การวิเคราะห์การใช้คำเชื่อมในงานเขียนความเรียงเชิงสาธกของ
นักศึกษาไทยที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ
The Use of Linking Adverbials in the Argumentative Essays of Thai EFL Learners

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บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อ 1) เปรียบเทียบการใช้คำเชื่อมในการเขียนเชิงสาธกของนักศึกษาไทยที่เรียน ภาษาอังกฤษในฐานะภาษาต่างประเทศกับเจ้าของภาษาที่เป็นนักศึกษา และ 2) ศึกษาถึงการใช้คำเชื่อมในงานเขียนที่มี ระดับคะแนนการเขียนต่างกันในนักศึกษาไทย ผลวิจัยแสดงให้เห็นว่าทั้งนักศึกษาไทยและนักศึกษาที่เป็นเจ้าของภาษา มีรูปแบบการใช้คำเชื่อมที่ค่อนข้างคล้ายคลึงกันใน 3 ด้าน คือ ด้านความหมาย ตำแหน่ง และคำเชื่อมที่ใช้บ่อยๆ จากการ ศึกษาถึงการใช้คำเชื่อมในงานเขียนเชิงสาธกของนักศึกษาไทยที่มีระดับคะแนนต่างกัน พบว่า งานเขียนที่คะแนนสูงจะ มีการใช้คำเชื่อมมากกว่างานเขียนที่คะแนนน้อยอย่างมีนัยสำคัญ (p<.05) และมีการใช้จำนวนคำและกลุ่มคำเชื่อมต่างๆ มากกว่าทั้งทางด้านกลุ่มความหมาย และหน้าที่ของคำเชื่อม

Abstract

The current study explores the use of linking adverbials in a Thai EFL learner corpus by comparing it with a US student corpus and focusing on occurrences of linking adverbials in different writing quality. The results revealed that the Thai learner corpus and the US student corpus shared several similar features in usage patterns of semantic categories (i.e., result/reference and enumerate/addition and summation), syntactic forms (i.e., single adverbials), and most frequent words (e.g., *so, however, therefore*). In regards to writing quality, higher quality essays (i.e., Score 3) contained significantly more linking adverbials than weaker ones (i.e., Scores 1 and 2) ($p < .05$). In addition, in more effective essays, a higher number of and a wider range of linking adverbials, different semantic categories, and semantic functions were found.

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The Use of Linking Adverbials in the Argumentative Essays of Thai EFL Learners

After the release of Halliday and Hasan's *Cohesion in English* (1976), interest in the study of cohesion and coherence received considerable attention. Studies related to cohesive devices, both lexical and grammatical, have flourished. One of the major and most widely studied grammatical devices is linking adverbials. This grammatical element has attracted a number of researchers in the field because linking adverbial usage is evidently a challenging area for second language learners to master (McCarthy, 1991; Lorenz, 1998). This is due to several factors. First, since linking adverbials are not usually obligatory, learners often find it difficult to decide when and when not to use them (Conrad, 1999; Halliday, 2004). Types and quantity of linking adverbials are determined by registers because each register (e.g., news and conversation) requires a different communicative functions register (e.g., addition, apposition, etc.) (Biber et al., 1999; Conrad, 1999). Finally, different rhetorical structures in the first and second languages may influence learners' choice of linking adverbials, resulting in learners' misuse, under, and overuse (Altenberg and Tapper, 1998; Kang, 2005).

In particular, some research studies have shown that learners underused and overused certain types of linking adverbials when compared to reference corpora (e.g., Bolton et al., 2002; Granger and Tyson, 1996). The current study provides further investigation into the analysis of EFL learners' linking adverbial use in comparison with native students' writing. Also, it throws light on EFL learners' use of linking adverbial in essays of different writing quality, an area which has to date received little attention.

Linking Adverbials as Cohesive Devices

Linking adverbials, or conjunctive adverbials, were brought to attention in 1976 by Halliday and Hasan's pioneering description of textual cohesion *in* English. According to Halliday and Hasan, text can be made coherent through two types of cohesive devices: grammatical and lexical. Linking adverbials, as part of conjunctions, are one of the grammatical cohesive devices used to mark relations in which one unit idea elaborates, extends, or enhances another unit that follows. According to Halliday and Hasan, linking adverbials can be divided into 4 groups: additive (e.g., *furthermore, in addition, besides*), adversative (e.g., *however, nevertheless, instead*), casual (e.g., *consequently, on this basis, therefore*), and temporal (e.g., *after that, meanwhile, previously*).

Based on the analysis of a large amount of spoken and written data, Biber et al. (1999) re-categorized linking adverbials and included two more categories. In their *Longman Grammar of Written and Spoken English* (LGWSE), linking adverbials are comprised of six categories: enumeration/ addition (e.g., *first of all, next, finally, lastly*), summation (e.g., *in sum, to conclude, all in all*) , apposition (e.g., *for example, for instance, namely*), result/inference (e.g., *consequently, thus, as a result*), contrast/concession (e.g., *in contrast, alternatively, though*), and transition (e.g., *incidentally, by the way*).

