- D. New **predictable** books for teenagers are on the top shelf.

## 24. reveal

- A. **Reveal** the set of stationery in the case and store it in the cabinet.
- B. The document is so confusing that I find it difficult to **reveal**.
- C. The contents of the letter **reveal** a plea for help from his superiors.
- D. Students will **reveal** the assignments to be graded to their instructor.

## 25. reject

- A. Due to the high rate of mortality, the public did not **reject** the evacuation plan.
- B. The authorities plan to **reject** students involved in the hazing incident from school.
- C. **Reject** the plants and replant them in the new pot.
- D. Please **reject** the tape recorder before you leave the room.

## 26. sufficient

- A. The pair of jeans is not **sufficient** as it is too short.
- B. Computers are so **sufficient**; we can communicate with others around the world.
- C. We need **sufficient** funds to run the foundation.
- D. Life will not be **sufficient** without a new house.

## 27. statistics

- A. Count the **statistics** of the books in the cabinet and record them.
- B. **Statistics** sources for the world's population are large.
- C. We collected empirical **statistics** during the experiment.
- D. The **statistics** do not show any conclusive evidence.

## 28. specific

- A. We enjoy her **specific** company during gatherings.
- B. Only **specific** techniques are required to carry out the experiment.
- C. Since John is **specific** to the corporation, he is very highly paid.
- D. The old typewriter in the attic is **specific** to me as it belonged to my grandmother.

## 29. significant

- A. We visited a number of historically **significant** buildings.
- B. She bought a new suit to look **significant** for the graduation.

- C. Yesterday, robbers broke into the **significant** house of an actress.
- D. This vial is **significant** to the top with live bacteria.

30. valid

- A. My backpack is still **valid**; I will use it during the trip.
- B. The computer is not **valid** as it broke down yesterday.
- C. These vouchers are **valid** only for a couple of weeks from today.
- D. Children should avoid watching programs that are not **valid** for them.

## APPENDIX D

### Cloze

Name: \_\_\_\_\_

Computer No: \_\_\_\_\_

Use the given words to complete the sentences. Each word can only be used once.

reject	exploit	conduct	bias	furthermore	evaluate
focus	resolve	whereas	statistics	valid	issue
significant	justify	illustration	documentation	category	assumption

1. Since the former aeronautic theory has no \_\_\_\_\_ claim, it will not be accepted.
2. The authorities will \_\_\_\_\_ your application if they find that you have given incorrect information.
3. Experts need to \_\_\_\_\_ the artifact before it is exhibited and sold at the auction.
4. The latest \_\_\_\_\_ indicate that there has been a decline in the school enrollment.
5. Scientists plan to \_\_\_\_\_ research to find out the how the deadly disease spread from animals to humans.
6. They are happy with the decision of profit sharing; \_\_\_\_\_, this idea will enable both the parties to cover the losses they incurred last year.
7. Parents are divided on the \_\_\_\_\_ of using Maya Angelou's book in the English curriculum because some claim the book to be inappropriate for teenagers.
8. We need a \_\_\_\_\_ amount of difference in the data before making a conclusion.
9. The completed \_\_\_\_\_ of the new project will be submitted to the board of directors for approval.
10. This fine arts institution will \_\_\_\_\_ students' talents so that they can perform to their fullest potential.
11. In her lecture, she gave a wonderful \_\_\_\_\_ of how children can be motivated to read.

12. Your \_\_\_\_\_ about his motives cannot be based on his behavior because you have met him only once and you do not know him very well.

**For the following items, circle the best answer.**

13. In our camp, the food was not \_\_\_\_\_ to sustain us for another day. We were sure to die of starvation unless help arrived quickly.

- |                  |               |
|------------------|---------------|
| A. accommodating | B. sufficient |
| C. consenting    | D. converse   |

14. Leaders of that country should \_\_\_\_\_ the involvement of their troops in the neighboring country before the public loses confidence in the leadership.

