

DOES DATA-DRIVEN LEARNING
LEAD TO BETTER ACADEMIC
WRITING?

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ABSTRACT

Over the past several decades, the TESOL community in general has seen an increase in the interest in the use of data-driven learning approaches. Most of these have focused on the acquisition of vocabulary items, including a wide range of information necessary for their correct usage. One type of vocabulary that has been investigated has been that used mostly in academic writing. However, there has been little empirical study into the acquisition and use of two types of vocabulary common in academic writing, linking adverbials and reporting verbs. In addition, most studies into data-driven learning and academic vocabulary acquisition have assumed that the acquisition of this vocabulary will automatically lead to better academic writing. However, there have been no studies which have confirmed these assumptions. This study will attempt to fill these gaps in the literature. It investigates the acquisition of linking adverbials and reporting verbs, two sets of vocabulary that are difficult for ESL writers to master, with the use of data-driven learning techniques. In addition to looking at the acquisition of this vocabulary specifically, this study investigates whether these approaches also contribute to students' progress in their academic writing. Results indicate that data-driven learning techniques do in fact help students acquire and better employ linking adverbials in their writing, although they do not help in the case of reporting verbs. No correlations to increases in student essay scores were found. However, this study still shows the possible value of data-driven learning approaches to students' academic writing.

DEDICATION

This thesis is dedicated to everyone who helped me and guided me through this process, from beginning concept to final completion. This includes my committee upon whose advice I sought on multiple occasions, the research team who gave of their time to assist me. In addition, this thesis is dedicated to my friends and family, whose constant support and encouragement helped me through this process.

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1. INTRODUCTION

Over the past two decades, the general linguistics community has seen an explosion in the interest in corpora. These giant electronically stored collections of text have served to drastically change the way linguists investigate natural languages. No longer is linguistic research confined to the local context surrounding the linguist. Utterances spoken and texts written across the world can be compiled and accessed from anywhere, opening the entire world to linguists. In addition, the basis for analysis is no longer what comes to the researcher's mind or that which they find unusual. Instead, it is natural language situated within its natural context. This has led to a completely different approach to linguistic research, known as the usage-based approach. It has also led to new ways of looking at language, such as the marriage of lexis and grammar.

In a similar vein, the advancement of corpora has also had effects on the way language is taught. In addition to generating better ways of explaining language for language teachers, it created an entirely new approach to language pedagogy, known as Data-Driven Learning. This approach attempts to change the traditional roles of teacher and student in the classroom. The student is no longer an empty receptacle, simply receiving and repeating information. They become their own researchers, finding their own answers to their own language questions. The teacher is no longer a simple dispenser of information to be absorbed and regurgitated, but now becomes a guide, directing students in the correct direction in their research. This gives students the power of their own learning, enhancing their generalizing skills.

There has been a wealth of studies that have shown the benefit of Data-Driven Learning in areas of vocabulary and lexicogrammatical acquisition. However, there have been few to none investigating this approaches effectiveness in the context of the academic writing course for non-native speakers. This study will attempt to fill this gap in the literature. Specifically, this study will investigate the acquisition of linking adverbials and reporting verbs by non-native writers in an academic writing course using Data-Driven Learning approaches. It will do this by measuring the frequency of use, as well as the correct semantic, phraseological, and register usage for linking adverbials and reporting verbs found in student essays. In addition, this study will attempt to determine the effect of any significant changes found on the quality of the students' writing. By doing so, we may begin to see the value of incorporating Data-Driven Learning into the academic writing course.

1.1 Corpora and Data-Driven Learning (DDL)

Put simply, a corpus is a large body of real-world texts collected and analyzed by linguists to study actual language in use. This could refer to a collection of simple sentences, written texts, oral interviews, or any other pieces of language in use. However, the modern use of the word refers to collections of natural text that are stored and accessed electronically. Electronic corpora have the advantage of being able to hold and process large amounts of data; thus, they are much larger. There are further characteristics of the modern corpus that are important to note. The texts for the corpus are chosen and compiled according to the research purpose of the linguist doing the compiling. This purpose will influence the choice of texts for the corpus. For example, a linguist researching an aspect of applied linguistics journal articles would take texts from popular applied linguistics journals. Another important characteristic of corpora is that they are searchable. In other words, the researcher does not have to read the text

of the corpus linearly. He or she can investigate occurrences of specific lexemes and phrases throughout the corpus, no matter their place in the compiled text (Hunston, 2009).

The electronic corpus has revolutionized the way linguists approach language study. Before the wide availability of electronic corpora, most language researchers focused on the structures of the language. They identified the structural units and lexical categories available to speakers of a language. They analyzed how these units could possibly be combined to form larger units of meaning, such as sentences, paragraphs, and texts. Their focus was the theoretical possibilities of a language. By contrast, the approach taken by language researchers using corpora is more usage based. According to Biber, Conrad, and Reppen (1998), “From this perspective, we can investigate how speakers and writers exploit the resources of their language” (p.1). A Usage-based approach prefers to look not at the structures that are possible, but those that occur in the real world. It looks at the multiple structures in a language that are similar in meaning and function. It looks at how these structures might differ in less easily observable ways and what these slight differences mean to the text they occur in. With this approach, linguistic description can move from what is possible to what is actually done in language use. This provides a fuller and more descriptive account of language in the real world than the traditional method could ever provide (Biber et al., 1998).

While corpora and usage-based approaches to language study can reveal things the traditional method could not, a corpus by itself reveals nothing. Only with computer software designed to help users analyze text in the corpus can users begin to investigate important aspects of language. There are several ways a corpus can be searched. First, users can look at frequencies of use for certain lexemes. They can observe the most frequently occurring lexemes in a corpus, creating either general lists of words or lists of similar words. From this linguists could make

observations as to register differences. For example, frequency lists from corpora of different disciplines may contain different lexemes, indicating differences in subject matter as well as other more subtle discourse differences (Hunston, 2009).

Second, the contents of corpora can be examined through concordance lines, which are lines of text from the corpus with the lexeme of interest centered (Sinclair, 1991). This view allows researchers to see the phraseological patterns associated with that lexical item. This phraseology is important, because the meaning of the lexeme can be altered according to the possible lexico-grammatical patterns it can occur in. Example concordance lines are presented in Figure 1. Lastly, a corpus can be examined in terms of collocations, or tendencies of lexemes to co-occur. Researchers can investigate what lexemes tend to co-occur most often and how these co-occurrences alter the meaning or grammatical function of either lexeme (Hunston, 2009).

bowls, other items. Studies	<u>show</u>	that West African carvers are
at baseline. These results	<u>show</u>	that the moderating effect of
Previous research	<u>shows</u>	that companion animals are
of his analysis, Austin	<u>shows</u>	that a proportion of the credit
corruptions of power. James	<u>showed</u>	that the first argument
Overall, the findings	<u>show</u>	that intrinsic motivation

Figure 1: Concordance lines with the lexeme “show”

Corpus investigation has had a major influence on the ways linguists see language. Through corpus investigation linguists have been able to show that every lexeme is restricted in the phraseological patterns that it can occur in. Each one of those patterns of the lexeme has their own meaning or connotation (semantic prosody). If different phraseological patterns have different meanings, even when centered around the same lexeme, it follows that the phraseological pattern, not the lexeme, carries the meaning. Thus, grammar and lexis are not separate entities (Sinclair, 1991). This has led to most corpus-based grammar to follow a lexico-grammatical approach, focusing on the patterns and the lexemes that occur in them. Sinclair

(1991), based on these insights, hypothesized the idiom principle. According to him, “the principle of idiom is that a language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analyzable into segments” (p. 110). This is opposite of the open-choice principle, also proposed by Sinclair (1991), which states that all language is a series of complex choices (Sinclair, 1991).

An area also heavily influenced by corpora is language pedagogy. This influence has largely been on the descriptions and examples of language presented to learners. In regard to the descriptions, corpus research has given the instructor better understanding as to the workings of language. Phraseological patterning is one example of this. It also has helped language instructors in the English for Academic Purposes (EAP) field, as well as English for Specific Purposes (ESP). Corpus research in EAP and ESP can reveal the differences between academic and informal language, differences in discipline (e.g. political science and physics), or even different genres (e.g. journal articles and research reports). For example, Coxhead (2000) created the *Academic Word List (AWL)*, consisting of 570 word families frequently occurring in a 3.5 million word corpus of academic English. These word families were chosen because they (1) occurred across all subsections of the corpus, (2) occurred at least 100 times. Furthermore, they accounted for 10% of the tokens in the corpus, compared to only 1.4% of the tokens in a comparable corpus of novels. This type of information is essential for second language writers for several reasons. Academic vocabulary, such as that found on the AWL, is used in all academic texts across disciplines. It accounts for a substantial number of tokens in academic writing. This vocabulary is also not as well known as informal and specialized sets of vocabulary (Nation, 2001). Specialized vocabulary is also important because proper control and use of it positively influences a writer’s ethos as a member of a specific academic discipline (Swales,

1990). In addition to vocabulary issues, students in EAP and ESP courses have considerable difficulty with the grammar of academic writing. Corpus investigation could assist them and their instructors by showing how the professional writers in their field construct their own arguments.

In terms of corpus influence on examples of language presented to learners, it has made them more realistic. Before the widespread availability of corpora, most language teachers and textbook writers had to create examples from their own language intuition. While this was not wholly wrong or detrimental to students, it still had the effect of examples feeling more contrived and less realistic. The example sentences or phrases were often too simplistic and were restricted to the language classroom. However, the increase in corpus availability has allowed instructors and textbook writers to take real-world usage of language and integrate it into the classroom. With this the language of the classroom becomes real, and the artificial context of the language classroom is partially eliminated.

This entrance “from the backdoor”, as Bernardini (2004) puts it, of corpora in the classroom is not the only way corpora have forever changed language pedagogy. Researchers and language instructors have also looked at giving students direct access to corpora. This approach, known as data-driven learning (DDL) was delineated by Johns (1991), who claimed that “research is too serious to be left to the researchers” (p. 2). In this approach, the corpus becomes an informant, holding vast amounts of text available for study. The student changes from being a simple receiver of information to now being a language researcher, examining language evidence and reaching their own conclusions. The teacher, formerly an all-knowing dispenser of information, now becomes a coordinator of research, guiding the learner in their study of the target language. This approach gives the learner control, allowing him or her to form

his or her own hypotheses of language usage. It also moves language learning from a deductive approach to a more inductive one. Learners can better their ability to make individual generalizations from their encounters with the target language. This improved skill would not only be restricted to the language classroom. It would go with the learner when they leave the language classroom and allow them to continue their acquisition of the language in the real world without assistance (Bernardini, 2004; Johns, 1994).

Despite these benefits, DDL has yet to be completely accepted as a viable approach to language teaching. In fact, it still appears to be absent from the majority of language classroom. This is partly due to several issues in the implementation of the approach in the classroom. One main issue is that it is only suited for intermediate to advanced learners of English. This is due to the high level of linguistic knowledge a learner must already possess in order to properly make generalizations from the data. Flowerdew (2009) addresses four other key issues in the application of corpora to pedagogy: (1) DDL encourages more bottom-up rather than top-down processing, (2) corpus data are decontextualized, (3) DDL is inductive, which may not be appropriate for all learners, and (4) student difficulty in choosing the most appropriate corpora and resources. In DDL, concordance lines are often examined one by one in a somewhat fragmented approach. It excludes the macrostructures of a text that can influence the linguistic choices made by the writer (Kaltenböck & Mehlmauer-Larcher, 2005). As such, it leads learners to also ignore these higher order issues. Instead, they will reach conclusions solely on the basis of the small portions of text given to them in concordance lines.

A related issue is that of decontextualization of text in a corpus. When concordance lines are examined, the investigator, be it linguist, instructor, or learner, sees only the text itself. He or she does not see the context of the discourse. In other words, the communicative situation is

unknown to the learner, not allowing them to see the influence this has on the text (Braun, 2005). As a result, the samples of text taken from the corpus, despite being “real”, lack authenticity (Kaltenböck & Mehlmauer-Larcher, 2005). Students may see real language, but still have no understanding as to its use in authentic communicative contexts, nullifying any perceived benefits of DDL.

As stated above, DDL is tied to an inductive approach to language learning, where learners investigate real-world language use and create their own rules and hypotheses. While this may seem like the best approach to increase student autonomy, it neglects those learners who prefer more deductive approaches. Learners who prefer more rule-based instruction may not readily accept DDL approaches. Even if they attempt to use this approach, they may still have difficulty in creating their own generalizations. This difficulty is amplified when the concordance investigation is focused on linguistic elements, such as phraseology, that can only be properly investigated through inductive learning approaches. In addition, learners may be bombarded by conflicting examples, some conforming to generalizations and some not. This could lead to confusion on the part of the students, as well as false generalizations (Flowerdew, 2009).