According to Biber et al. (1999), linking adverbials are found more commonly in academic prose, compared to other registers (i.e., conversation and news). In academic prose, a wide range of linking adverbials is used because the writer needs to mark explicit relationships between ideas in order to develop the argument of the text (Conrad, 1999). The semantic categories that are commonly used are result/inference relations, followed by appositive, contrast/concession,

and enumerative/additive/summative adverbials, and the last type is transition adverbials, which are rare in the academic prose.

LGWSE also reports that in academic prose, the syntactic structure that is most commonly used is the single adverb, followed by prepositional phrases and other syntactic structures (i.e., finite and nonfinite clauses). Linking adverbials can occur in the initial position (e.g., *first, second,* or *to conclude*), the medial position (e.g., *Einstein, therefore, set to work…*), and the final position (e.g., *You could buy a mini, though*). However, linking adverbials occur most commonly in initial position, followed by the medial position. Linking adverbials in the final position are rarely found in academic prose since they are a feature of interpersonal interaction. The initial position is found to be the primary position of linking adverbials since linking adverbials in this position function as the link between two adjunct ideas, the second of which indicates the relationship to the previous unit (Conrad, 1999).

Previous Studies on Second Language Learners' Conjunction Use

It was found that most previous studies focused on the use of linking adverbials in advanced learners, and compared their use to that of native-speaking university students. For example, Altenberg and Tapper (1998) compared advanced EFL learners' use of linking adverbials with a native student corpus to determine overuse and underuse. The learner corpus was taken from the Swedish ICLE Corpus (86 untimed essays) and the control corpus was contributed by 70 native speakers. The results showed that the Swedish learners overused certain linking adverbials (e.g., *moreover, for instance, and on the other hand*) and underused others (e.g., *hence, therefore, thus, and however*). Similarly, Chen (2006) also investigated the use of linking

adverbials in EFL advanced learners, who were Taiwanese MA students in TESOL. He compared a Taiwanese learner corpus of 23 academic papers with his constructed corpus of 10 published journal papers. The results showed that Taiwanese learners used slightly more linking adverbials than the comparison corpus. Some inappropriate use of linking adverbials was reported. For example, *besides*, which is an oral communication feature, was used as an additive in learners' academic writing.

Other studies have compared learners' use of linking adverbials to the adverbial use found in large, general corpora. For instance, Milton and Tsang (1993) investigated the use of Chinese learners' logical linking adverbials by comparing it to the Brown and LOB corpora. The results revealed that learners overused all logical connectors (e.g., *lastly, besides, moreover, consequently, furthermore*). Similarly, Bolton et al. (2002) investigated the use of linking adverbials in Hong Kong learners' academic writing and compared it with two native corpora: International Corpus of English in Britain (i.e., native student corpus) and International Corpus of English (i.e., published academic corpus). The results revealed that the two groups of learners (i.e., second language learners and native students) overused many connector types (e.g., *so, also,* and *thus*); the occurrence of underuse was not found.

For those studies which compared learner essays to large, general corpora, it is unclear whether the large, general corpora are appropriate targets. It may not be appropriate to expect learners to use adverbials in argumentative essays the same way writers use adverbials in journal articles, textbooks, etc. In addition, studies which tried to compare learner essays with essays written by native speaking students typically ignore the issue of essay quality. It may not be useful to group all learners in one category, without considering differences within these groups.

Only one study by Tanko (2004) used writing quality of essays as one factor in her analysis of learners' linking adverbial use. Only highly-rated argumentative essays were included in her learner corpus; the participants were foreign language learners who were studying in a master's program in English. The learner corpus consisted of 21 argumentative essays produced by Hungarian university students and it was compared with a native student corpus. The results showed that Hungarian learners' writing contained some similar features to those of native speakers' writing (e.g., positions of adverbial connectors and stylistic requirements). Learners tended to use a high number of linking adverbials but the range of used linking adverbials was more restricted than that of native speakers (i.e., types of used linking adverbials).

Even though taking into account learners' writing quality, Tanko looked at only highly-rated papers and was not interested in the comparison of papers with different grading. Information about learners' use of linking adverbials in essays of different writing quality would enhance our knowledge of EFL learners' linking adverbial use. Unfortunately, no studies have explored the differences in linking adverbial use in essays of different writing quality. The current study, therefore, seeks to examine EFL learners' use of linking adverbials in argumentative writing in comparison with native students and, particularly on essays of different writing quality. Furthermore, unlike the previous research, this study focused on Thai EFL learners, a group that has not been studied in regards to the use of linking adverbials. Accordingly, this study seeks answers to the following two research questions:

1. To what extent does the use of linking adverbials vary across the learner and native student corpora? In particular, are differences observed in:

a. The overall frequency with which linking adverbials are used?

b. The frequencies of particular semantic categories?

c. The distribution of syntactic forms?

d. The positions of linking adverbials?

e. The frequencies of particular linking adverbial forms?