- |            |            |
|------------|------------|
| A. justify | B. scheme  |
| C. credit  | D. predict |

15. I need to leave early. Please inform me of the \_\_\_\_\_ of this surgery.

- |             |                  |
|-------------|------------------|
| A. evidence | B. concentration |
| C. outcome  | D. ratio         |

16. A clear \_\_\_\_\_ of the clue in this text will help us solve the mystery.

- |                   |                 |
|-------------------|-----------------|
| A. assumption     | B. consent      |
| C. interpretation | D. significance |

17. His renewed \_\_\_\_\_ to withdraw from the agency caused chaos among the members.

- |                   |              |
|-------------------|--------------|
| A. identification | B. analysis  |
| C. confirmation   | D. affection |

18. The chimpanzees hid in the foliage, afraid to \_\_\_\_\_ themselves to the poachers.

- |               |            |
|---------------|------------|
| A. reveal     | B. justify |
| C. comprehend | D. valid   |

19. Checklists can help doctors \_\_\_\_\_ leading causes for heart attacks in women.

- |            |             |
|------------|-------------|
| A. submit  | B. identify |
| C. restore | D. edit     |

20. The governor's response during the press conference was uninteresting and \_\_\_\_\_.

- |                |               |
|----------------|---------------|
| A. constant    | B. innovative |
| C. predictable | D. specifying |

21. The water \_\_\_\_\_ results will confirm if the water is safe for public consumption.

- |             |             |
|-------------|-------------|
| A. ratio    | B. schedule |
| C. analysis | D. estimate |

22. Compared to the others, this solution contains the greatest mineral \_\_\_\_\_.

A. confirmation

B. comprehension

C. consideration

D. concentration

23. Poor attendance for the course will definitely \_\_\_\_\_ your final grades.

A. consent

B. benefit

C. enhance

D. affect

**APPENDIX E****Sentence-building task**

Name: \_\_\_\_\_

Computer No. : \_\_\_\_\_

**Make sentences with the given words. The word used in the sentence can be in any form (noun/verb/adjective/adverb). Please specify the word form.**

**1. affect**

\_\_\_\_\_

word form: .....

**2. analysis**

\_\_\_\_\_

word form: .....

**3. assumption**

\_\_\_\_\_

word form: .....

**4. concentration**

\_\_\_\_\_

word form: .....

**5. conduct**

\_\_\_\_\_

word form: .....

**6. confirmation**

\_\_\_\_\_

word form: .....

**7. documentation**

\_\_\_\_\_

word form: .....

**8. evaluate**

---

---

word form: .....

**9. exploit**

---

---

word form: .....

**10. furthermore**

---

---

word form: .....

**11. identify**

---

---

word form: .....

**12. illustration**

---

---

word form: .....

**13. interpretation**

---

---

word form: .....

**14. issue**

---

---

word form: .....

**15. justify**

---

---

word form: .....

**16. outcome**

---

---

word form: .....

**17. predictable**

\_\_\_\_\_

word form: .....

**18. reject**

\_\_\_\_\_

word form: .....

**19. reveal**

\_\_\_\_\_

word form: .....

**20. significant**

\_\_\_\_\_

word form: .....

**21. statistics**

\_\_\_\_\_

word form: .....

**22. sufficient**

\_\_\_\_\_

word form: .....

**23. valid**

\_\_\_\_\_

word form: .....

## APPENDIX F

### Writing Task

English 101C

Paper 4 Assignment Sheet

Fall 2003

**Due date: December 5, 2003**

Turn in your typed, double-spaced paper in one of your two-pocket folders along with all drafts and invention, self-evaluation questions, your classmate's comments, and copies of your sources. I will not evaluate a paper without all the required parts of the assignment.

In this paper, you will explain an issue from more than one perspective. The paper should present a balanced view, explaining the viewpoints of people on both sides of the issue. You should try to maintain an objective or neutral tone, regardless of your own position on the issue. You may indicate which viewpoint you support, but the paper should not be an argument supporting one side. You should use at least four published sources in writing your paper.

**Choosing a topic:** Try to find a topic that interests you personally. You may want to begin thinking about an issue that stimulates argument, discussion, or debate among your friends.

Be careful to choose a topic that can be seen from more than one perspective. For example, if you are interested in writing about nuclear power, your paper would not fulfill the assignment if it focused on how a nuclear reactor works or what new engineering advances are making nuclear power plants more efficient. These issues are factual, not subject to debate. On the other hand, the paper would fulfill the assignment if you looked at arguments both in favor and opposed to building new nuclear power plants. Similarly, if you are interested in writing about teen alcohol consumption, the paper won't work if your focus is a question like, "Is drinking excessive alcohol bad for a person's health?" No one would disagree on the answer to this question. Instead, in order to explore the topic from two sides, you could focus on a question such as, "Is the age of 18 an appropriate legal drinking age?" People do have differing opinions on this topic, so it would be possible to show more than one viewpoint on it. Your goal will be to present those differing opinions clearly and fairly.

As you choose a topic, think about pros and cons, advantages and disadvantages, positives and negatives, or strengths and weaknesses. Read through the suggestions on pp. 221-227 for ideas on the assignment.

**Using your Sources:** You will need to find **at least four sources**, which must be photocopied (or printed if they come from a website) and handed in with your paper. I will not be able to evaluate your paper unless you hand in your sources.