The last drawback to DDL discussed by Flowerdew (2009) is the proper selection of corpora to consult. Corpora are constantly being created and expanded, and the number of corpus-based resources continues to increase. With this wealth of corpora and corpus-based resources, learners may be at a loss as to which one is appropriate for them and their research question. Without guidance from an instructor, they may choose the wrong one, causing them to reach false conclusions. The resource they choose may present data in such a way that the learner has to sift through too much “noise” for any generalization to be reached. Altogether, this may

leave the learner frustrated and likely to see corpora as useless to their language learning (Flowerdew, 2009).

These issues seem to put serious doubt into the pedagogic feasibility of DDL. However, each of these may be addressed through instructor intervention and guidance. Instructors could integrate corpus investigation into activities or lessons that move learners from top-down to bottom-up, or vice versa. Learners in a writing course could first become familiarized with certain rhetorical moves in writing through awareness-raising exercises or class discussions. They would then move onto corpus searches for the lexico-grammatical structures that are used to make these moves. Alternatively, learners could start by looking at concordance lines, then move beyond them to the overall text they come from. Loss of context in concordance lines could be mediated by the instructor, who could give students the context of the text. Learners could be told whether the concordance lines come from academic texts, newspapers, or informal conversation. The issue of deductive learning and DDL could be addressed by the instructor giving learners hints or clues as to what they should be looking for. Learners would then have a better idea as to the elements they should focus on and those that they can ignore. Lastly, instructors could guide the learners to the correct resources they need to consult. These methods of pedagogic mediation can ensure that students get the most out of DDL and reach their full potential as language researchers (Flowerdew, 2009).

Most empirical studies in the use of DDL have shown positive results. Cobb conducted two studies (1997, 1999) investigating the effect of hands-on concordancing on vocabulary acquisition. The first study used five computer-based activities grouped into one computer program. The program had two versions: one using concordance lines in each activity, and the other using no concordance lines. The activities, structured into steps, moved along three

continuums: from easy to difficult, from word-level to text-level, and from reception to production. They accessed a 10,000 word corpus consisting of 20 texts from the students' classroom readings. The vocabulary of interest were those that were judged to be unknown by the learners but were required for the exam at the end of their intensive studies. It would also determine whether they could enter English-medium courses the following year. In total, the list numbered at 240 words and was split into 12 smaller lists, one for each week of instruction. Cobb's results were broken into three components: a pre-test and a post-test, questionnaire asking them to rate the instructional materials, and weekly vocabulary quizzes divided between spelling and gap-filling tasks (Cobb, 1997).

The results seem to indicate that students' acquisition of vocabulary improved with the use of concordance lines. The pre-test and post-test showed a difference in score of 21.5% (pre-test: 33.5%; post-test: 55%). On their materials questionnaire students consistently rated the program higher than any other materials used in their study. The weekly quiz scores followed a pattern of alternate concordance and non-concordance learning. In other words, on average students scored higher in weeks in which students used concordances than the weeks when they did not. Despite a lack of test/control group comparison, Cobb believes these results to be promising for the use of concordancing for two reasons. First, the students spelling scores on their weekly quizzes did not fluctuate with the gap-filling scores, showing that the students were using the program. Second, the program recorded the time each student spent with it, as well as every interaction of every learner with it. These records showed that the students, while not spending considerably more time with the concordance lines, did do something more with the concordance program that contributed to their vocabulary acquisition (Cobb, 1997).

In his next study, Cobb (1999) attempts to show how concordancing can help students acquire a breadth and depth of academic vocabulary. He describes the dilemma facing second language students in academic courses as, “Students typically need to know words measured in thousands, not hundreds, but receive language instruction measure in months, not years. In this time-squeeze, vocabulary course developers have to choose between breadth . . . and depth” (p. 345). The objective of the study was to have subjects increase their vocabulary knowledge from 1,000 to 2,000 in an academic session. They were assigned 200 words every week for 12 weeks. This study used the same corpus and same program as the previous one. However, this one differed in that only one group of students used the program to create their own dictionaries. The other group, the control group, used a word list and dictionary. Again, a pre and post-test were conducted as well as weekly quizzes (Cobb, 1999).

Like his previous study, the results were promising. The control group, using word lists and dictionaries, experienced a strong gain in definitional knowledge. However, this knowledge was restricted to the short term. The control subjects also were not able to apply the learned words to gaps in a text. The test group also showed considerable gain in definitional knowledge. In contrast to the control group, this knowledge lasted past the short term. In addition, they were able to use this knowledge productively in the gap-filling quizzes. This included both the short term weekly quizzes and the long term post-test. These results seem to indicate that instructors no longer need to choose between breadth or depth of vocabulary acquisition. They can use concordancing to achieve both (Cobb, 1999).

Another interesting study in the use of hands-on concordancing in the classroom was conducted by Chan and Loiu (2005). For their investigation they chose knowledge and use of collocations by Chinese university students in an English freshman composition course. The

authors chose verb-noun collocations that had de-lexicalized verbs, where not congruent between Chinese and English, or those that were very similar semantically. The concordancing program itself was used in a web-based software program with five units, three using the concordancing program. The subjects took a pre-test before treatment, post-test immediately following treatment, and a delayed post-test two and a half months later. In addition, the subjects took a background questionnaire before and an evaluation questionnaire after treatment. This was designed to elicit student opinions of concordancing.

Comparing the pre-test and immediate post-test scores, the authors find that subjects made significant gains in their collocation knowledge. These results seem to prove that, in the short term, concordancing does aid learning of collocations. In the long term, the students did not retain all of their collocation knowledge, as evidenced by their lower scores on the delayed post-tests. Nevertheless, they still scored higher on the delayed post-test than on the pre-test, so some retention did occur. In addition, the authors found that the gain scores for the collocations taught using the concordance were higher than those taught without the concordancer. In regard to student attitudes to the corpus, the students overall saw the corpus as helpful. They did, however, comment on difficulty in locating appropriate answers.

In light of the current study, Kaur and Hegelheimer's (2005) investigation of transfer of academic words learned through concordancing is very important. They compared the use of concordancing with that of an online dictionary to learn vocabulary beneficial to fluency in writing. The choice in vocabulary was based on the type of writing assignment. The list totaled 30 lexemes. The subjects were all students in a freshman level composition course. They were divided into treatment and control groups, with the former receiving concordance instruction and online dictionary while the latter used just an online dictionary. The concordancing program used

by the control group accessed the written British National Corpus (BNC). The activities were integrated into their normal class time. Before treatment, the subjects were given a questionnaire eliciting information on their previous learning experience. They also took a pre-test in which they had to distinguish correct from incorrect usage in sample sentences. After treatment, they were administered a cloze post-test and a sentence building test. Most important to the study, the students were assigned a writing task as part of the normal course they were enrolled in. For this assignment they were given a list of the target vocabulary and encouraged to use them in their essay. Lastly, a post-questionnaire was given, asking their opinions of the concordance program and online dictionary.

In all of the post-treatment tasks, the test group did better than their counterparts in the control group. The differences in the two vocabulary tests, however, were not statistically significant. Subjects from both groups used the target vocabulary in the writing task, but the subjects in the test group used them more than the control group. They also used them correctly significantly more than the control group. The study failed to report the finding of the questionnaires. It also neglected to compare scores on the pre-test to either post-tests. Still, the results of the study seem to indicate that transfer of academic vocabulary knowledge from concordancing to productive academic writing is possible (Kaur & Hegelheimer, 2005).

Recently, Liu (2010) has completed a study in the use of corpora to treat lexico-grammatical errors in second language writing. Corpus consultation was integrated into an ESL academic writing course. Students were instructed in the search functions of the corpora being used and how to find lexico-grammatical usage information in the data. The areas of usage the students investigated were (1) collocations (including verb-noun, adjective-noun, verb-noun-adjective plus preposition), (2) word meaning, including connotations, (3) register, and (4) other

issues such as article usage and subject-verb agreement. Moreover, throughout the course students were advised to consult the corpus when they had questions about any lexicogrammatical issues. The instructors of the course also advised students to consult the corpus to address errors in their writing. When needed they would provide guidance to students regarding procedures they needed to use in their investigations. There were two instruments used for analysis in the study. The first was a questionnaire in which they ranked which lexicogrammatical issues the corpus was most helpful in addressing. The second was a 40 question error correction exercise. It was divided into without corpus assistance and with corpus assistance, with subjects receiving only 20 questions at a time.

Students ranked collocations as the most conducive to DDL approaches, followed by use of prepositions, word meaning, register information, use of articles, and, last, subject-verb agreement. Overall, the students did significantly better in correcting the errors in the test with the corpus than in the test without the corpus. Looking at each category specifically, the corpus was significantly effective in helping students correct errors in all categories except article usage. This effect was sizeable in all categories, with collocation error experiencing the largest, followed by idiom error, register error, and preposition error. Liu (2010) attempts to explain the difference in effectiveness between collocation and article correction. He points out that once an article is noticed as missing or unnecessary, there is no need to consult a corpus to correct it. In contrast, collocations errors are conducive to corpus search because the tools of the corpus allow the user to quickly find collocation information.

Several of the above studies, in addition to the acquisition of vocabulary through DDL techniques, attempted to elicit information regarding student attitudes toward them. Three studies (Yoon and Hirvela, 2004; Sun 2007; Varley 2009) made this their main target of investigation.

The first study surveyed two classes of students, one labeled “Intermediate” and the other “Advanced”. They were instructed in searching the corpus and interpreting the data they receive from it. There was no specific list of target vocabulary; rather, the corpus was introduced as a problem-solving tool designed to help student improve problem areas of their writing. At a later stage of the course, the students were given a Likert-style survey broken into two parts. The first part elicited information as to the student’s background knowledge. The second was designed to elicit the students’ attitudes towards the corpus instruction, including usefulness and difficulty of use. Semi-structured interviews were also conducted with four students.

Overall, the results of the surveys indicate that students saw the corpus as beneficial to their writing. Students in both classes felt that using the corpus helped their use and understanding of vocabulary, use of phrases, writing skill, grammar, and increased their confidence. They also saw the advantage of corpus investigation in reading, although not as much as the other areas. Their attitudes towards the corpus activities in the classroom were also positive. It must be noted that in the all the above cases the ratings given by the advanced class were generally lower. There are several reasons for this result. It can be assumed that since the advanced students had a higher level of vocabulary and grammar knowledge, they did not receive as much additional knowledge as their intermediate counterparts. Second, the students in the advanced group indicated that they were less satisfied with the results of their corpus inquiries. This makes it understandably difficult for them to rate the corpus in a positively light.

The students’ responses to problems encountered in their corpus work tended to fall in the middle of the scale. In other words, students tended to see the corpus as neither too difficult nor too easy to use. Still, there were some problems that the advanced class rated as more difficult, such as concordance output, search techniques, and overflow of sentences. The authors

account for this result by pointing out that the intermediate group received more direct instruction in corpus use because of their lower level. Hence, they were more comfortable with the corpus. The responses in the interviews with the four students tended to fall along the same lines as the survey results. All four interviewees, while reporting problems with corpus work, saw the corpus as helpful (Yoon and Hirvela, 2004).

The second study investigating student attitudes toward DDL (Sun, 2007) focused on the use of a concordance program by doctoral students in Taiwan. The subjects, twenty in total, were taking a course in academic writing. The concordance program was integrated into the course and was used to find lexical and grammatical elements used to accomplish certain rhetorical moves in academic writing. For example, each concordance example was accompanied by information regarding the discipline and article section it comes from and the rhetorical move it accomplished. At the end of the course the subjects were given a seventeen item Likert-scale survey, eliciting evaluation of the program as well as opinions regarding its helpfulness. The author also interviewed three subjects, all of whom were currently writing theses or dissertations. The survey results showed that students had little difficulty with the program and saw it as beneficial to their writing. The interviewees seemed to echo the opinions on the surveys, with one or two of them also mentioning some difficulties they had with the program (Sun, 2007).

The subjects in Varley's (2009) were assigned individual research projects using a corpus. They were to choose a genre of spoken and written English and investigate the usage of two to four lexico-grammatical features. Before the project, they were given a questionnaire to elicit information regarding their learning strategies and preferences and attitudes toward computer assisted language learning. During their work on the project, they were required to keep a reflective log recording their thoughts on the strategies they were using. They were also

asked to make comments on their evaluation of the information they were gaining from the corpus and compare that to other resources (e.g. dictionaries or grammar texts). Five students were further chosen to take part in a discussion group. The results of all three seemed to corroborate the results found by Yoon and Hirvela (2004) and Sun (2007). Students overall felt that the corpus was helpful in their language learning, with some suggesting they would use it in future studies. They also noted that the largest problem they had was the overabundance of examples.