2. Within the learner corpus, do higher quality essays contain more linking adverbials?

Method

Participants and Corpora

Learner corpus. The learner corpus used in this study consists of 163 argumentative essays contributed by 163 Thai learners. The learners were third and fourth year undergraduate and graduate students majoring in English studying at Thai universities located in the northeast region of Thailand. The essays were untimed, and the topics were of their own choosing (e.g., wearing uniforms, the equality of men and women, war, religion, and money). The participants were allowed to use language reference tools (dictionaries, grammar books, etc.). Learners' essays were typed and their original work (e.g., spelling errors, grammatical mistakes) was kept unaltered.

In order to rate the quality of the essays in the corpus, the essays were graded following the five-level scale of iBT TOEFL for independent writing, which evaluates essays on five main areas (i.e., topic development, organization, unity and coherence, use of language and word choice), by two raters, who received intensive rating training. The correlation of scores between the two raters (r = .79) was strong (Weigle, 2002). Scores awarded to the essays ranged from 0 to 4. However, due to the small number of the

essays with scores 0 and 4, only essays of scores 1 to 3 were included in this study. For the present study, twenty-four essays were randomly selected from each score level; therefore, there were 72 essays in the final

learner corpus used in this study. The total word count of the learner corpus is 24,211 words; the average essay length of each score is 227.38, 365.08, and 416.33 for Scores 1, 2, and 3 respectively (see Table 1).

Table 1. Number of Learner Essays and Total Words in each Score

Score	Number of Essays	Average Essay Length	Total Words
1	24	227.38	5,457
2	24	365.08	8,762
3	24	416.33	9,992
Total	72	336.26	24,211

US student corpus. 86 native English speaking students enrolled in compulsory freshmen composition classes in 2005 and 2006 at a state university in the USA were contacted and asked for permission to include their argumentative essays in this present study. However, only 12 students volunteered and gave consent to use them. Therefore, the corpus of US students' writing consists of 12 untimed argumentative essays. The essays were class assignments. Similar to the learner corpus, the topics were of students' choices (e.g., teen pregnancy, religion, and animals). The total word count of the US

student corpus is 31,394 words (see Table 2). Similar to other previous studies (e.g., Chen, 2006), the individual essays in the US student corpus were much longer than the learner essays (i.e., approximately 2,616.17 words per essay). This may be explained in terms of writing proficiency and context of learning (native versus EFL). To make the occurrences of linking adverbials within the two learner corpora comparable, normalization was used; this will be explained in details under the analytical decisions and data analysis section.

Table 2. Number of US Students' Essays and Total Words

Number of Essays	Average Essay Length	Total Words
12	2,616.17	31,394

Analytical Decisions and Data Analysis

Within the learner corpus, the participants' essays were first examined to identify any occurrences of non-target forms using the framework which combined frequent linking adverbials mentioned in Biber et al.(1999) and Halliday and Hasan (1976). The decision to include non-target features in learners'

writing into the analysis was based on the fact that some of non-target features (e.g., *in the other words* and *eventually*) were used to fulfill the same function as the target-like forms (e.g., *in other hands* to mean *on the other hand*, *eventually* to refer *to finally*). (See Table 3 for the complete list of the analysis framework.)

Table 3. Analysis Framework

Linking adverbials	Items
Enumeration and addition	Enumeration: *First, second, first of all, next, finally, lastly, firstly, secondly, thirdly, for one thing, for another thing, to begin with, in the first/second place, at last*, eventually*, at first**
	Addition: *In addition, further, similarly, also, by the same token, furthermore, likewise, moreover, in the same way*
Summation	*In sum, to conclude, all in all, in conclusion, overall, to summarize, to resume, to return to the point, to sum up, in short*
Apposition	*Which is to say, in other words, i.e., that is, e.g., for example, for instance, namely, specifically, I mean*
Result/inference	*Therefore, consequently, thus, as a result, hence, in consequence, so (therefore), then (therefore)*
Contrast/concession	*On the other hand, in contrast, alternatively, though, anyway, however, yet, by contrast, meanwhile, otherwise, in the other hands*, conversely, instead, on the contrary, in contrast, by comparison, anyhow, besides, nevertheless, still, in any case, at any rate, in spite of that, after all*
Transition	*By the by, incidentally, by the way*

* non target-like forms identified in the learner corpus

Both the learner corpus and the US student corpus were searched to identify occurrences of the linking adverbial forms listed in Table 3. To count overall frequencies of the six categories of linking adverbial in the learner corpus and the US student corpus, a concordancing software *MonoConc* was used. An automated search tool provided by the program, called a batch search, was used in accordance with hand editing of KWIC (Key Word in Context) concordance lines. After lists of automated counts were generated by the program, they were manually examined in order to eliminate items which do not function as linking adverbials. The judgments were made based upon the fact that one word can have multiple syntactic functions. For example, the word *"so"* can be used to fulfill the function of a linking adverbial to link two idea units (e.g., *Oh well you've seen it, so I won't put it on*), an amplifier modifying adjectives or adverbs (e.g., *Oh, it's so nice*), or a clausal substitution (e.g., *I don't think so*).