You will need to use your summarizing, paraphrasing, and quoting skills in referring to the writers' ideas. The paper should be organized around the points *you* wish to make, so try to weave the sources into your own ideas. The paper should not simply be four summaries strung together. The paper should include at least one direct quotation and at least one paraphrase. At the end of your paper, you will need to list your sources on a separate page following the correct format for documenting sources, described in Chapter 11.

### **Evaluation Criteria**

- The paper presents both sides of the issue fairly and accurately.
- The paper is organized around the writer's own explanations.
- The introduction interests the reader and forecasts the main points.
- The conclusion sums up the controversy and/or leaves the reader with something interesting to consider.
- The sources are quoted, paraphrased or summarized accurately without plagiarism.
- Bibliography is in appropriate MLA or APA form.
- The paper should be relatively free of distracting errors in language.

**Here are some topics that students have chosen in previous semesters:**

- **Sex education in secondary schools**
- **McDonald's expansion to other countries**
- **Home remedies (tonics)—are they good for you or bad for you?**
- **Advantages and disadvantages to children using the Internet**
- **The effect of TV violence**
- **The advantages and disadvantages of highly competitive school entrance examinations**
- **Positive and negative effects of students using credit cards**
- **Diet pills—the positive and negative effects on weight and health**

**APPENDIX G****Post-questionnaire**

**Name:** .....

1. How long has it been since you started using the computer?

---

2. What do you usually use a computer for?

---

3. Were you given ample time to complete the cloze and sentence building activities?

---

4. Which did you find helpful in completing the cloze activity: the dictionary alone, the concordancer or the combination of both?

---

Why?

---

5. Which did you find helpful in completing the sentence building activity: the dictionary alone, the concordancer or the combination of both?

---

Why?

---

6. Did you use any of the academic words (from the list I gave you) in essay 4?

---

7. Were those words helpful in writing the essay? How?

---

8. Did you use a concordancer to help you write essay 4?

If yes, explain how it was useful: \_\_\_\_\_

If no, why not? \_\_\_\_\_

9. Did you refer to a dictionary when you wrote essay 4?

If no, why not?

\_\_\_\_\_

10. Would you use a concordancer in the future?

What would you use it for?

\_\_\_\_\_

## APPENDIX H

### First training session

#### Using a Concordancer

Concordance, *n.*

1. Agreement; concord.
2. **An alphabetical index of all the words in a text or corpus of texts, showing every contextual occurrence of a word: a concordance of Shakespeare's works.**
3. Genetics. The presence of a given trait in both members of a pair of twins.

Source: The American Heritage® Dictionary of the English Language, Fourth Edition  
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As definition 2 states, a concordance is an index of words that occur in certain texts. If you have access to a large body of texts (a corpus) a concordance can be very helpful in helping to see how words are normally used in written language. The British National Corpus (BNC) is a collection of texts including newspapers, "periodicals and journals for all ages and interests, academic books and popular fiction, published and unpublished letters and memoranda, school and university essays". This corpus contains approximately 100 million words and is "designed to represent a wide cross-section of current British English, both spoken and written." (information from the [British National Corpus Homepage](#))

We'll be using a concordance provided at the Compleat Lexical Tutor to investigate words in the BNC as part of our vocabulary study. By using a concordance, you will be able to see the word in context--how it is commonly used in written English. This will give you an idea of how you can use it in your own writing. You may know the meaning of a word, but sometimes using it correctly in writing is difficult.

#### *Instructions:*

1. Go to [Compleat Lexical Tutor](#).
2. Under the heading **Research** in the center, choose **Concordance your words** and click on **Eng**.
3. For **Keyword**: type in the word you are looking for.

4. For **Select corpus**: select **BNC written**.

5. Leave the other settings as they are.

6. Click on **Search for concordances**.

\* For example, if I type in "ignore" and search for it, a concordance sheet with "ignore" in the center will appear. The sentences are not complete; only the part of the sentence which contains the word "ignore" will be shown. To see the entire context for a particular use of "ignore", click on it and a paragraph will appear.

\* If you want to see the word "ignore" associated with another word, you can do so. Go to "Option 1" and type in the word. For example, if I want to look up the word "cannot" associated with the word "ignore" I will type in "cannot" at Option 1. Then, I need to choose where the word "cannot" can be put in the sentence--left of "ignore," right of "ignore," or anywhere. Then I click "Search for concordances" as before

This page created with the help of Jagdish Kaur.