These studies all point to the fact that DDL is beneficial to students in academic writing courses. They show that the use of corpora and concordance lines leads to better knowledge of lexico-grammatical patterns, academic vocabulary, and register differences. They also suggest that students generally respond well to DDL approaches, regardless of previous experience or preferred learning style. There still is, however, two aspects of DDL in academic writing courses that have either not been investigated well enough or not at all. First, very few studies have investigated the transfer of academic vocabulary taught through DDL into student's writing. Kaur and Hegelheimer (2005) do investigate this, but they are the only ones who have done so. Secondly, to the author's knowledge, no study has to date attempted to search for measurable effects in student writing brought about through DDL. No study has investigated the nature and size of any effects on student writing brought about by DDL. This information may be helpful to language teachers for several reasons, the main one being time constraints. Coxhead and Byrd (2007) point to the fact that academic writing instructors desire to teach composition skills to their students. However, the students often lack the linguistic resources to be competent academic writers. Instructors face a critical dilemma as to the best way to spend classroom time.

If it can be shown that DDL can significantly improve aspects of student essay writing, it would be another solid piece of evidence for the integration of DDL in academic writing courses.

1.2 Linking Adverbials

According to Halliday and Hasan (1976), sentences and clauses that follow one another, either in spoken or written form, cannot truly be considered a text unless they form some unified whole semantically. In other words, a text only comes into existence when the structures that follow one another have some sort of semantic connection between them and combine to form a semantic whole. This is not to say that structure does not help create text, but that simply structure alone is not sufficient. The other element that needs to exist is cohesion. The term cohesion, as Halliday and Hasan see it, refers to the relations that are not structural, but yet still help to form semantically unified text. Cohesion occurs when elements in a text, connected structurally or not, must depend in some way or another on the elements that have come before them for their complete interpretation. Therefore, cohesion is a purely semantic term, as it is concerned with the semantic relations that create a text (Halliday & Hasan, 1976).

Halliday and Hasan (1976) present five cohesive schemes available to authors. Reference occurs when items are not themselves interpreted semantically; rather, they point the reader back to something else in a text. One of the most common linguistic devices that achieves this is pronouns. Pronouns like *they*, *he*, or *she* have no meaning, but simply refer the listener or hearer to some person or thing mentioned at another point in the text. Substitution is the replacement of one item with another. This is very similar to reference. However, it is different because it is a grammatical relation while reference is a semantic one. In other words, the item used as the substitute does not rely on the item it substitutes for its meaning. Instead, it simply replaces it in the structure of the clause or sentence. Ellipsis is a type of substitution where the element to be

replaced is replaced by nothing, leaving a gap. Lexical cohesion is the use of the same lexeme, or lemma, in multiple sentences. It can also be achieved with the use of synonyms, hyponyms, hypernyms, and other words that share semantic features. For example, the two sentences *Mike's Jaguar is pretty* and *I wish I had that car* are unified because *Jaguar* is a hyponym of *car*. Lastly, and most important for this current study, is conjunction. Unlike the other textually cohesive devices previously discussed, conjunctive elements are not inherently cohesive. They do not tie sentences or clauses together by forcing readers or listeners to search their memory for meaning already provided. Instead, these elements simply inform the reader as to how the previous and current information relate to each other. They signal the ways in which the ideas flow together and combine to create a bigger meaning (Halliday & Hasan, 1976).

Within conjunction, there are four major semantic categories, each with their own subcategories. The “additive” category includes the subcategories ‘emphatic’, ‘appositional’, and ‘similarity’. These have the effect of showing that the following sentence or clause emphasizes the meaning of the preceding one, signaling a restatement or reinterpretation of previous material, or comparing new information to old. The “adversative” category shows a relationship that is contrary to expectation based on what has come before. The subcategories that are included in “adversative” are ‘proper adversative’, ‘contrastive’, which shows contrast between the ideas it links, ‘correction’, which introduces new information that will correct the false previous information, and ‘dismissive’, which dismisses what has come before as irrelevant. “Causal” is subdivided into ‘general causal’ and ‘conditional’ with the distinction being that the former means “because a, b” while the latter means “if a, then b” (Celce-Muria & Larsen-Freeman, 1999). The last category “temporal” is subdivided into ‘sequential’, ‘simultaneous’, and ‘conclusive’ (Halliday & Hasan, 1976).

The most important type of cohesive element for the present study is linking adverbials. Linking adverbials, “make semantic connections between spans of discourse of varying length” (Biber et. al, 1999 p. 558). What makes these different from conjunctions specifically is that while conjunctions make semantic and structural connections, linking adverbials can make only semantic connections. Furthermore, as stated in the above quotation, linking adverbials can make semantic connections across spans of discourse of different lengths, while conjunctions work at the sentence level or below only (Liu, 2009). For example, *however* can begin a paragraph, indicating to the reader that the content of the paragraph will contradict information presented in the preceding one, but *but* cannot.

Linking adverbials have been called many things over the years, including “conjunctive adverbials” (Bussmann, 1996, as cited in Liu, 2009), “logical connectors” (Celce-Murcia & Larsen-Freeman, 1999), “linking adverbials” (Biber et. al, 1999), “conjuncts” (Finch 2000, as cited in Liu, 2009), and “connective adverbs” (Huddleston & Pullum, 2002, as cited in Liu, 2009). There has also been much variation in how they are categorized. Biber et. Al (1999), for instance, list “appositional” as its own category separate from “additive”, while Celce-Murcia and Larsen-Freeman (1999) stay true to Halliday and Hasan and keep it within the “additive” category. This is also the opinion taken by Liu (2009), as well as in the present study. In addition, the term “linking adverbials”, used by Liu (2009) will be adopted for this study.

While the categorization adopted by Celce-Murcia and Larsen-Freeman (1999) and Liu (2009) will be adopted for this study, they are not perfect. There are a couple reasons for this. First, linking adverbials in the same category may not mean the exact same thing and cannot be used in the same situations. For example, *however* and *nevertheless* are both “adversative proper”, but they cannot be used in the same way. *However* can be used generically in almost

any situation where difference is indicated, while *nevertheless* can only be used to show contrast between what is expected and what actually occurs (Celce-Murcia & Larsen-Freeman, 1999). Second, several conjunctive words and phrases have more than one meaning and more than one way they connect clauses and sentences. For example, *of course* can be used either emphatically or concessively (Liu, 2009). These issues do not require us to do away with the classifications, but it is important that they be kept in mind when linking adverbials are discussed in research and pedagogy.

Halliday and Hasan (1976) make an interesting case for the importance of linking adverbials to cohesion and cohesion to text status. However, their claims that they give a text cohesion and that cohesion is necessary for a designation as a text are problematic. There are multitudes of texts that are devoid of linking adverbials, yet they are still considered semantically unified texts. In addition, texts may have a unified meaning, but still not have any elements of cohesion to them. These are the points Mauranen (1993) makes in her discussion of reflexive text, which she defines as “text about text” (p. 145) and claims that, “It organizes the text and comments on it” (p. 146). Mauranen sees cohesion as a text-clarifying linguistic phenomenon, which plays a role in facilitating processing and understanding of text, but is not vital for making the text hang together. Specifically, connectors (her term for linking adverbials), one type of reflexive text, help in the understanding of a text by showing how the ideas in it hang together to create a single proposition. In addition to helping processing and understanding of text, Mauranen also sees the use of connectors as having a rhetorical function. Connectors can help writers to persuade their audience, which is often imagined as skeptical, to accept their proposition. When composing a piece of writing, the author might envision problems his or her audience may have with different aspects of it. Because connectors assist in overtly signaling to

readers how pieces of information work together to support an idea, the author could use connectors to address possible problems audiences might have. This would not only increase understanding, but also the writing's persuasive power. This is essential for academic writing. Authors in academic fields are constantly presenting new ideas or concepts, which sometimes may contradict previous research and established concepts, to their readers, often other professionals in their field. As such, they need to be able to persuade them to accept this new, and possibly controversial, information. Connectors, with their ability to aid understanding and persuasive power, help them achieve this.

The main focus of the study by Mauranen (1993) was to investigate the differences between L1 Finnish researchers writing in English and L1 English research writers. For this, she looked at many aspects of writing that she expected to differ because of the linguistic and cultural differences between the groups. One aspect that she investigated was the use of reflexive text, including connectors. While connectors do exist in Finnish, the attitudes toward them in American and Finnish culture differ. The American writing textbooks she consulted seemed to vary from positive to neutral to negative. In contrast, she states that Finnish schools teach reflexive text as superfluous. In addition, they teach students that it is a sign of an unskilled writer. Therefore, differences in connector usage between the two groups she studied could be accounted for by cultural, rather than linguistic, factors. When she investigated two sets of research articles written in English, one by the L1 Finnish writers and one by the L1 English writers, the findings supported her claim. She did not find many examples of misuse. More importantly she found that the Finnish writers tended to use fewer connectives. In addition, they seemed to only use a very restricted set of them, with only one or two per semantic category. For

instance, the set of adversative connectives used by the Finnish writers was restricted to only *however* and *on the other hand*.

Milton and Tsang (1993) investigated the use of “logical connectors” in the writing of Chinese students at a university in Hong Kong. They created a corpus of 2,000 assignments written by 800 first-year undergraduates and 206 texts from the composition section of the Hong Kong Examinations Authority’s ‘A’ level Use of English Examination, totaling over 4 million words. They then compared this to three native speaker corpora: The Brown Corpus, the London/Oslo/Bergen (LOB) corpus, and the Hong Kong University of Science and Technology corpus (HKUST), which consists of extracts from first-year university Computer Science textbooks. They found that overall there was an overuse of connectors by the students when compared with the native speaker writers in the corpora. They further divided the errors found in the Learner Corpus into two broad categories. The first they called redundant, which occurs when, “the logical connector is not necessary; its presence does not contribute to the coherence of a text” (p. 228). The other group they classify as misuse, occurring when, “the use of the logical connector is misleading; another cohesive device should have been used; the logical connector is placed inappropriately; misuse of the logical connector is related to loose organization and faulty logic within the text” (p. 228). The authors then attempt to explain the causes for these problems. To them, these problems are created by issues in the teaching of logical connectors. They claim that students are often incorrectly taught that connectors in the same category are all interchangeable and have the same meaning, ignoring subtle yet important differences. In addition, students are often given the erroneous impression that the more logical connectors they use, the better their writing will be (Milton & Tsang, 1993).

Granger and Tyson (1996) used the International Corpus of Learning English (ICLE) to look at the use of “connectors” by L1 French speakers in their writing in English. For this, they focused on the L1 French subsection of the ICLE (89,918 words) and compared it to a sample corpus of native English essay writing (77,723). Their original hypothesis, which they based off (1) their personal experiences with English essays written by L1 French speakers, (2) earlier empirical studies, and (3) transfer from French (French uses more connectors for structuring texts), is that they would find evidence of overuse by the nonnative writers. What they found, however, is that while some semantic categories of connectors were overused, some were also underused. Specifically, they noted that the French writers overused additive connectors and underused adversative and causal connectors. Regarding this unexpected finding of underuse, the authors state that, “the learners used most frequently those connectors which add to, exemplify, or emphasize a point, rather than those which change the direction of the argument or take the argument logically forward” (p. 20). Within overuse, the authors found evidence of misuse semantically, as well as stylistically. In other words, not only did the French writers use connectors incorrectly in terms of the meaning being conveyed, but also in terms of formality of essay writing. The semantic misuse, they claim, is explained by transfer from French to English. They account for the stylistic issues by pointing out that little emphasis in French school and university education is placed on stylistic variation (Granger & Tyson, 1996).

Next came a study by Altenberg and Tapper (1998) that investigated the use of “adverbial connectors” by L1 Swedish ESL students in their written English. Like Mauranen (1993), they compare their writing to that of L1 Swedish speaker’s written Swedish and L1 English speaker’s written English. Like Granger and Tyson (1996), they use the ICLE, this time the Swedish subsection (about 50,000 words) and compare it to an English control corpus of similar length.

For the comparison to Swedish writing, they also compiled a corpus of native Swedish writing consisting of about 37,000 words. Unlike the previous studies, the subjects in their study tended to overall underuse connectors when compared to native English speakers and even when compared to the Swedish texts. From this they conclude that transfer is not the cause of different usages patterns by the Swedish writers in English. Instead, they believe that this is a result of the subjects' problems expressing themselves in a language other than their mother tongue. The authors also found that the adverbial connectors underused by the Swedish writers in their English writing the most were of a more formal register. This result would seem to indicate, according to the authors, that the subjects had some level of uncertainty when it came to stylistic concerns (Altenberg & Tapper, 1998).