After the data were defined, the number of instances of each linking adverbial and the total number of adverbials found in each essay score were counted and presented in percentage and normalization of occurrences form. Due to the different lengths of the Thai learner corpus and the US student corpus, normalization to 10,000 words was adopted in order to accurately compare across groups (for normalization methods, see Biber et al., 1998). To answer the first research question, the results from the two corpora were compared qualitatively using descriptive statistics (i.e., raw frequency, percentage, and normed counts). In addition, an independent-sample *t*-test was used to compare the difference in instances of linking adverbials per essay observed in the two groups. To answer the second question, learners' use of linking adverbials was analyzed quantitatively and qualitatively. A One Way Analysis of Variance (ANOVA) and Post Hoc comparisons using Tukey with an alpha of .05 were used to compare the occurrences of adverbials used across the three essay score categories. To further determine the differences between essays of each writing score, descriptive data as well as qualitative analysis were used to examine types and semantic functions of linking adverbials under each score.

Results

This section is structured to answer the two posted research questions.

Research question 1: *To what extent does the use of linking adverbials vary between the learner and native speaker in terms of overall frequency, frequencies of semantic categories, distribution of syntactic forms, positions of linking adverbials, and most frequent words?*

Overall frequency. A total of 364 and 245 linking adverbials were identified in the Thai learner corpus and in the US student corpus respectively (see Table 4). Thai learners used twice as many linking adverbials as US students (150.34 and 78.04 times per 10,000 words). It appeared to be that the overall frequency of linking adverbial instances that occurred in the US student corpus (78.04 times per 10,000 words) was similar to that of the corpus-based findings presented in LGSWE (slightly over 70 times per 10,000 words) (Biber et al., 1999).

Table 4. Descriptions of the Thai Learner and the US Student Corpora

Group	N	Total Word	Raw	Normed per 10,000
Thai learner corpus	72	24,211	364	150.34
US student corpus	12	31,394	245	78.04

Frequencies of semantic categories. Table 5 presents the frequencies of semantic categories in percentage and in normed counts per 10,000 words. According to Table 6, result/inference adverbials accounted for the largest proportion of linking adverbials that occurred in the Thai learner corpus (38.19%), followed by enumeration/addition/ summation (37.36%) and contrast/concession (13.19%). Transitions were rarely found (0.55%). Interestingly, the pattern of linking adverbial use is similar to that of US students. That is, US students also showed a high preference for using result/inference (31.53%) and enumeration/addition/summation (25.16%), with relatively infrequent use of apposition (3.19%) and transition (0.32%). Samples of result/inference adverbials that were frequently used by both groups were *so* and *therefore*; enumerative/additive adverbials were *moreover* and *furthermore* in the Thai learner corpus and *also* and *moreover* in the US student corpus. When compared to the corpus-based findings, the pattern used by these two groups was slightly different from that presented in LGSWE. Whereas apposition was rare in the Thai learner corpus and the US student corpus, the LGSWE reports that this was the second most frequent type of linking adverbial used in academic prose. In order of frequency of estimated percentages the results showed result/ inference (41%), apposition (25%), and contrast/ concession (18%). Appositive adverbials which were relatively common features of the academic prose but were not found in the two corpora were i.e. and e.g..

Table 5. Raw Count, Percentage, and Normed Count per 10,000 Words of Semantic Categories

Linking adverbials	Thai Learners			US Students		
	Raw [a]	% [b]	Nor [c]	Raw [a]	% [b]	Nor [c]
Enumeration/addition/ summation	136	37.36	56.17	79	32.24	25.16
Apposition	39	10.71	16.10	10	4.08	3.19
Result/inference	139	38.19	57.41	99	40.41	31.53
Contrast/concession	48	13.19	19.83	56	22.86	17.84
Transition	2	0.55	0.83	1	0.41	0.32
Total	364	100	150.34	245	100	78.04

[a.] Raw frequency; [b.] % of use; [c.] Normed counts per 10,000 words

In addition, when compared with the US student corpus, the Thai learner corpus contained two to four times more linking adverbials under each semantic category than the US student corpus. Similarly, the occurrences of linking adverbials in the Thai learner corpus were considerably higher than the corpus-based findings in LGSWE. For example, result/inference adverbials in the Thai learner corpus were twice as many as the instances of result/inference in LGSWE. Enumerative/additive/ summative adverbials in the learner corpus were six times greater than LGSWE. Enumerative/additive/ summative adverbials in the US student corpus were three times more than in the findings of LGSWE.

