CORPUS STUDY OF VERB- NOUN LEXICAL COLLOCATIONS IN EFL TEXTBOOKS

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Abstract
This study examines how verb-noun lexical collocations are treated in senior high school EFL textbooks in Taiwan. We identify and tabulate the different verb-noun collocations and the number of repetitions occurring in the six volumes for three popular series and examine whether they are highlighted to promote noticing and acquisition.

Key words
collocations corpus study EFL textbooks senior high schools in Taiwan

1 Introduction
Although he was not the first to define the term (Flinth 1957) is credited as the researcher who drew attention to the importance of collocations in linguistics. He defined collocation as "the company words keep together" (1957:196). The constituent elements of these word combinations recur together frequently (Lewis 1997; Nation 2002). In addition, collocations are quite typical of language (Hill 2000) and could comprise as much as 80% of a written text (Hill 2003:382). Thus, they play an essential part of native speakers' competence. In order to use the language in a more native-like way (Brumfit (1994)), ESL or English as a second language (ESL) or English as a foreign language (EFL) learners might need to acquire collocational knowledge. The literature also suggests that the use of collocations in listening, speaking, reading or writing can help a learner think more quickly and communicate more efficiently (Hill 2000:54).

Inasmuch as learners spend so much of class time interacting with textbooks (Young (1989) and EFL teachers surveyed in Taiwan closely follow the contents of their textbooks in their teaching (Chen 2000; Hsu 2004), the crucial role that textbooks play in language classrooms is obvious. Therefore, we believe it is important to look at how many collocations are included and how they are displayed in language teaching textbooks.

Investigating techniques for promoting attention to and conscious awareness of collocations in the current study, we explore whether publishers assist learners in noticing collocations by highlighting them in any way in the textbooks. If the teaching materials have already highlighted word combinations for students to pay special attention to, the collocations may become automatically more salient for them.

The number of times a collocation is repeated in textbooks may also affect learners' acquiring it. In order to increase the probability of making a collocation become part of learners' actual competence, they may need multiple encounters (Hill; Lewis; Lewis 2000). Numerous exposures will be a great help especially for the kind of collocations that learners have more difficulties with, such as the verb-noun lexical collocations (Liu 2002; Shih; Wang 2006). Because most EFL teachers including those in senior high schools in Taiwan use published textbooks, learners' encounters with collocations may depend a great deal on the selected textbook. Therefore, it becomes important to analyze textbook coverage of
collocations to know what kind of exposure to collocations students are receiving.

Due to the lack of previous studies focusing on collocation highlighting and recycling, the present study attempts to draw the attention of English language teachers, textbook publishers, writers, and the Ministry of Education (MOE) to the treatment of collocations in the textbooks used in Taiwan. This should help English language teachers and textbook publishers, writers to know more about these two specific issues, keys to collocation acquisition. These findings can also serve as a reference for the ongoing development of new curriculum guidelines for senior high schools by the Ministry of Education.

2 Literature Review

In this section, we give a working definition of collocation and briefly review the importance of collocational knowledge. We also look at other studies of collocations in textbooks. We conclude with the specific research questions we seek to answer in this study.

2.1 Definition of Collocations

The concept of collocations was first identified by Palmer (1933) as cited in Nation (2002) as a string of words that "must or should be learned or is best or most conveniently learned as an integral whole or independent entity rather than by the process of piecing together their component parts." Collocations have been discussed in terms of a continuum in which they are placed in the middle position. At the two ends of the continuum are free combinations, which are phrases constructed using rules of syntax, and idioms, which allow little or no variation in form and whose meaning cannot be determined by the literal meanings of the individual words. Gitsaki (1999), Howarth (1998), Nattinger & DeCarrico (1997) following Benson & Benson and liason (1997) define collocations as consider collocations to be "fixed identifiable nonidiomatic phrases and constructions" such as account for and commit murder. The verb account takes the preposition for and the expected verb used with murder is commit. The two extremes of the continuum of multiple word lexical items are excluded from our discussion because as Howarth (1998) suggests, it is collocations that ESL/EFL learners often have problems with in their written or oral production and so they should be treated in teaching and learning.