While they also use a corpus-based approach to look at the use of connectors by nonnative writers, Bolton, Nelson, and Hung (2002) take a slightly different approach to their analysis. The previous studies cited in this study used a word-based calculation to determine frequency of occurrence. The authors of this study, however, chose to use frequency per sentence. They claim that this is the better approach by arguing that, "The primary function of connectors in academic texts is surely that of relating linguistic units at the sentence level and beyond, and yet a word based calculation ignores this fact" (p. 172). They compared the essays written by L1 Chinese speakers appearing in the Hong Kong component of the International Corpus of English (2,755 sentences) with those written by native English speakers taken from the British component of the International Corpus of English (2,471 sentences). Because they see the methodology of comparing nonnative and native student writing as problematic, they compare both to the academic subsection of the ICE-GB corpus (4,507). This subsection is also where they compiled their list of connectors to investigate. This is because they felt that those

compiled in their sources (Halliday & Hasan, 1976 and Quirk et. al, 1985) were methodologically flawed (Bolton, et. al, 2002).

Their results showed that both groups of students use a smaller range of connectors than their academic counterparts. They also revealed that both groups overused connectors. This would seem to indicate that overuse is not only a problem for non-native speakers, but is one for all student writers. Despite these interesting results, they must be taken with some caution, mostly due to the methodology taken by the authors. Chen (2006) notes in her study that the use of a sentence-based approach can skew the results because of differing average sentence lengths. In other words, when two texts have similar word counts and amounts of linking adverbials, the results will look very similar (Bolton et. al, 2002). However, if they differ in average sentence length, which is a valid concern, the author writing shorter sentences will appear to use linking adverbials less frequently. Also, to classify the word-based approach as flawed is problematic because of the claim it is based on. Linking adverbials do not only work at the sentence level and above, but can be used to connect non-finite, dependent clauses (Chen, 20006).

Tankó (2004) compiled a corpus of argumentative essays written by L1 Hungarian writers. They were written as part of an examination during the second or third year of their university studies in English. 93 essays were originally collected. However, only essays that received high overall scores were considered for analysis. In addition, they had to have received maximum scores in cohesion/coherence to be used. This left a total of 21 essays, totaling 9,969 words, for analysis. For comparison, the author uses the results of the native speaker corpus from a study by Altenberg and Tapper (1998), which was discussed above. He does this because they report their findings as tokens per 10,000 words, keeping the overall token difference very minimal. When comparing the type and tokens frequencies, he found that, “Hungarian students

used slightly fewer adverbial connector types more frequently than the native speaker writers” (p. 167). In addition, the most frequently used semantic groups were “enumerative” and “contrastive”. This finding indicates that their reasoning is highly structured and that their writing is concerned with references to opposing standpoints. In the case of the “enumerative” group (*first, second, lastly*), they are fairly easy for L2 writers to acquire, due to their simple function. Unlike previous studies, the Hungarian subjects used formal adverbial connectors more frequently than informal ones, indicating an advanced level of register awareness. Tankó believes that, based on the lack of linking adverb in Hungarian, Hungarian academic English writing instructors give this vocabulary a special emphasis in their writing courses (2004).

Most recently, Chen (2006) analyzed the use of “conjunctive adverbials” in the academic writing of MA/TESOL students in Taiwan. She hypothesized that Taiwanese learners would overuse this vocabulary, a hypothesis based on personal experience and earlier studies of Taiwanese writers (Crewe, 1990, Milton & Tsang, 1993, and Bolton et al, 2002). She compared a corpus of 23 papers written by 10 subjects, all students in a MA/TESOL program, and 16 professional journal articles in their field of study. She discovers that the Taiwanese writers, unlike the studies she cites, use conjunctive adverbials at a lower frequency than their native speaker counterparts. However, her results also show that they used a smaller set of types than their native speaker counterparts. They also show that the subjects also lack some register awareness, using conjunctive adverbials like *besides* too often (Chen, 2006).

All of these studies point out several problems that L2 academic writers, regardless of L1, seem to have with linking adverbials, important tools that can make academic writing more understandable and persuasive. They are also similar to the problems discussed by Zamel (1983) and Crewe (1990) before any of these studies were done. Both address the semantic misuse of

linking adverbials, a fact they claim is caused by faulty pedagogy that simply gives students a list of supposedly interchangeable vocabulary. Also, the authors argue that the traditional teaching of this vocabulary was at that time very simplistic, ignoring slight differences in meaning and register variation. Among their pedagogical implications, as well as every one of those mentioned in all the previously discussed empirical studies, they suggest that instructors should focus on having the students learn the slight semantic differences between semantic groups, subgroups, and individual linking adverbials. Another pedagogical suggestion they mention is that students be made aware of register differences in the use of linking adverbials. Lastly, they conclude that instructors should also attempt to show students how to not use them, or at least use them less (Zamel, 1983; Crewe, 1990). Through these changes in instruction techniques students could learn this vocabulary and use it effectively, making their writing easier to understand and increasing its persuasiveness.

Corpus studies in the use of linking adverbials have shown us the problems second language writers have with linking adverbials. The good news is that the corpus, when applied in a Data-Driven Learning classroom, has the potential ability to solve these problems. Presenting students with a large number of actual examples from real world usage can help students understand how linking adverbials differ from one another in more subtle ways. Letting them attempt to explore those reasons for themselves gives them a higher chance of retaining this vocabulary. In addition, students could encounter linking adverbials completely new to them and begin to understand their meanings and usage. This would allow them to increase the set of adverbials they use instead of relying on the same ones repeatedly. Also, comparing results of corpora searches across registers can reveal to students the differences in formality between linking adverbials. They can see which linking adverbials are more appropriate for formal

writing and which are more suitable for informal writing and speaking. By acquiring this vocabulary knowledge students can begin to implement the adverbials in their writing, possibly increasing its readability and rhetorical effect.

To the author's knowledge, only one study has attempted to test the effects of DDL on the acquisition of linking adverbs. Cresswell (2004) used a "communicative DDL" approach to teaching "connectors". In his study, he had groups of students work together on a set of concordances of specific subgroups of linking adverbials taken from corpora. After discussing their results together, each group would present to the rest of the class their results. Based on their presentations, Cresswell presents some interesting results. The students who used an inductive approach to learning, where they looked at evidence and then reached their conclusions, and those who used a deductive approach, where they looked at reference books and tested their conclusions, acquired some declarative knowledge of the subgroup they studied. However, the author notes that the students using the inductive approach had an overall deeper understanding. The results concerning correct usage, quantity, and variety of this vocabulary were less conclusive. In all cases, DDL has observable, albeit little, positive effect. However, the author also found that the DDL approach helped students learn when not to use them. Overall, the author concludes that instructors need to take a more involved role, making sure that no misleading information leading to misuse by students could become fossilized (Cresswell, 2004).

Despite the mixed results of Cresswell's (2004) study, making slight changes to his approach could eliminate the issues he encountered. Students should still be given assignments involving the corpus itself or exercises using concordances taken from the corpus and be required to work in groups. The results of their work, however, should not be simply presented to the other students. Instead, they should be the focus of class discussions with all students and the

instructor working together to create an agreed upon conclusion. The instructor should take the role of discussion leader, allowing students to reach their own conclusions while at the same time correcting possible errors when necessary.

This review of the pertinent literature in the nature of linking adverbials and their use by non-native writers has several effects on the analysis undertaken in this study. First, this study will focus on the type and token frequencies of linking adverbials in student essays. Second, the correct usage of linking adverbials will be focused on. This includes the correct usage in terms of semantic correctness and in terms of academic appropriateness. All of this will be done in order to see if DDL can assist students in better employing this important vocabulary.

1.3 Reporting Verbs

One feature found throughout academic writing across all disciplines is the citation of source material. There are several reasons for the almost necessity of citations in academic writing. Citation serves to take previous texts and integrate them into the current work. This allows the writer to establish the theoretical grounds upon which he or she will present their research. It helps the writer create their ethos as a reliable and credible academic writer; it shows their allegiance to a specific community or theoretical orientation. Lastly, it can help a writer reveal what has not been covered in previous works. In indicating where the gaps in communal knowledge lie, the writer justifies their current work (Swales, 1990).

Given their importance in academic writing, linguists in genre and discourse analysis have spent a considerable amount of time researching citation practices. Most of these have focused on the use of reporting verbs used in citation clauses, looking at the multiple functions these verbs can achieve. Several studies have attempted to create a system for classifying the discourse functions of these verbs. This information is vital for academic writers because often

the effectiveness of their argument is decided by how cited information is presented and incorporated into the current work. For example, according to Thompson and Yiyun (1991), reporting verbs have an inherently evaluative function. This is due to the fact that academic writing serves some communicative purpose. In other words, writers in academic disciplines (and writers in general) have some goal or purpose for creating their text. This purpose influences the information the writer chooses to include; it also influences his or her choice in the manner of presenting that information. The information the writer presents must be placed within the context of the current work. It must be shown as either supporting or refuting their work. If this evaluation is not signaled, readers will either misinterpret the purpose or interpret no purpose at all (Thompson & Yiyun, 1991).

These facts led Thompson and Yiyun (1991) to investigate the use of reporting verbs as elements to evaluate cited material. For their data they only chose to look at the introductions to journal articles, citing previous studies for this methodological choice (Adams & Smith, 1984, Davies, 1988, Swales, 1990, Tarone et. al, 1981, as cited in Thompson & Yiyun, 1991). While they do not give an exact number of journal article introductions included in this study, the authors do maintain that were taken from journals in diverse fields such as applied linguistics, geology, public administration, and engineering. The authors also did not embark upon the investigation of the texts with a set list of verbs they were looking for. Instead, they looked for integral citations, which occur when the cited author appears as the subject of the active sentence (Thompson & Yiyun, 1991).

Based on their results, Thompson and Yiyun (1991) classify reporting verbs according to two factors: what they denote and how they evaluate. Within denotation the authors create two groups: Author Acts and Writer Acts. Author Acts include the subgroups “textual”, “mental”,

and “research”, indicating either the verbal, cognitive, or research processes of the cited author. “Textual” includes such verbs as *state* and *point out*, “Mental” includes such verbs as *believe* and *think*, and “Research” includes verbs such as *obtain*, and *find*. Writer Acts include the subgroups “comparing” and “theorizing”. “Comparing” refers to the act of the writer taking two sources ideas and drawing comparisons between them. This includes verbs such as *correspond to*, *accord with*, and *contrast with*. “Theorizing” verbs are those that indicate the writer’s use of source material in developing his or her own argument. Examples of this are *account for*, *explain*, and *support*. Writer Acts are counted as reporting verbs because, while the action is performed by the writer, it uses material taken from cited authors. For example, the verbs in the “comparing” subgroup indicate the writer's comparison of two or more cited author's, placing their works in the perspective of the argument. In regards to the evaluative power of reporting verbs, the researchers again make a distinction between the author and writer. They also divide their results between stance and interpretation. In Author's Stance, writers can convey the author’s positive, negative, or neutral views towards their information. Writer's Stance verbs include the factive, counter-factive, or non-factive subgroups and indicate how the writer views the author’s information. Writer's Interpretation verbs include those verbs that can interpret the author's text or their behavior. They also interpret the status of the information in regard to other cited material. They can also be non interpretive, showing the reported material as objectively as possible. Despite these interesting results, they are still somewhat lacking in that authors fail to provide any statistics or figures showing which type of verb most commonly occurs. However, the study did provide a good theoretical base for future research to build upon (Thompson & Yiyun, 1991).

Thomas and Hawes (1994) take the framework created by Thompson and Yiyun and apply it to the genre of medical journal articles. However, they do not focus on the evaluative nature of the reporting verbs, but rather on the denotation of actions taken by cited authors. They do so in order to investigate the functions of these verbs in discourse. In other words, their goal was to establish the reasons for a writer's choice in reporting verb and what this choice meant for the text. They review a corpus of eleven journal articles taken from the same medical journal. Unlike previous studies of reporting verbs, the authors choose to not limit their study to the introduction section and include all other sections except Methods. Their reason for excluding Methods sections is that, according to them, citations perform a different function in those sections, although they fail to clarify what this function is. In total, the authors find and analyze 129 reporting structures (Thomas & Hawes, 1994).

The authors identify three main functional categories of reporting verbs, all very similar to Authors Acts found in Thompson and Yiyun (1991): “Experimental”, “Discourse”, and “Cognition” (“Research”, “Textual”, and “Mental” in Thompson and Yiyun). Thomas and Hawes go a step further in their analysis by creating subcategories within each main category and, in some cases, further subcategories within those. In “Experimental” (also called “Real-World” verbs) they identify “Findings” (*observe, find*) and “Procedural” (*compare, conduct, examine*), which report the findings of the cited author's work and the procedures the cited author took. They further subdivide “Findings” into “Objective” and “Effect”, with the former reporting information objectively (*find*) and the latter reporting information as having an effect on the writer. This effect is that the writer accepts the cited author’s findings as valid (*demonstrate, show, establish*). In regards to the function of these verbs within the texts, most

“Objective” verbs were found to occur in statements of results. “Effect verbs”, on the other hand, occurred more often in generalized statements of multiple studies (Thomas & Hawes, 1994).