Distribution of syntactic forms. Figure 1 illustrates the distribution of syntactic forms of linking adverbials in the Thai learner corpus and the US student corpus in percentage. In both corpora, single adverbials accounted for the largest proportion of syntactic forms (78.3% and 88.03% in the Thai learner and the US student corpora respectively), followed by prepositional phrases (19.78% and 11.97%) and others (i.e., finite and non-finite such as *first of all* and *that is*) (1.92% and 0%). The patterns of syntactic forms found in the two corpora were identical to those in the academic prose presented in LGSWE. Interestingly, there was no instance of the third syntactic forms at all in the US student corpus. This, however, may be due to the small scale data.
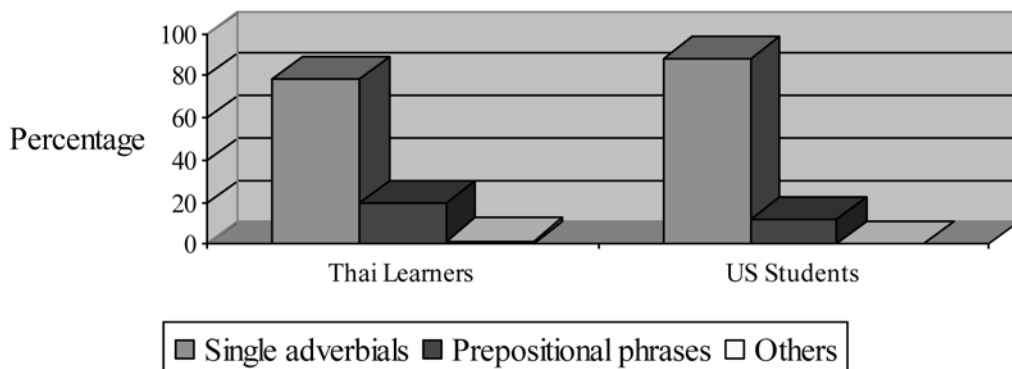
Figure 1. Syntactic realizations of linking adverbials

Positions of linking adverbials. The results revealed that Thai learners always placed linking adverbials in the initial position (i.e., sentence and clausal initial positions) (100%). In contrast, it was found that in the US student corpus, participants used both the initial (72.65%) and medial (26.94%) positions, though the initial position was most frequent. The final position was found only once (see Writing Sample 1). The results found in the US student corpus appeared to be an identical pattern to that of linking adverbials presented in LGSWE. LGSWE, however, reports that the final position is a conversational feature (Biber et al., 1999).

(1) US Student: # 1

This is the idea of Checks and Balances. Bush has found a loophole from this, *though.*

Most frequent words. Table 6 presents raw counts, percentages of the overall use, and normed counts per 10,000 words of the top five most frequently used linking adverbials in the Thai learner corpus and the US student corpus. The linking adverbial that occurred most frequently in the Thai learner corpus was *so*, which accounted for 23.90% of the overall use and 35.93 times per 10,000 words (see Writing Samples 2 - 4). Also, it was found that *so* was highly used by US students, as the second most often used connector (16.14%, 12.84 times per 10,000 words) (see Writing Samples 5 and 6). In addition, it was found that the top five most frequently used linking adverbials accounted for over fifty percent of the entire linking adverbials used in the two corpora (53.30% and 66.93% in the Thai learner corpus and the US student corpus respectively). This shows that both groups of learners rely heavily on a rather small set of linking adverbials in their writing. It is also of note that while the US students used these five frequent words fairly equally in number, the Thai students profoundly depended on the first topmost frequent word (i.e., s*o*). This may show that the Thai students were not yet proficient in using a variety of linking adverbials in their academic writing.

Table 6. Top Five Most Frequently Used Linking Adverbials (per 10,000 words)

Group	Rank and Linking Adverbials	Raw Counts	% of the Overall Use	Normed per 10,000 Words
Thai learners (N=72) (Total of Raw Counts = 364) (Word Total = 24,211)				
	1.So	87	23.90	35.93
	2. Moreover	33	9.07	13.63
	3. For example	29	7.97	11.99
	4. However	27	7.42	11.15
	5. Therefore	18	4.95	7.43
		194	53.30	80.13
US students (N = 12) (Total of Raw Count = 245) (Word Total = 31,394)				
	1. Also	52	20.47	16.28
	2. So	41	16.14	12.84
	3. However	34	13.39	10.65
	4. Then	32	12.60	10.02
	5. Therefore	11	4.33	3.44
		170	66.93	53.23

(2) Thai Learner: Score 1, # 15

But the women must worked at home and waited for her husband came back home, _so_ she didn't had an opportunity to out off the home.

(3) Thai Learner: Score 2, # 21

Besides, we help the others in class, when we are outside the class we are still friends. _So_, I feel so warm.

(4) Thai Learner: Score 3, # 6

All students in a group will think carefully before they give their answers to their friends for discussion. _So_, it will motivate them to be active all the time.

(5) US Student: # 3

Due to the fact that society looks upon athletes so heavily, athletes feel pressure to perform better, _so_ they turn to unnatural methods to enhance their performance.

(6) US Student: # 12

The magnet is located just under the scalp, _so_ it could be replaced later.

It is important to note that, even though _so_ was also found in academic prose in LGSWE, its frequency normed count per 10,000 words was only 2 instances. In addition, _so_ is more a characteristics of spoken language (i.e., 34 times per 10,000 words in conversation) (Biber et al., 1999). This is also true with _then_, which was relatively frequently used by US students (i.e., 10.02 times per 10,000 words, while 9 times per 10,000 words in LGSWE in conversation) (see Writing Samples 7 and 8).

(7) US Student: # 4

There were sites that would focus on one subject and _then_ jump to another.

(8) US Student: # 9

If we must keep building _then_ why not look at different way to help lower the cost of what it is doing.

Research Question 2: _Within the Thai learner corpus, do higher quality essays contain more linking adverbials?_

To answer this question, quantitative and qualitative analyses were performed. The occurrences of linking adverbial among the three writing scores were analyzed through a One Way Analysis of Variance (ANOVA). See Table 7 for the means and standard deviations per essay for each of the three groups.