2.2 Learners’ Collocational Knowledge

Acquiring collocations is beneficial for EFL learners’ lexical development. Ellis (1996) and communicative competence. Bahns & Eldaw (1993) and Nattinger & DeCarrico (1997). With increasing knowledge of collocations, EFL learners may be able to speed up their thinking in speaking and get their meaning across more effectively. Hill (2000) At the same time, acquiring collocational knowledge may help overcome the problem of comprehending a sentence word by word. Thus, learners’ listening and reading abilities can be improved. Lewis (2000) Bahns & Eldaw (1993) and Gitsaki (1999) based on the results of their own studies argue that EFL learners face relatively greater difficulty with lexical collocations rather than grammatical ones in their language production since they make more errors in lexical word combinations in writing. Specifically, the verb/houn lexical collocation was found to be the most difficult kind for Taiwanese EFL learners in their written production. Liu (2002) and oral production. Shih & Wang (2006). Therefore, verb/houn lexical collocations types L1 and L2 in Table 2 are the focus in the present study. Tables 1 and 2 summarize Benson et al. (1997) categorization of collocations. These exemplify the kind of collocational knowledge native speakers of English share.

<table>
<thead>
<tr>
<th>Types</th>
<th>Patterns</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>noun preposition</td>
<td>The blockade of enemy ports by our navy</td>
</tr>
<tr>
<td>G2</td>
<td>noun to infinitive</td>
<td>They made an attempt to do it</td>
</tr>
<tr>
<td>G3</td>
<td>noun that clause</td>
<td>It was his desire that his estate be divided equally</td>
</tr>
<tr>
<td>G4</td>
<td>preposition noun</td>
<td>We discovered it by accident</td>
</tr>
<tr>
<td>G5</td>
<td>adjective preposition</td>
<td>They were angry at my friends</td>
</tr>
</tbody>
</table>
The Role of Collocations in English Textbooks

To deal with learners' perceived insufficient collocational knowledge, several studies have concluded that providing explicit instruction about word collocability in class helps EFL learners perform better on collocations. Chan and Liou (2005) and Hsu (2002) noted that teachers' instruction has suggested above textbooks also play an important role in all areas of learners' language acquisition because they are the learning materials that EFL learners access most often for target language input.

Conzet (2000) pointed out that not all published EFL textbooks available worldwide address or discuss collocations. This might be interpreted to mean that collocations have not yet achieved the status of an essential concept to be addressed pedagogically. In contrast, reviewing previous studies, Howarth (1998) noted a possible change in progress in this situation when he observed that more and more vocabulary-oriented EFL coursebooks were beginning to give explicit attention to collocations. None of these previous reviews of textbooks has referenced Taiwan textbooks and so certain aspects of collocations in locally published English textbooks in Taiwan are examined for the first time in the present study.

The dominant role of textbooks in the language classroom can be seen from Young and Reigeluth's (1988) study in which they claim that over 90% of class time is spent by students on interacting with textbooks. The high reliance on coursebooks can also be seen among English teachers at senior high schools in Taiwan. According to Chen (2000) and Hsu (2004), over 90% of the surveyed English teachers at local senior high schools follow at least 75% of the contents of their textbooks in their teaching. Thus, the contents of textbooks influence greatly both students' learning and teachers' teaching. To investigate the importance of textbooks, Gitsak (1999) studied the collocations in textbooks and subjects' acquisition of collocations. She analyzed the number of tokens of collocations for each of 26 grammatical patterns and 11 lexical ones in the three-volume textbook series Task Way English used by Greek students at state junior high schools in Greece. To examine the productive knowledge of
collocations she had each subject write a composition of about 200 words and do a 10-sentence translation task from Greek to English receptive knowledge of collocation was assessed using a fill the blank test in English. Analyzing these three tasks separately [8] Gitsaki [1999] ranked the 37 collocation patterns verb noun or adjective noun in terms of the number of collocations produced by students at each academic level. Each list was then correlated with the frequency of collocation patterns found in each volume of the textbook series. The results showed that the more a certain pattern of collocation appeared in the textbook at an academic level the greater number of and more accurate the collocations of that pattern they produced. She explained that this was because learners become more conscious of collocation patterns when they repeatedly encounter them.