Within the “Discourse” category, the authors find verbs showing “Tentativity”, “Certainty”, and “Qualification” towards the cited material. The “Tentativity” verbs are further subdivided into “Pre-Experiment” (*hypothesize, postulate, propose*) and “Post-Experiment” (*suggest, indicate*). The “Post-Experiment” most often occur in statements of the conclusions based on the data obtained from the cited author's work. “Certainty” verbs include the subcategories “Informing” and “Argument”. “Informing” verbs (*state, report, note*) simply pass along cited information to the reader, while “Argument” verbs (*present, maintain, provide evidence*) signal that the cited information is supporting the writer's own claims. The “Qualification” verbs (*caution, raise the question, call attention to the fact*) serve to limit the generality of a claim. The last main category delineated by the authors is “Cognition” verbs, which report the mental activities undertaken by the cited author. In their corpus, these verbs were mainly used to introduce general statements or ideas held by large numbers of researchers. They also often occurred at the beginning of the articles, establishing a broad theoretical basis to be subsequently narrowed down by other works, including the present one (Thomas & Hawes, 1994).

Taking all their data into account, the authors reach three general conclusions regarding the function of the reporting verbs in their corpus. First, “Cognition” verbs predominantly occurred in reports of consensus views held by members of the scientific community. Second, writers making statements of specific results from cited studies used either “Certainty” verbs or “Objective” verbs. Second, writers stating generalized conclusions use “Effect” or “Tentativity” verbs. In addition, the authors provided actual frequency numbers for each category and

subcategory. Of the 134 total reporting verbs they find, just over half were “Experimental” verbs, with most of these belonging to the “Findings” subcategory. “Discourse” verbs were second most frequent, with the largest subcategory being “Certainty”. “Cognition” verbs were least frequent, making up less than 10% of the total. This analysis, while interesting, may not be as suitable for this present study, since it is solely focused on medical journal articles. It is still a valuable study in terms of comparing discourse communities, but has less relevance for a study like this one, focusing on characteristics of academic writing found across disciplines.

Hyland (2002) was the next to take the framework created by Thompson and Yiyun (1991) and investigate the functions, both denotation and evaluation, of reporting verbs in citation. However, his investigative corpus was much larger. It consisted of eighty research articles from eight disciplines, ranging from the pure sciences to the social sciences. It totaled just over 500,000 words. To find the reporting verbs in these articles, he first searched for all citation forms, such as dates in brackets. Understanding that this might not account for all references to cited authors, he also concordanced all names occurring in the bibliographies of the articles and third-person pronouns. This unfortunately left out general references to schools of thought. In total, this gave him 2,287 reporting verb tokens. His analysis indicated that the most frequently occurring verbs were of the “Discourse Acts” group (“Textual” in Thompson and Yiyun) with 58%, followed by “Real-World Acts” at 35% and “Cognition Acts” at 8%. Within “Real-World Acts”, “Findings” and “Procedures” were evenly distributed (Hyland, 2002).

Turning his attention to the evaluative function of the reporting verbs in his corpus, Hyland (2002) departs from Thompson and Yiyun's classification by combining “Writer Acts” and “Author Acts”. However, he does still retain their view that writer's can attribute evaluation to either themselves or the cited author. For example, while most “Discourse” verbs show the

evaluative stance of the writer, “Cognition Acts” verbs show the stance taken by the cited author. In the “Discourse Acts” category, writers can express “Doubt” towards reported statements, either “Tentative” (*hypothesize, indicate, suggest*) or “Critical” (*evade, exaggerate, not make point*). They can also signal “Assurance”, which is more positive, towards reported statements. They do so either with “Non-Factive” verbs (*state, describe, discuss*) or “Factive” verbs (*argue, point out, claim*). The former inform readers of the author's position, while the latter signal the agreement of the writer with the cited author. This agreement is used to further support the writer’s argument. Writers could also choose to signal the author's own reservations towards their conclusions, using “Counters” (*deny, critique, refute*). In terms of frequency, writers in Hyland's corpus tended to avoid using those verbs which directly criticized their cited author's claims. For instance, “Critical” verbs accounted for only 5% of the “Doubt” verbs in the corpus, and “Counters” accounted for only 5% of all “Discourse Acts”. Furthermore, the writers preferred to present the cited information in a more positive light, choosing “Assurance” verbs 71% of the time (Hyland, 2002).

In the “Findings” subcategory, writers either signaled their acceptance of the authors conclusions using “Factive” verbs (*demonstrate, establish, show*), or signaled their rejection of the conclusions with “Counter-factive” verbs (*fail, misunderstand, ignore*). They also could signaled no stance towards the conclusions using a “Non-factive” verb (*find, identify, observe*). The “Non-factive” were most frequent at 55%, followed “Factive” at 41%. In addition, it appeared that writers chose not to directly challenge their cited authors, evident by the minimal use of “Counter-factive” verbs (4%). The “Cognition Act” verbs evaluated cited information a bit differently. Writers using these verbs do not take a position on the cited information, but rather attributed the evaluation of that information to the cited author. They could indicate that

the author had a “Positive” (*agree, hold, think, know*), “Tentative” (*believe, suppose, suspect*), “Critical” (*disagree, dispute, not think*), or “Neutral” (*picture, conceive, anticipate, reflect*) stance. Similar to the trends in the other two major categories, writers chose not to be directly critical of the information (5% of “Cognition Acts”), but more positive towards it (50% of “Cognition Acts”) (Hyland, 2002).

Hyland (2002) goes a few steps further than Thompson and Yiyun by spending a considerable amount of his study looking at the variations between disciplines in terms of their citation practices. First, he found that the articles in the humanities and social sciences in his corpus used more citations than those from the hard sciences. He explains this by pointing out that:

(i) they typically have less cohesive and established frameworks of knowledge; (ii) they possess less highly formalized and standardized codes for reporting research; (iii) they are more inclined to explicitly recognize the role of human agency in constructing knowledge and (iv) they engage in more recursive patterns of investigation which involve more diverse and less predictable and abstract subjects than those typically found in the sciences (p. 124).

Second, it was found that the “soft sciences” of philosophy, sociology, marketing, and applied linguistics used “Discourse Act” reporting verbs more frequently. The engineering and hard sciences, on the other hand, preferred “Real-World Act” verbs. 85% of the “Cognition Act” verbs occurred in the humanities and social sciences articles, being almost completely absent from the hard sciences articles. These facts make sense when considering the rhetorical differences between soft and hard sciences. In the hard sciences, the emphasis is usually placed on the process involved in research activities and the results of those processes, not on the

researcher who performed them. They prefer that information be given as impersonally as possible. In contrast, the “soft sciences” investigate subjects influenced more by context and human variation. As such, they rest on argumentation that is based more in interpretation, speculation, and complexity, requiring greater use of “Discourse” and “Cognition” verbs. Lastly, Hyland observed that all disciplines showed less variation in terms of evaluation. Overall, the writers in his corpus tended to take more neutral stances and avoid direct criticism of the cited author (Hyland, 2002).

In her study of reporting practices in theses writing of two disciplines, Charles (2006) takes a different approach than all previous researchers discussed. Those studies took a systemic-functional approach, analyzing all instances of reporting according to form and function. In contrast, the starting point of her study is the reporting clause itself. Specifically, she examines the phraseological patterns of reporting verbs. This approach to the grammar of English, known as Pattern Grammar, is based on work on the Collins COBUILD book series. According to Hunston and Francis (2000), two authors of the series, lexical items behave in a certain way with regard to the other lexical items they most frequently occur with. Lexical items can behave in multiple ways, the differences sometimes also causing a difference in meaning. In other words, the phrase carries the meaning, not the individual lexical items in it. Furthermore, multiple lexical items with the same pattern and similar meaning, can be grouped into meaning groups (e.g. **V that** ARGUE verbs). This approach to English grammar is heavily corpus-based, since the evidence of patterns can only be found from the investigation of large amounts of text.

The two patterns used in Charles' (2006) investigation were **V that** (e.g. *Skinner argues that...*) and *it be V-ed that* (e.g. *It has been reported that...*). Both can be found in Francis, Hunston, and Manning's (1996) book of verb patterns (part of the *Collin's COBUILD Grammar*

Patterns series). Her data consisted of eight theses from Politics/International Relations (190,000 words) and eight theses in Material Sciences (300,000) words. She found that occurrences of the **V that** pattern greatly outnumbered those of the *it be V-ed that*. This occurred in both disciplines, although the percentage of the latter pattern was higher in the Material Sciences corpus. The **V that** pattern was also found to most often occur as an integral citation with a human subject. In addition to looking at the phraseological patterns of the reporting verbs, she investigated the verb groups occurring in the theses and their function. The four groups she finds are ARGUE, THINK, SHOW, and FIND. These roughly correspond to the functional groups (“textual”, “cognition”, and “research”) established by Thompson and Yiyun (1991), Thomas and Hawes (1994) and Hyland (2002). The ARGUE verbs dominate the number of occurrences, accounting for 88% in the Politics theses and 54% in the Materials theses. In the materials corpus, the FIND and SHOW verbs also make up a significant amount of the occurrences of the **V that** pattern in integral citations with a human subject. She also found patterns in regard to verb tense. She noted that the ARGUE verbs most likely were used in present tense in both disciplines, while FIND/SHOW verbs tended to occur in the past tense in the materials theses.

The dominance of the ARGUE verb group pattern (integral citation + human subject + present tense ARGUE verb + *that*) in both corpora can be explained by noting a major requirement of theses specifically and academic writing in general. As noted earlier, academic writers have to situate their present work with the works that have come before it. The use of integral citation with a human subject allows the writer to make a comment on the individual work. This comment positions the cited study in relation to the entire body of knowledge shared by the discipline, as well as in relation to the current work. The comment itself is achieved with the choice in verb. With the use of a certain ARGUE verb, the writer chooses to either evaluate

the cited information positively or negatively. They can also choose whether to evaluate or not. This evaluation places the cited work either in opposition or support of the current work. At the same time, it places the current work itself into the greater body of knowledge. In short, the ARGUE verb group pattern, by at once opening an evaluative space and filling it, fulfills one major requirement of academic writing.

These studies have given researchers and language teachers more insight into the citation practices in academic writing, with specific focus on reporting verbs. There are two reasons for the amount of attention this topic has been receiving. The first is the importance placed on citation in academic disciplines. As stated above, citation is key in helping writer's establish their ethos, justify their work, and place it within the greater knowledge shared by the discipline. Second, reporting the works of others in academic writing is a skill that second language writer's continue to have difficulty with. Second language writers have a tendency to use simple quotation when reporting the work of cited authors. Furthermore, they tend to signal no evaluation in their reporting; they can even attribute incorrect evaluations to cited information. This is in part due to their reliance on a restricted range of reporting verbs, mostly non-academic types such as "say". They also have difficulty in making correct choices in syntax, tense, and voice.

It must be noted, however, that all of these insights into second language writers' citation practices come from personal observation. In fact, there have been few if any studies focusing solely on the citation practices of second language writers. Moreover, there have been few studies done on the use of data-driven learning techniques in teaching proper citation practices. However, it could be hypothesized that they could. Students reading either concordance lines or longer sections of text from a corpus could begin recognize the different lexicogrammatical

patterns evident in reporting sentences. They could begin to understand the importance their choices in reporting verb and phrasal pattern have to the incorporation of cited material to their argument. This includes the influence of those choices on the evaluation of cited material. In addition, they could acquire new and more academically appropriate verbs that can better help them properly report cited information. Lastly, they could see the differences in citation practices across disciplines, helping them learn the proper techniques required by their chosen academic discipline. Students can become not only better writers, but their membership credentials for their discipline will be stronger.

This study will specifically focus three main aspects of reporting verb use. First, the frequency and range of reporting verbs found in student essays will be investigated. Second, the study will focus on the use of the correct phraseology associated with reporting verbs, specifically the **V *that*** pattern identified by Hunston and Manning (1996) and investigated by Charles (2006). Lastly, the academic appropriateness of reporting verbs used, in terms of types and tokens, will be investigated. Again, this will be done in order to test the applicability of DDL to academic writing instruction.

2. METHODS

2.1 Setting and Subjects

The subjects in the present study were taking part in two sections of the second unit of freshman composition course designed for non-native speakers at a public university in the southeastern United States. The pedagogical focus of the course is academic writing, including an understanding of formal argumentation and resource practices. Section 1, the test group, consisted of 15 students, while Section 2, the control group, consisted of 12 students. All students had scores meeting the university's TOEFL requirement (600 on the paper-based or its equivalent score on the computer-based or the internet version) and were matriculated students. Therefore, their general English level was intermediate or above, suitable for DDL. The predominant native language of the students was Chinese, but other languages included Arabic, Korean, and Lithuanian.