Table 7. Means and Standard Deviations of Linking Adverbials Used (per Essay)

Score	n	Mean	SD
Score 1	24	5.25	4.16
Score 2	24	6.37	5.47
Score 3	24	12.02	5.56
Total Group	72	7.88	5.85

An alpha level of .05 was used for all analyses. The one-way ANOVA of standardized test score (see Table 8) revealed a statistically significant main effect [$F_{(2, 69)}$ = 12.14, $p < .05$] indicating that there were significant differences among the occurrences of linking adverbials in the three scores. Omega squared (ω^2) of .376 showed that approximately 38% of the variation in occurrences of linking adverbials is attributable to differences between writing quality.

Table 8. Analysis of Variance for Linking Adverbial Usage

Source	SS	df	MS	F	P
Between	631.99	2	315.99	12.14	.000
Within	1795.41	69	26.02		
Total	2427.40	71			

Post hoc comparisons using Tukey procedures were performed to determine which pairs of the three group means differed. The results are given in Table 9 and indicate that writing Score 3 ($M = 8.875$) contained significantly more linking adverbials than Score 1 ($M = 2.417$) and Score 2 ($M = 3.875$). The effect sizes for these pairwise differences were 1.854 and 1.436, respectively.

Table 9. Tukey Post Hoc Results and Effect Size of Linking Adverbial Use by Writing Score

Writing Score	Mean	Mean Differences (effect size indicated in parentheses)		
		1	2	3
1	5.25	0.00		
2	6.37	1.124	0.00	
3	12.02	6.6771* (1.854)	5.00* (1.436)	0.00

*$p < .01$

Qualitative analysis of the semantic categories used within each essay score (see Table 10) showed that in Score 1, result/inference accounted for the largest proportion of linking adverbial use (53.45%). In addition, in the higher quality essays, more diverse types of linking adverbials and semantic categories were used, indicated by the wider spread of percentage figures for each semantic category. In regards to patterns of use, similar patterns of linking adverbial use between Scores 1 and 2 were found (i.e., result/inference > enumeration/addition > concession/contrast); but there was a reverse between the first two ranks in Score 3. It is interesting to note that result/inference accounted for a large proportion of linking adverbials use in Score 1, but not Scores 2 and 3 (see Writing Samples 9 and 10). In addition, it is interesting that apposition makes up much more of the total adverbial use in Scores 2 and 3 than in Score 1 (see Writing Samples 11 and 12).

Table 10. Raw Counts and Percentage of Semantic Category in Each Score

Linking adverbials	Score 1 (n = 24, word total = 5,457)		Score 2 (n = 24, word total = 8,762)		Score 3 (n = 24, word total = 9,992)	
	Raw[a]	%[b]	Raw[a]	%[b]	Raw[a]	%[b]
Enumeration/addition/summation	17	29.31	31	34.07	88	40.93
Apposition	3	5.17	13	14.29	23	10.70
Result/inference	31	53.45	32	35.16	76	35.35
Contrast/concession	7	12.07	14	15.39	27	12.56
Transition	0	0	1	1.10	1	0.47
Total	58	100	91	100	215	100

[a.] Raw frequency; [b.] % of use

(9) Thai Learner: Score 1, # 1

If students are in schools or university, they must wearing uniform of school. *Then*, wearing uniforms is culture of Thailand.

(10) Thai Learner: Score 1, # 12

Wearing uniforms in school is a good idea and the usefulness for everybody in the day to come, *So* we are the student ought to proud of uniforms.

(11) Thai Learner: Score 2, # 17

Many kinds of technology that use money in their process can impact on people and environment. *for example*, car can cause the air pollution, water pollution from many factories.

(12) Thai Learner: Score 3, # 13

In addition has responsibility about family. Women can do work outside. *That is* they can help family make money.

To further determine the differences among writing scores, types and semantic functions of each individual linking adverbial occurring in each semantic category were examined. Similar to the finding shown by the quantitative data, essays of higher quality contained a wider range of linking adverbial forms and semantic categories; the range of linking adverbials in the lower writing quality was restricted (see Table 11). For example, under the category of result/inference, in Score 1, only three linking adverbial forms were used (i.e., *so, then, and therefore*), while in Score 3 a variety of linking adverbials were employed to express this relationship (e.g., *for this reason, hence, as a result, consequently, accordingly, and thus*) (see Writing Samples 13 and 14). Moreover, in higher quality essays, the use of different semantic functions of linking adverbials was found. For example, in essays of Scores 2 and 3, *then* was used to fulfill two different semantic categories: enumeration/addition (as in Writing Sample 15), and result/inference (as in Writing Sample 16). On the other hand, in Score 1, *then* was only used as a result/inference adverbial (as in Writing Sample 17).