## APPENDIX I

### Second training session

#### Using a Concordancer for Vocabulary Learning

Name: \_\_\_\_\_

Two vocabulary words: (1)\_\_\_\_\_ (2) \_\_\_\_\_

- Using the Compleat Lexical Tutor's Online Concordancer (linked to the course homepage) do a search for each of your words. Based on the concordance results, guess the meaning(s) of your words. (If your word isn't found, guess the meaning on your own as best as you can.)
  - Guess (1)
  - Guess (2)
- Now using Dictionary.com (also linked to the course homepage) search for the dictionary definition of each of your words.
  - Definition for word (1)
  - Definition for word (2)
- Now write a sentence using one of your two vocabulary words:

Below are activities about words or phrases that posed problems for many students in Paper 2.

- "Capable" and "able" are similar in meaning, but are used quite differently. Open up the concordancer in two windows and do a search for each word using the BNC written corpus.
  - Which word follows "capable" a majority of the time? \_\_\_\_\_
  - Is this word ever used immediately after "able"? \_\_\_\_\_
  - Which word follows "able" a majority of the time? \_\_\_\_\_
  - Is this word ever used immediately after "capable"? \_\_\_\_\_

- Do you notice any other patterns in how these two words are used?  
\_\_\_\_\_
- Do a concordance search in the BNC written corpus for the phrase “one of”.
  - Look at the objects of this phrase. Are they generally singular or plural? (Be careful, the object can be modified by other words that immediately follow “one of”.)  
\_\_\_\_\_
  - Are there exceptions? If so, what are some of them? \_\_\_\_\_
  - When “one of” is used with these exceptions, does it seem to have the same meaning as it does usually? \_\_\_\_\_ Explain. \_\_\_\_\_
  - So, generally in your writing, should “one of” be followed by a singular object or a plural object? \_\_\_\_\_
- Do a search similar to the one described above with “a lot of” and “any of”.
  - Are their objects generally singular or plural? \_\_\_\_\_
  - If there are exceptions, can you discover a pattern in them? \_\_\_\_\_

## APPENDIX J

### Concordance and dictionary use

Participant	Word	C	CD	D	Pretest	Posttest	Cloze	Sentence building	Writing task
1	Affect		*		X	X	/	/	X
2	Affect	*			X	/	/	/	
3	Affect	*			/	/	/	/	
4	Affect		*		X	/	/	X	/
5	Affect	*			/	/	/	/	/
6	Affect			*	/	/	/	/	X
7	Affect				/	/	/	/	
8	Affect				X	/	/	/	
9	Affect			*	/	/	/	X	

Participant	Word	C	CD	D	Pretest	Posttest	Cloze	Sentence building	Writing task
1	Issue			*	/	/	/	/	/
2	Issue				/	/	/	/	
3	Issue	*			X	/	X	/	
4	Issue	*			/	/	X	/	/
5	Issue				/	/	X	/	
6	Issue			*	/	/	/	/	/
7	Issue				/	/	/	/	
8	Issue				/	/	/	/	/
9	Issue				/	/	X	/	/

### Key

C – Concordance

D – Dictionary

CD – Concordance & Dictionary

\* - tool was used

/ - word used correctly

X – word used wrongly

## **APPENDIX K**

### **Task Justification**

#### Pretest

In constructing the sentences, feedback from two language professors and students in the M.A. in TESL/Applied Linguistics program was taken into consideration in terms of sentence structure and clarity of the sentence so as not to confuse or mislead the students. This pretest was a revised version of the pretest used in the pilot study conducted in summer 2003. On-line concordancers and dictionaries were also used as reference to write the correct answers and distractors. For example, to construct a distractor for the headword “statistics” , a word that was close in meaning to it was looked up in the dictionary. Then, a concordancer was used to see how the word such as “data” that was closely related to “statistics” was used in a sentence. Finally, distractors were formulated based on sentence patterns that had the word “data” .

#### Cloze

Some items from the pilot study were changed depending on the item analysis while others were modified based on the feedback from three M.A students in the TESL/Applied Linguistics program. The items were randomly divided into groups of 12 and 11 to write the cloze; the first part consisted of 12 sentence completion with long sentence context items which had 18 supplied choices while the second part consisted of 11 long sentence context items with four multiple choice answers each. For the first 12 items, all of the supplied choices (correct answers and distractors) were in the same form as in the pretest. In the multiple choice task, the answers and distractors for each item were in the same word form because the rationale here was to test students’ knowledge of word use and not word form.

The options for the cloze were formulated the same way as the options in the pretest. Three M. A. students were given to complete the cloze and based on their feedback on sentence clarity and the logic of the given options, the cloze task was modified.

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