2.2 Corpora Used

The two corpora used for instruction were the Corpus of Contemporary American English (COCA) and the Michigan Corpus of Upper-Level Student Papers (MICUSP). The COCA is a 400 million word collection of texts taken from spoken conversation on TV and radio, fiction, popular magazines, newspapers, and academic journals compiled since 1990. It is run by Professor Mark Davies at Brigham Young University in Salt Lake City, Utah. Because the focus of the course is academic prose, the use of the COCA will be predominantly the academic subsection of the corpus, which contains 79 million words taken from nearly 100 different academic journals covering a wide range of topics published from 1990 to 2009.

However, some activities, such as those focused on register difference, will use other sections as well. The benefits of using COCA are its wide coverage, amount of data, and amount of search and display options.

The Michigan Corpus of Upper-Level Student Papers (MICUSP) is a collection of 830 papers (around 2.6 millions words) written by students in upper-level courses across four academic divisions (Humanities and Arts, Social Sciences, Biological and Health Sciences, and Physical Sciences). The papers were written by undergraduate students in their final year and graduate students and received an A grade. The corpus has been compiled since 2004. This corpus has been chosen by the investigator for its particular relevance to the students, them being new undergraduates in university. The display of results was another positive factor. Instead of simply showing concordance lines for results, it would display an entire paragraph, with an option to view the entire essay. Another benefit to MICUSP was its ease of use, making it less likely to cause student difficulty.

2.3 Procedures

Section 1 was the test group with Section 2 being the control (this is how they will be labeled in tables). Section 1 was taught in an identical fashion and covered the same content as Section 2, but also included 30 to 45 minutes per week of DDL activities and instruction while Section 2 received an equal amount of instruction using traditional grammar approaches. The grammar topics covered in Section 2 included linking adverbials and reporting verbs as well other problematic aspects found in their writing. In addition, students in the test group were assigned homework involving the use of corpora.

The DDL activities in and outside of the classroom varied, but could be divided into two main types. The first used concordance lines of text taken from the corpora. Students would be

presented sets of concordance lines centered on different words. They would work together in groups of two or three and work through assigned questions. The questions were designed to direct them in their reading of the concordance lines and towards making the correct generalizations. Another example activity consisted of students being given concordance lines with the central lexeme missing. This activity would force students to look at the phraseology in the lines in order to correctly fill the gap. The activity would always end with a whole class discussion of results, under the direction of the instructor. This type of activity was mainly used for discussions of reporting verbs. This was done for several reasons. The focus of the discussion of reporting verbs was their meanings and phraseology, two issues easily addressed with concordance lines. Because linking adverbials often connect longer units of discourse than can be shown with concordance lines, this activity was rarely used in their discussions.

The second type of activity would focus on direct corpus investigation conducted by the students. For example, students would be given an exercise on register difference, requiring them to use the COCA to obtain frequency numbers in multiple registers. It would also be used to get students to find the meanings of unknown words. These exercises would also usually include either some gap-filling exercise or sentence creation exercise. For example, one activity on linking adverbials required students to search the corpus for examples. Based on the examples they would then write down the semantic category for each one (e.g. additive, adversative, causal, sequential). In the next part of the activity, the student would have to combine pairs of sentences using them. As with the concordance line activities, whole class discussion followed any corpus investigation activities. These were used for both linking adverbials and reporting verbs, although slightly more often with the former. When DDL activities were assigned for

homework, these were usually of this type. One sample activity of each type can be found in Appendix B.

Several additional points must be made as to the activities in the classroom. The individual activities were designed to involve a great deal of group work. This design was based on ideas from Gavoli and Aston (2001), who claim that, “discussing their findings may also raise learners’ awareness of broader lexical, grammatical, and textual issues” (p. 242). In addition, discussion of corpus data can help students develop their own ways of describing language and question those presented to them. The activities were also a mix of inductive and deductive. In other words, some sessions began with the instructor laying out rules to the students and having the students apply these rules to new examples, while others had students reach conclusions based on their work. This was done to ensure that all students, regardless of preferred learning style, benefited from them. It was also done because it was necessary at some points to give the students some hints as to focus of investigation. The whole class discussions were directed by the instructor to guide the students towards the correct generalizations.

The corpus instruction was broken into three parts. The first section lasted the first four weeks of class. It introduced students to the corpora to be used. They were shown the multiple functions of the corpus as well as what type of information each would present them. They were taught how to use the information to make generalizations about academic writing. The activities at this point were designed to get the students comfortable with using the corpus on their own. They focused on general differences between academic writing, semantic differences between similar lexemes, and academic phrases. The second section lasted five weeks and focused on linking adverbials. They were introduced to each semantic type and subtype (following the framework of Liu, 2008). The main topics were semantic differences and register differences.

Students were also instructed in the grammar of linking adverbials and when not to use them. The specific linking adverbials covered in the activities were those that occurred over 50 times per million words or were the most frequent in the semantic subtype in the academic section of the analysis by Liu (2008). In total, there were 39 (11 additive, 11 adversative, 8 causal, 9 sequential). In class activities, the most frequent adverbials of each category were the first to be discussed and were used as frames for the others. The last section lasted the final 5 weeks of instruction and covered reporting verbs. Instruction on this set of vocabulary focused on their discourse and evaluative functions, register differences, and phraseology. The total number of reporting verbs used in the instruction was 47 (11 Research, 17 Cognition, 19 Discourse). The procedure for choosing the frequency for each discourse and evaluative category involved two steps. First, all examples reporting verbs given in Hyland (2002) were selected. Then, the list was reduced by searching for frequency number for each in the argumentative essays in MICUSP (560,000 tokens). Those that did not appear in the corpus at all were eliminated. Similar to linking adverbials, the most frequent of each category was discussed first and used as a frame for subsequent verbs. The instruction on reporting verbs was done in part with instruction on citation and proper use of sources.

2.4 Instruments

The instruments in this study consisted of (1) a pre-test and post-test and (2) three essays written by the students as a normal part of the course. The pre and post-test were two argumentative essays, the type of essay students were required to write for the course. Ten linking adverbials and ten reporting verbs were found and removed from each essay. The distribution across semantic types and discourse and evaluative functions was based on the

results of corpus-based studies for each. Students were asked to read the essay and decide which lexeme or phrase best completed the text.

The three essays were spread out across the semester and corresponded with the schedule for corpus instruction. The first essay was a rhetorical analysis. Students were given a source essay and required to make a decision as to the quality of the essay and defend their evaluation. Because this essay occurred before DDL activities focused on either set of vocabulary, it is the pre-treatment essay. The second essay is an original argument. They were instructed to choose a position in a current debate and defend it. Use of sources was encouraged but not required. It is also the essay occurring simultaneously with the DDL section on linking adverbs. Thus, this will be the post-treatment essay for linking adverbials only. The third essay is again an original argument, but requires the use of multiple sources. This requirement necessitated the use of citation and, hence, reporting verbs. This essay will be post-treatment for reporting verbs.

2.5 Analysis

The analysis of the data will be done according to the set of vocabulary under question. The pre-test and post-tests are scored for semantic correctness of linking adverbials and discourse and evaluative correctness of reporting verbs. Both scores will be out of ten. The essays written by the subjects will be analyzed according to different measures. For linking adverbials, the measures will be (1) overall use of linking adverbial tokens and types, (2) proportion of correct usages, and (3) proportion of academic tokens and types. “Academic” types are those that were part of the vocabulary covered in the course and those that occurred over 50 times per million words in Liu (2008). For reporting verbs, the investigation will focus on (1) overall use of reporting verb tokens and types, (2) use of correct phraseology (**V that**), and (3) proportion of academic tokens and types. “Academic” types are those that appeared in the

classroom activities. The essays will also be rated according to the quality of the writing. Each essay will be rated on a scale of 1-5 holistically and analytically. The analytical rating will have ratings for content and development, organization, style and tone, and grammar and mechanics. Rating will be done by two independent raters using a rubric that has been in use at the university for several years.

These sets of analyses will be used to answer two research questions:

1. Does DDL lead to better usage of linking adverbials and reporting verbs in the academic writing of second language writers?
2. Does this improvement, if any, have any significant effect on the quality of their writing?

In order to answer question 1, the measures for each set of vocabulary will be compared across groups (same essay, different group) and across essays (same group, different essay). This will be done individually, with average numbers for each group being calculated. In order to address question 2, different measures from each set of analyses will be examined for any correlations. For linking adverbials, the correct usage scores and frequencies will each be correlated with the organization score. The correct phrases scores for reporting verbs will be correlated with the grammar and mechanic scores. The academic usage scores for each will be compared to the style and tone scores for their respective essays. Again, the first essay is pre-treatment for both, while the second is post-treatment for linking adverbials and the third is post-treatment for reporting verbs. If no significant difference exists in pre- and post-treatment essays, no correlation analysis will be done.

3. RESULTS

The results for linking adverbials and reporting verbs are presented separately. Both sections will first report the results of the pre- and post-treatment cloze tests. Then both sections will focus on results taken across individual essays. As stated above, the analysis for linking adverbials will focus on (1) type and token frequencies, (2) proportion of correct usage and (3) on proportions of academic types and tokens. The analysis of reporting verbs will focus on (1) overall use of reporting verb types and tokens, (2) use of correct phraseology (**V *that***), and (3) proportion of academic types and tokens. In all cases, an analysis of covariance (ANCOVA) was run. This statistical test is stronger than a MANOVA because it tests for the effects of instruction on the post-treatment scores while controlling for the pre-treatment differences. In other words, this test will better ascertain the significance of the increase or decrease in the frequency counts or proportions because it starts both groups at the same level. It must be noted that the means reported in the following tables will be adjusted means for the post-treatment results, not actual means. This is done because the covariate, the pre-treatment scores, is held constant and is the value the post-treatment means are now being tested against. For a complete table of the actual means found in both the pre-treatment and post-treatment tests and essays, refer to Appendix A. This analysis will be done to address research question 1. Research question 2, which focuses on correlations between vocabulary usage tendencies and essay grades, will then be answered by conducting a Pearson product-moment correlation test to determine if any significant correlation between the changes in the relevant two variables. Specifically, the correlation test will determine whether there is a significant correlation in the changes between the following pairs of

variables: 1) type/token frequencies of linking adverbials and the essay organization scores, 2) correct usage scores for linking adverbials and organization scores, 3) reporting verb phraseology use and grammar and mechanics scores, and 4) academic type and token proportions for reporting verbs of and style and tone scores.

3.1 Linking Adverbials

The pre- and post-treatment cloze test results are presented in Table 1. It needs to be noted that the number of subjects who took the cloze tests is smaller than the total number of subjects, due to some subjects missing the class sessions in which the tests were given. Students in both groups failed to correctly choose linking adverbials in the same semantic category over fifty percent of the time on the pre-test. In addition, they were unable to do so in the post-test, in spite of the DDL activities in the case of the test group. A surprising result is that the test subject's number of correct answers, like the control group, decreased following treatment. However, they still performed significantly better than the control group, as the results of the ANCOVA show ($F [1,19] = 4.56, p = .046 < .05, \eta_p^2 = .193$ see Table 1). Furthermore, the partial eta squared (η_p^2) shows that 19.3% of the variance in the student's cloze test scores can be accounted for by instruction, which is rather significant.

Table 1

Adjusted Means for Post-Treatment Cloze Test

	Adjusted Post-Treatment Means	d.f.	F	P	η_p^2
Test	3.42	1	4.56	.046	.193
Control	2.10				

Linking adverbials found in each student essay were counted according to token and type. Because each essay differed in the exact total token count, and because the design of the course itself required that the post-treatment essay be longer (1000 word minimum for the pre-treatment essay; 1250 word minimum for the post-treatment essay), these raw counts were then calculated according to frequency per thousand words and averaged across the group. These means were then used to run an ANCOVA, the results of which are summarized in Table 2 and Table 3.

Table 2

Adjusted Post-Treatment LA Type Frequencies (per thousand words)

	Adjusted Post-Treatment Means	d.f.	F	p
Test	7.20	1	.820	.374
Control	7.95			

Table 3

Adjusted Post-Treatment LA Token Frequencies (per thousand words)

	Adjusted Post-Treatment Means	d.f.	F	p
Test	11.15	1	.021	.885
Control	11.32			

In the pre-treatment essays, the students in the control group used slightly more linking adverbial types in the pre-treatment essay (8.60 to 7.27). The students in both groups used on average around ten linking adverbial tokens per thousand words in the pre-treatment essay (10.04 for the test group; 10.38 for the control). Controlling for pre-treatment differences, there was no significant effect of instruction on the frequency of linking adverbial types ($F [1,24] = .820, p = .374 > .05$, see Table 2). There was also no significant effect on the frequency of linking adverbial tokens ($F [1,24] = .021, p = .885$, see Table 3). Thus, it appears that the DDL activities

focusing on linking adverbials had no effect on the range or frequency of the test group’s use of linking adverbials.