Table 11. Types and Numbers of Conjunctive Adverbials Used by Learners

Linking adv.	Score 1	Score 2	Score 3
Enumeration/ Addition	*also, finally, first, first of all, fourth, furthermore, moreover, second, third*	*finally, first, firstly, furthermore, in addition, moreover, next, second, secondly, then, third, thirdly, at last *, eventually **	*additionally, also, finally, first, firstly, furthermore, in addition, in the same way, last, lastly, likewise, moreover, next, second, secondly, similarly, then, third, at first**
Summation	-	*in summary*	*in conclusion, in summary, to conclude, to sum up*
Apposition	*for example*	*for example, in other words, that is*	*for instance, that is*
Result/Reference	*so, then, therefore*	*so, therefore, thus*	*accordingly, as a result, consequently, for this reason, hence, so, then, therefore, thus*
Contrast/ concession	*anyway, however, nevertheless*	*however, in any case, in contrast, in the other hands*, nevertheless, otherwise*	*anyway, besides, however, in contrast, nevertheless, on the other hand, otherwise ,yet*
Transition	-	*by the way*	*meanwhile*

* indicating deviated forms identified in the Thai learner corpus

(13) Learner corpus: Level 3, # 2

Like in the society when we go to work with others; this skill will help us to consider the other's mind or idea. *Accordingly*, we will be able to deal with the problem and our colleague easily and happily. [result/inference]

(14) Learner corpus: Level 3, # 20

so the fourth that I will talk to is money make people render a decision from exterior or make a pricestimat of human from money, *for this reason* people are becoming the materialism. [result/inference]

(15) Learner corpus: Level 2, # 9

I think everyone should to have the cooperation. The importanting they should to decrease an angry and they should to decrease the greed, *then* return to make a good thing for our social. [enumeration/addition]

(16) Learner corpus: Level 3, # 10

Try to make use of studying in group and apply to use in real situations, *then* teamwork will support you to reach success. [result/inference]

(17) Learner corpus: Level 1, # 12

If students go to shopping or to travel, the students can wearing freedom dress such as undershirt, short skirt and singlet but if students are in schools or university, they must wearing uniform of school. *Then*, wearing uniforms is culture of Thailand. [result/inference]

Discussion and Conclusions

The present study attempted to compare the use of linking adverbials by Thai EFL learners and US university students, and explored how, within a group of EFL learners, linking adverbial use varied across essays of different quality. The results showed that Thai learners used more linking adverbials in normed counts per 10,000 words than native-speaking students. However, the two corpora shared several similar features of linking adverbial use (i.e., preferences of certain semantic categories, most frequent words, and heavy reliance on certain linking adverbials). In spite of this, some of the patterns observed within the EFL student and US student essays differed considerably from the patterns of academic prose from the corpus-based findings reported in Biber et al. (1999). The analysis of essay quality within the learner corpus indicated that essays of higher quality contained a higher number and variety of linking adverbials, and a wider range of semantic categories than essays of lower level quality. As a result of the analysis of the learner corpus and the US student corpus, several issues are worth noting.

First, the similar features between the two learner corpora need to be carefully considered. As seen, both corpora contained a high number of spoken linking adverbials (e.g., so) and followed similar usage patterns of semantic categories (i.e., result/inference, enumeration/addition/summation/, and contrast/concession). The patterns, however, were different from the LGSWE (i.e., result/inference, apposition, and contrast/concession). The similarities and differences reveal two interesting points. First, the use of the ungraded US student corpus as a comparison corpus may be inappropriate. As seen, many features of linking adverbial use in the US student corpus revealed some features of ineffective use of linking adverbials in academic

writing (e.g., heavy reliance on conversational linking adverbials). It is questionable whether ungraded essays written by native speakers that were commonly used in corpus studies would represent a good writing model for comparison. Therefore, it is suggested that the quality of native students' essays included in the comparison corpus should also be graded and only high-scored essays be included in the comparison corpus. Second, the identical patterns produced by the two learner corpora may imply that the patterns (i.e., the use of enumeration/ addition/summation adverbials) may be features of learners' argumentative essays since these linking adverbials were also found to be highly used by EFL learners as found in previous studies (e.g., Chen, 2006; Granger and Tyson, 1996; Liu and Braine, 2005).

Another point concerns the quality of learners' essays. As we have seen, essays of higher quality were different from lower quality in certain respects. They contained a higher number and a wider range of linking adverbials. In more effective essays, different semantic functions of linking adverbials were used. Granger (1997, 2003, 2005) has brought to our attention the comparison between second language learners corpus and native student corpus through her extensive works in learner corpora. According to Granger, the information from contrastive interlanguage analyses will help provide a better description of learner language and guidelines for the development of pedagogical tools and methods that meet learners' needs. As the results of the present study have shown, learners' writing of different quality contained varied features, implying different needs of learners. Accordingly, writing quality should be one crucial concern in contrastive interlanguage analyses in order to interpret the differences being observed in a more meaningful way and to provide appropriate rationale for the development of pedagogical tools and methods that better meet learners' needs.

In addition to the discussion on writing quality, several studies classified learners' levels based upon their level of education (e.g., Altenberg and Tapper, 1998; Bolton et al., 2002; Granger and Tyson, 1996; Tanko, 2004). For instance, Granger and Tyson (1996) defined "advanced" as third or fourth year English major students. However, as is seen in this study, the participants of this study were English majors: graduate and third and fourth year undergraduate students. Their writing performance, however, was mostly at low to intermediate levels (Scores 1 to 3). While the criterion of level of education may be suitable in European contexts due to their high exposure to the target language, this criterion may not be applicable in other contexts such as in Asia. Therefore, the level of education may not be an appropriate indicator of learners' levels. Learners' actual performances on written tests should be a more reliable measure.