Once all linking adverbials in each essay were counted, they were further analyzed to determine whether they were used correctly semantically. In other words, was each one used to indicate the correct semantic relationship between the discourse units they were connecting? The proportion of correctly used linking adverbials in each student’s essay was then calculated and averaged with the other essays in the group. An ANCOVA, treating pre-treatment scores as the covariate, was then calculated. The results are in Table 4.

Table 4

Adjusted Post-Treatment Proportions of Correct Usage

	Adjusted Post-Treatment Means	d.f.	F	P	η_p^2
Test	90.80%	1	20.213	.000	.457
Control	79.90%				

In the pre-treatment essays, both groups correctly use linking adverbials at a fairly high rate (79.64% for the test, 74.41% for the control). Both groups showed improvement from pre- to post-treatment essays, although the Test Group does show a better improvement. The results of the univariate test, controlling for pre-treatment variance, indicate that the subjects in Test Group improved significantly more than those in the Control ($F [1,24] = 20.213, p = .000 < .05, \eta_p^2 = .457$ see Table 4). The effect of instruction was also quite large, accounting for 45.7% of the variance in subject scores. Thus, these DDL techniques produced significantly better effects than normal classroom instruction when it comes to correct semantic usage of linking adverbials.

Next, all linking adverbials counted, used correctly or incorrectly, were divided into academic and non-academic groups, the division based on the results of Liu’s (2008) study. The

proportion of academic linking adverbial types and tokens in each student's essay was then calculated and averaged with the other essays in the group. The results of the ANCOVA are presented in Tables 5 and 6.

Table 5

Adjusted Post-Treatment Proportions of Academic LA Types

	Adjusted Post-Treatment Means	d.f.	F	P	η_p^2
Test	90.80%	1	20.06	.000	.455
Control	65.20%				

Table 6

Adjusted Post-Treatment Proportions of Academic LA Tokens

	Adjusted Post-Treatment Means	d.f.	F	P	η_p^2
Test	92.90%	1	20.06	.000	.457
Control	69.90%				

Before treatment, both groups used similar proportions of academic and non-academic tokens and types, ranging from 68.43% to 75.73%. The control group stayed within a similar range of proportions in their post-treatment essays, even falling below that in the case of academic types. The test subjects, on the other hand, significantly increased the proportion of academic types and tokens they used. The results of the ANCOVA, again controlling for pre-treatment variance, confirmed these findings. There was a significant difference in proportions of academic types ($F [1,24] = 20.06, p = .000 < .05, \eta_p^2 = .455$), as well as a significant difference in proportions of academic tokens ($F [1,25] = 20.06, p = .000, \eta_p^2 = .457$). The effect sizes of these tests were also rather high, accounting for 45.5% of the variance in academic type proportions and 45.7% in the academic token proportions. It appears that the particular DDL techniques

employed helped students gain a higher level of understanding in the differences between academic and non-academic linking adverbials and in turn enabled them to apply this knowledge to their own writing.

It has been shown that subjects in the test group gained a better understanding of the meanings of certain linking adverbials. They also gained a higher level of register awareness in regard to linking adverbials. However, does the implementation of this knowledge correlate to any measurable effect on essay quality? Three Pearson product-moment correlation coefficients were computed. The first was done to determine the relationship between correct semantic usage and changes in organization scores on student essays. The results are reported in Table 7. The other two were done to determine the relationship between changes in academic type and token frequencies of student essays and changes in style and tone scores on student essays. The results are reported in Tables 8 and 9. No significant correlations, either in correct semantic usage and organization score changes or in frequency and style and tone scores changes, were found.

Table 7

Correlation of Correct Semantic Usage and Organization Scores

Correct Semantic Usage	Organization Score	R	p
+8.6%	+0.037	-.154	.442

Table 8

Correlation of Academic Type Proportions and Style and Tone Scores

Academic LA Proportion	Style and Tone Score	R	p
+9.5%	+0.093	-.024	.906

Table 9

Correlation of Academic Token Proportions and Style and Tone Scores

Academic LA Proportion	Style and Tone Score	R	p
+8.8%	+.093	-.070	.730

Overall, there was no significant correlation between the correct semantic usage scores for linking adverbials and the organization scores, $r = -.154$, $n = 27$, $p = .442$. No significant correlation was found between linking adverbials' academic type proportions in the essays and style and tone scores, $r = -.024$, $n = 27$, $p = .906$. There was also no significant correlation between proportions of academic tokens in the essays and style and tone scores, $r = -.070$, $n = 27$, $p = .730$. Thus, it appears that while student knowledge of linking adverbials and register awareness increased with the use of DDL activities, as seen in their essays, this did not positively correlate significantly to any changes in their essay scores. Possible explanations for this will be discussed in the next chapter.

3.2 Reporting Verbs

The methods of data analysis for reporting verbs were similar to that for linking adverbials. However, instead of correct semantic usage, reporting verbs were analyzed for the correct use of phraseology associated with them (**V that**). The results of the ANCOVA for the cloze test are presented in Table 10. The results of the reporting verbs section of the cloze tests mirror those of the linking adverbials section. Both groups failed to correctly choose reporting verbs in the same evaluative category over fifty percent of the time on the pre-test. In addition, they were unable to do so in the post-test, in spite of the DDL activities in the case of the test group. As was the case with linking adverbials, the test subject's number of correct answers, like the control group, decreased following treatment. However, unlike those with linking adverbials,

the results of the univariate test show that the differences in each group's changes were insignificant ($F [1,19] = .351, p = .560 > .05$, see Table 10).

Table 10

Adjusted Means for Post-Treatment Cloze Test

	Adjusted Post-Treatment Means	d.f.	F	p
Test	2.74	1	.234	.634
Control	2.42			

Once all student essays were collected, all reporting verb tokens and types were counted. Similar to the analyses for linking adverbials, the raw token and type counts were calculated per thousand words and averaged across groups. The results of the univariate test, controlling for pre-treatment variance, are summarized in Table 11 and Table 12.

Table 11

Adjusted Post-Treatment RV Type Frequencies (per thousand words)

	Adjusted Post-Treatment Means	d.f.	F	p
Test	2.62	1	.355	.557
Control	2.34			

Table 12

Adjusted Post-Treatment RV Token Frequencies (per thousand words)

	Adjusted Post-Treatment Means	d.f.	F	p
Test	3.97	1	.688	.415
Control	3.21			

In the pre-treatment essays, students in both groups on average used over nine reporting verb tokens per thousand words. Both groups were also on average very similar in their usage of

reporting verb types at around 5.80 per thousand words. Both groups reduced the tokens and types of reporting verbs they employed in their post-treatment essays, regardless of DDL activities. The results of the univariate test, pre-treatment frequencies being treated as a covariate, show that there were no significant differences in the changes of frequency of reporting verb types ($F [1,24] = .335, p = .557 > .05$, see Table 11). They also indicate that there were no significant differences in the changes in frequency of reporting verb tokens ($F [1,24] = .688, p = .415 > .05$, see Table 3). From this, we can see that DDL instruction had no significant effect on the frequency of the student's use of reporting verbs and that any changes in use could be due to other factors.

Once all reporting verbs were found, the next step was to determine the proportion of correct phraseology employed with these verbs. This was done for only the verbs that fell into the **V *that*** pattern. This pattern was introduced to the students in the Test Group through the use of DDL techniques. The results of this analysis are presented in Table 13.

Table 13

Adjusted Post-Treatment Proportions of Correct Phraseology

	Adjusted Post-Treatment Means	d.f.	F	p
Test	74.80%	1	.741	.398
Control	61.10%			

Both groups failed to utilize the **V *that*** verb pattern appropriately in their pre-treatment essays, with both groups scoring under 40%. On the other hand, their post-treatment essays showed a more correct use of the verbs that appear in this pattern, both groups employing it over sixty percent of the time, with the Test group using it at 73.67%, more than 10% higher than the control group. It appears, then, that DDL instruction led to a better improvement acquiring

the correct phraseology. However, controlling for the variance in the pre-treatment scores, these changes were not significantly different ($F [1,24] = .741, p = .398 > .05$, see Table 13).

Lastly, the reporting verbs found in the students' essays were divided into academic and non-academic groups. This division was based on the lists generated from those found in Hyland (2002) and the argumentative essay subsection of MICUSP. The proportion of academic reporting verb types and tokens in each student's essay was then calculated and averaged with the other essays in the group. Again, an ANCOVA controlling for pre-treatment differences was calculated for each. The results are presented in Tables 14 and 15.

Table 14

Adjusted Post-Treatment Proportions of Academic RV Types

	Adjusted Post-Treatment Means	d.f.	F	p
Test	55.90%	1	.655	.426
Control	49.00%			

Table 15

Adjusted Post-Treatment Proportions of Academic RV Tokens

	Adjusted Post-Treatment Means	d.f.	F	p
Test	52.20%	1	.000	.995
Control	52.12%			

The proportions of academic types and tokens in the students' pre-treatment essays were very similar, with the Control Group's percentages being slightly higher in both cases. In addition, both the Test and Control group increased their usage of academic reporting verb types and tokens to around fifty percent. Thus, there appears to be no significant differences between both groups' improvements, as evidenced by the results of the ANCOVA ($F [1,24] = .655, p =$

.426 > .05, see Table 14 for RV types and $F [1,24] = .000, p = .995 > .05$, see Table 14 for RV tokens). Therefore, it appears DDL also had no significant effect on the Test Group's register awareness in regard to reporting verbs.

Overall, then, the results of the reporting verb analyses seem to indicate that DDL instruction had no significant effect on the subject's use of reporting verbs. Specifically, the DDL techniques employed in the Test Group had no significant effect on overall type and token frequencies, proportion of correct phraseology, or proportion of academic types and tokens. Hence, no correlation analysis is needed. Attention will now be turned to the possible reasons for and pedagogical implications of these results, as well as those for linking adverbials.

4. DISCUSSION

As shown in the previous chapter, the results of this study seem to indicate some positive value of the particular DDL approaches. What do these results suggest and what are the pedagogical and result implications? This chapter strives to address these questions.

First, the cloze test results for linking adverbials show that students have a difficult time trying to take the role of the writer of the essay they are reading. Their low scores in both pre- and post-treatment tests, all under fifty percent, show that they did not understand the connections either writer was trying to express. They may have understood their main claims, but did not understand the means of support. In addition, the essays could have included information that the students did not know about, making it even more difficult to enter the mind of the writer. This appears to be the case more so for the post-treatment cloze test, as evidenced by the fact that both groups did worse on the second cloze test in both linking adverbials and reporting verbs. However, it must be noted that the test group did not do as poorly on the post-treatment cloze test, as evidenced by the significant differences found in the ANCOVA. Thus, it appears that these DDL techniques did help students better understand the way the second essay was organized. In other words, the test subjects were better able to see the semantic connections between sections of text and from this supply the correct linking adverbial.

The changes in type and token frequencies of the linking adverbials indicate several interesting things. The results of the ANCOVA reveal no significant differences between the changes made by students in the Test and Control groups in their range of linking adverbials. However, looking at the raw frequencies (found in Appendix A), the Test group did make a

bigger reduction in their range of linking adverbials (from 7.27 to 6.84). The decrease in range of linking adverbials by the test group shows that students may have noticed that some of the linking adverbials they preferred to use were non-academic. This could have led them to simply stop using them. In fact, they seemed to use academic ones that they already knew more often. For example, *besides* fell in frequency by half, from .598 to .263 tokens per thousand words, while *moreover* increased in usage from .355 to .842. Another fact to support this is that the number of types employed by the test group fell from 49 in the pre-treatment essay to 41 in the post-treatment one. Only five academic linking adverbials covered in the course appear only in the post-treatment essay, *accordingly*, *hence*, *in contrast*, *otherwise*, and the causal *then*. Of the nineteen linking adverbials appearing in the pre-treatment essay and not in the post-treatment one, fifteen were non-academic. The slightly higher change in token frequency by the test group may indicate that they felt the need to use more linking adverbials since it was covered in the class. They may have been responding to the instruction by attempting to add more cohesion to their essays through linking adverbials. This is despite the fact that instruction also focused on having students reduce the number they use. However, since the difference in change between the groups is not significant, both groups could have increased their use of linking adverbials simply because they still felt the need to overtly show how their arguments are structured. In other words, students were still not confident that their reader would understand the connections between their claims and support, so they continued to use linking adverbials. Further support for this is that the difference in change in token frequency between groups was not statistically significant.