Finally, the cause for learners' heavy use of linking adverbials in Thai learners' writing (i.e., over twice as many linking adverbials in the overall frequency as the US student corpus and LGSWE) may have resulted from different factors. It may be possible that the participants perceived linking adverbials as a main feature of argumentative essays (Castellon, 2004). Therefore, they may impose linking adverbials onto their writing in order to make their papers sound more academic (Crewe, 1990; Granger and Tyson, 1996). Also, learners might be aware that linking adverbials are features that essay graders depend on when grading papers (Chiang, 1999, 2003; Jafarpur, 1991). Another possibility is that this may be one characteristic of learners' language or interlanguage in linking adverbial use. That is, learners tend to under use linking adverbials when their language proficiency is low and tend to overuse them when their proficiency is improved. Once they master the language, they will be able to use

linking adverbials more naturally (i.e., less in number) and more effectively. As seen in this study, the Score 3 essays contained the most linking adverbials, while only a few of them were found in Score 2 and the least in Score 1. However, since the information about learners' linking adverbials of higher quality (i.e., Scores 4 and 5) is still lacking, the optimal number of adverbials (and also the most important types) is left unknown. As such, what exactly constitutes "good" adverbial use is unclear. This may be the reason why it is still unfeasible to properly determine whether learners underuse or overuse adverbials in previous studies (e.g., Bolton et al., 2002; Chen, 2006; Tanko, 2004). Learners' underuse and overuse can be better determined and described understood when variability of essay quality is taken into consideration.

Pedagogical Implications

Pedagogical implications for each writing score cannot be conclusively made due to the lack of information about optimal use of linking adverbials from essay scores 4 and 5. Until we are more informed about linking adverbial use in essays of higher equality (i.e., Scores 4 and 5), more appropriate implications concerning how to help learners develop effective ways of using adverbials in their writing cannot be obtained. However, based on the results of the overall characteristics of Thai learners, some implications can be suggested. It is necessary to raise learners' awareness of the register restriction of linking adverbials (i.e., academic versus spoken). They should be provided with more exposures to academic register, which contains features of argumentative essays expected to be produced by learners, and be trained to use linking adverbials that are specifically required by such academic register. Also, learners need to learn the flexibility of the position of linking adverbials (e.g., medial positions).

These two issues may be achieved through the use of authentic texts via such techniques as concordances. The unique feature of KWIC (i.e., key-word-in-context) offered by concordances may increase learners' level of attention and provide positive evidence for learning (for more information about the positive effect of concordances on second language acquisition see Cobb, 1997, 1999; Higgins et al., 1999; Tseng and Liou, 2006)

Finally, the high use of certain linking adverbials, particularly the five top most frequent words, seems to imply that EFL learners considerably rely on the use of linking adverbials to create coherence (i.e., approximately twice as many as native-speaking students). Learners should be made aware that the use of linking adverbials is not the only means to create coherence and that their restriction to a single type of cohesive device may instead hinder the reader's comprehension. Learners should be introduced to other types of cohesive ties (e.g., lexical cohesion and reference) and learn to apply them to strengthen the coherence of text in accordance with the use of linking adverbials.

Limitations and Suggestions for Future Studies

This study is limited by the size of the two corpora. The generalizability of the findings may, therefore, be limited. Even though it is not clear how many essays should be included in this type of research, a great number of writing samples may provide a more elaborative picture of EFL learners' linking adverbial usage. A further source of limitation is that the participants of this study were homogeneous in terms of their first language. The homogeneity of learners' linguistic background may have some impact on their usage patterns and features found in each writing score.

For future research, studies with larger-scale, corpus-based data on foreign language learners

will provide a more comprehensive picture of linking adverbial use in this group of learners. Another possible research direction is to probe into the investigation of and the construction of an appropriate comparison corpus for EFL learners' linking adverbial use. One important feature of a comparison corpus arising from the results of this study is the use of argumentative essays which have been rated as high in quality; this type of comparison corpus has not yet been constructed and researched in previous studies. It is hoped that with the knowledge of an appropriate comparison corpus and the construction of such a corpus, the understanding of characteristics of foreign language learners' linking adverbial use will be enhanced. Since this study analyzed learners' essays of Scores 1, 2, and 3, it will also benefit the field more if essays of Scores 4 and 5 are examined and compared with the results from the lower levels. The current study focused mainly on learners' frequent use of linking adverbials; it leaves space for more questions regarding the effectiveness of learners' use of linking adverbials and other types of cohesive ties in argumentative essays. Finally, recruiting writing samples of EFL learners from different linguistic backgrounds may provide a more complete picture of EFL learners' linking adverbial use of different writing quality. In addition, comparisons of linking adverbial use across language backgrounds can be better made. This will also contribute to our understanding of the roles of the first language on linking adverbial usage.

Acknowledgement

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