The proportion of correctly used linking adverbials increased significantly more for the test group than the control, suggesting the potential value of the particular DDL techniques. That

is, through direct corpus consultation, the main technique used for linking adverbials, students are able to see the ways other writers use certain linking adverbials. From that they are then able to determine the meaning of these cohesive devices and subsequently better employ them in their own writing. This would appear to make their writing more cohesive. Nevertheless, the correlation between the correct usage scores and the organization scores were statistically insignificant. It appears, then, that students' better employment of linking adverbials in their writing did not make their writing any more or less organized, at least in the minds of the essay graders.

The proportion of academic types and tokens used by the subjects in the test group increased dramatically, in both cases over twenty percent. The proportions in the control group's essays decreased in both cases, falling by over five percent each time. These statistically significant results demonstrate clearly the value of these DDL techniques in increasing student register awareness. Through the use of these particular DDL approaches, the test group acquired a higher level of understanding of the differences in formal and informal writing. They were then able to put this knowledge into practice in their writing. The correlations, though, with style and tone scores were statistically insignificant in both cases.

While the effects of instruction on correct semantic and register appropriate usage of linking adverbials are rather significant, they fail to correlate to any changes in the related analytical essay scores. However, this may have more to say about the validity of the measurement than the correlation being investigated. The organization scores were given based on the organization of the essay as a whole. The same is the case for the style and tone scores. Consequently, there could be a myriad of other factors that influenced the grader in their assignment of the grades. For example, the student could use linking adverbials correctly in more

situations, but there could still be other areas of their essay that are disorganized. The student could use more register appropriate linking adverbials, yet still use a high number of nouns and verbs that may not be appropriate. The grader, taking all of this into account, may still give the student a lower grade than if he or she had just focused on linking adverbials. Future research may choose to use different measures to assess these correlations.

Similar to linking adverbials, the cloze test scores for reporting verbs for the students in both groups decreased following treatment. The number of correct responses by the test group fell more than the control group, but was still higher than the one for the control group. This again shows that students have a difficult time trying to take the role of the writer of the essay they are reading. Their low scores, again all under fifty percent, show that they did not understand the evaluation the writer was giving the material he or she was citing.

Both groups significantly reduced the number of types and tokens of reporting verbs they used in their essays. For example, the test group used 9.57 tokens per thousand words in the pre-treatment essay and only 3.99 in their post-treatment. This change may be due to the change in topic between essays. The first essay was a rhetorical analysis in which students had to discuss the argument made by another author. This would force them to use reporting verbs. The post-treatment essay, on the other hand, was a research argument. While the use of reporting verbs is vital for introducing other author's works into one's own writing, it is not the only way of doing it. Students could also use clauses like *According to* to cite the author. For example, while the clause *according to* appeared only once in one student's pre-treatment essay, it was used by over half of the subjects in their post-treatment essays, hardly ever being used just once. They could also simply state the information they use from the source and use a non-integral citation at the end of the sentence. Both groups reduced their reporting verb type and token frequencies at

similar rates. The test group reduced the frequency of types by 3.14 per thousand words and frequency of tokens by 5.58 per thousand words, compared to 3.45 and 6.2 for the control group. Thus, it appears that DDL instruction had little to no effect on the test group's usage of reporting verbs.

Both groups improved in their usage of verbs with the **V that** pattern. This fact could indicate that students can acquire this knowledge simply by reading more academic sources. For the pre-treatment essay, the students were required to read only one source. For the post-treatment essay, the students were required to use at least six academic sources. This increased exposure to academic writing may have increased their knowledge of the pattern. In other words, they may have seen the authors they were reading using the pattern, so they attempted to do the same. It must be noted that the test group, controlling for pre-treatment variability, saw a higher improvement than the control group. However, this difference between groups was not statistically significant. This could be due to a high amount of variance within the groups. For example, several students had post-treatment scores of 0.00%, while a similar amount had scores of 100.00%. So, while some students did show improvement, it is impossible to say whether this was caused by these DDL approaches, by reading more academic sources, or by simple chance.

Both groups again improved their use of academic types and tokens of reporting verbs in their writing following treatment. Similar to the case of the **V that** pattern, this suggests that reading more academic sources can increase student register awareness. Being exposed to the tone academic writers employ reveals to them the way they should write. This point is further supported by the fact that the differences between the two groups were not statistically significant.

Returning to the two hypotheses, the results are mixed. In the case of linking adverbials, the DDL approaches did not help students increase their range of usage. The students still relied on a small set of linking adverbials. They may have added new linking adverbials, but they also removed just as many, if not more. They also did not reduce the frequency of linking adverbial tokens used, so they may still be overusing them. However, since no comparison between these essays and those by native speakers was done, no conclusion as to underuse or overuse can be made. The statistically significant results found in the cloze test scores suggest that these particular DDL approaches can help students acquire a better knowledge of linking adverbials. In addition, they are better able to employ them in their writing, as evidenced by the statistically significant results found in correct usage scores. The significant results in the proportions of academic linking adverbial types and tokens found in the essays of the students in the test group suggest that the DDL techniques can also improve student register awareness. By investigating the differences across registers of writing in the corpus, they can see how these registers differ. They can then take that knowledge and apply it to their own writing. All of the analyses of the reporting verbs showed no statistically significant results. The DDL approaches thus do not seem to have any effect on students' frequency or range of use of reporting verbs. They also do not help students improve their phraseological or register awareness any more than simply reading more academic texts does. Therefore, Hypothesis 1, in the case of linking adverbials only, seems to be a sound one.

As for Hypothesis 2, since no correlation was found between any aspects of linking adverbial and reporting verb use and essay grades, it is not supported. That is, the analyses have failed to show that the DDL approaches lead to any significant effects on the quality of their writing. If that is the case, it might make sense for second language writing instructors to avoid

using these techniques in their writing course and spend more time teaching other aspects of academic writing. Nevertheless, since the analytical essay scoring was rather general, taking into account the organization and style and tone of the entire essay, any effects on the use of linking adverbials might have been crowded out by other aspects. As stated above, further research into effects of linking adverbial usage on quality of writing would do better to use more specific measures.

There are several other limitations that need to be noted. The first one is the small sample size, making it harder to make generalizations based on these results. In addition, only two aspects of academic writing were investigated. This not only made it more difficult to investigate using the essay grades but also makes the findings less generalizable. These techniques may work for linking adverbials, but they may be less apt for other aspects. Future research will need to increase the sample size and include other aspects before we can have a full picture regarding the effects of DDL approaches on student writing ability. With a bigger sample size, results would be more generalizable. The addition of other aspects in the investigation would also better show where these DDL approaches would be best applied.

As for implications for classroom practice, instructors can use these DDL techniques to improve aspects of their students' writing. Through these techniques, students can take control of their own learning, finding the answers to their own questions for themselves. With the instructor directing their investigation, students can begin to see the meanings and usage patterns of certain words. They can see the ways writing differs in a range of registers, such as fiction, newspapers, and academic articles and books. They can see how writers in different registers use certain vocabulary and the frequency with which they use it. They can then apply this knowledge in their own writing. This will not only improve the quality of their writing, but it will also make it

read more academic. Through this, their qualifications for membership in their chosen academic community will also become stronger. They will no longer be simply imitating good academic researchers and writers; they will in essence become them.

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APPENDIX A: STATISTICAL TABLES

Linking Adverbials

Cloze Test

	Pre-Test	Post-Test
Test Group	4.00	3.41
Control Group	3.90	2.10

Types per thousand words

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	7.27	6.84
Control	8.60	8.40

Tokens per thousand words

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	10.04	11.06
Control	10.38	11.43

Correct Semantic Usage

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	79.64%	91.60%
Control Group	74.41%	78.95%

Proportion of Academic Types

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	68.43%	90.53%
Control Group	71.91%	65.54%

Proportion of Academic Tokens

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	72.29%	92.52%
Control Group	75.73%	70.31%

Reporting Verbs

Cloze Test

	Pre-Test	Post-Test
Test Group	4.00	2.83
Control Group	3.00	2.30

Types per thousand words

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	5.76	2.62
Control Group	5.80	2.35

Tokens per thousand words

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	9.57	3.99
Control Group	9.39	3.19

Correct Pattern Usage

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	23.89%	73.67%
Control Group	36.11%	62.55%

Proportion of Academic Types

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	36.43%	56.19%
Control Group	39.57%	48.61%

Proportion of Academic Tokens

	Pre-Treatment Essay	Post-Treatment Essay
Test Group	29.78%	52.20%
Control Group	31.66%	52.12%

APPENDIX B: SAMPLE DDL LESSONS

Sample A: Concordancing

Below you are given a set of concordance lines with either show, understand, describe, and argue. Read them and answer the questions that follow.

<p>bowls, other items. Studies reunification. Of course, Lee the towns. When Tocqueville histories. Yet when Smith the modern academy. Aristotle the Essay's four books, Locke at baseline. These results study by Johnson. Johnson Previous research theories of gender. Butler To that extent, Nietzsche of itself" (96). Benjamin loss may seem obvious, Freud of his analysis, Austin its rules of decorum, Isabella corruptions of power. James rather than individuals. Miller or unsound. Other critics of parapsychology, Jung Overall, the findings and leakage. Fitzgerald and other historical scholars in "The Camps", Castro the public. President Clinton A number of researchers another way in which Origen Origin of Species, Darwin In that first part, Bloom</p>	<p><u>show</u> <u>understands</u> <u>describes</u> <u>argues</u> <u>understood</u> <u>argues</u> <u>show</u> <u>described</u> <u>shows</u> <u>argues</u> <u>understands</u> <u>describes</u> <u>argued</u> <u>shows</u> <u>understands</u> <u>showed</u> <u>describes</u> <u>argue</u> <u>described</u> <u>Show</u> <u>understood</u> <u>Argue</u> <u>describes</u> <u>understood</u> <u>Argue</u> <u>understands</u> <u>showed</u> <u>describe</u></p>	<p>that West African carvers are the Yin-Yang principle and five the townships as supplying that there are alternative this difference well. He also that realizing the extent of that the moderating effect of family reactions and needs are that companion animals are that there is no authentic, scholarly motivations to be exactly what Joe represents to that if anything, beauty or the that a proportion of the credit the marriage market to be a that the first argument how two types of portfolio that the notion of legitimacy an incident that was a that intrinsic motivation when he rented the villa that that hypotheses that rely on one famous guachuchero who this when he pledged to "end that large criminal syndicates the significance of the fire of that species have changed over and evaluates how the life of a</p>
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1. What words, if any, most frequently occur after each verb?
2. What nouns frequently occur before each verb?
3. Based on your answers to #3 and #4, what pattern, if any, would you say these verbs have? What does this tell us about how we should use these verbs?

Sample B: Direct Corpus Consultation

Some linking adverbs differ in what situations they can be used. In other words, some may be used more in academic writing while others are best used in more casual situations. Below you are given 5 pairs of linking adverbs from the same type (e.g. addition, opposition, causal, sequential). Using the COCA, for each determine (a) amount of times it appears in the academic subsection, (b) percentage of overall occurrences, and (c) which is more academic.

1. Besides vs. Furthermore
Occurrences in Academic Subsection:
 Besides _____ Furthermore _____
Percentage (occurrences in academic/total occurrences)
 Besides _____ Furthermore _____
More Academic: _____
2. Actually v. In Contrast
Occurrences in Academic Subsection:
 Actually _____ In contrast _____
Percentage (occurrences in academic/total occurrences)
 Actually _____ In contrast _____
More Academic: _____
3. Anyway v. Despite
Occurrences in Academic Subsection:
 Anyway _____ Despite _____
Percentage (occurrences in academic/total occurrences)
 Anyway _____ Despite _____
More Academic: _____
4. Last but not least v. Lastly
Occurrences in Academic Subsection:
 Last but not least _____ Lastly _____
Percentage (occurrences in academic/total occurrences)
 Last but not least _____ Lastly _____
More Academic: _____
5. All in all v. In Conclusion
Occurrences in Academic Subsection:
 All in all _____ In conclusion _____
Percentage (occurrences in academic/total occurrences)
 All in all _____ In conclusion _____
More Academic: _____

APPENDIX C: IRB APPROVAL

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

October 1, 2010

James Garner
745 Tamaha Trace NE #268
Tuscaloosa, AL 35404

Re: IRB#: 10-OR-298 "Do Corpus-Based Approaches Lead to Better Academic Writing?"

Dear Mr. Garner:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on September 30, 2011. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol. Changes in this study cannot be initiated without IRB approval except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the Continuing Review and Closure Form.

Please use reproductions of the IRB approved stamped consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpanato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office of Research Compliance
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