Gitsaki [1999] study helps us understand that frequency of occurrence of collocations in learners' textbooks can influence their acquisition. However she examined collocations by category [6] [8] verb noun but not individual ones such as commit murder. It is possible that the specific collocations matter more than the general pattern. Therefore we may have to examine the frequency of each collocation in textbooks in addition to the number of collocations of a particular category.

Although it appears to be crucial to explicitly address collocations in textbooks how this can be done has remained relatively unexplored. Learners' practicing identifying collocations in texts has been suggested by Hill [2000] and Nesselhauf [2003]. These researchers have recommended that learners underline linguistic chunks in materials as one teaching-learning technique. Taking this technique as a model for promoting conscious awareness of collocations we investigate whether publishers assist learners in noticing collocations by highlighting them in any way in the textbooks. If the teaching materials have already highlighted word combinations for students to pay special attention to the collocations may become automatically more salient for them. However it is worth noting that learners consciously underlining collocations may involve deeper processing of the lexical chunks than merely seeing the underlined ones in texts and thus help students acquire them better.

The number of repeated exposures necessary to acquire single word vocabulary has been widely investigated however that of collocations has not yet been explored. As Lewis [1997:51] suggests if multi word units including collocations are perceived by learners as single lexical items we might conclude that the repetition range for single word vocabulary could reasonably be applied in collocation acquisition research. Nevertheless we should note that learning vocabulary and collocations may not be exactly the same especially if a learner already knows the individual words that make up a collocation. This aspect of textbook treatment of collocations has also been neglected in previous studies and we attempt to provide some insight by investigating the repetition or recycling of verb noun collocations in our three series textbook corpus.

To conclude this section we raise three research questions that are to be answered in the present study:

1) a How many different verb noun lexical collocations are found in reading passages of three series of senior high school English language textbooks
b Are the numbers significantly different among the different publishers series?

2) a How are the verb noun lexical collocations in the reading passages of the three series of senior high school English language textbooks highlighted such as by using boldface color italics or underlining?
b What amount of the verb noun lexical collocations in the reading passages is highlighted such as the whole collocation or single word constituents of the collocation?

3) What is the frequency of occurrence of verb noun lexical collocations throughout a whole series?

3 Method

3.1 The Series of English Textbooks Comprising the Corpus

In order to discover the three most popular series of senior high school English textbooks used locally we surveyed publishers to confirm the actual textbook series used in the greater Kaohsiung area in the academic year of 2004-2005. Some discrepancies about textbook use were checked again with the
English teachers in certain schools. The results showed that only three series of English textbooks were used by the senior high schools in this area; though others were available. Far East, 51, 5; San Min, Chen, 35, 5, and Lung Teng, 12, 5. The paper and electronic copies of the three series of the English textbooks-six volumes each for the senior high school of textbooks were obtained either by purchase or publisher's generous donation. All of these materials were used only for this academic study. The reading and non-reading sections of the lessons of the three series constituted the corpus analyzed.

3.2 Data Collection and Analysis Procedure

To identify collocations in the textbooks, we went through all texts in the reading passages in each lesson and underlined all possible verb-noun collocations. Afterwards, we confirmed the locational status by consulting two collocational dictionaries: BBI Dictionary and Oxford Collocations Dictionary and two native speakers of English. Americans who are experienced English teachers currently at a university, BBI Dictionary with 75,000 collocations was chosen for being the first widely known collocational dictionary. Oxford Collocations Dictionary for Students of English, Lea 2002 was used because its 170,000 collocation entries are mainly selected from the 100 million-word British National Corpus. Most importantly, these two collocational dictionaries exclude free combinations and fixed idioms which is essential to keep the focus on collocations rather than other kinds of multiple-word items. Only collocations found in the BBI Dictionary or the Oxford Collocations Dictionary or agreed on by both native speakers of English following a strict protocol were counted for this study.

A total of 994 different collocations were found in all three series of textbooks combined. See Table 6 for frequencies of tokens and types found in the series also see Wang, 2006 for a complete list of all collocations identified. Of all the lexical items designated as collocations over 56% of them were confirmed by the BBI Dictionary while approximately half of the remainder by the Oxford Collocations Dictionary and the other half by the two native speakers of English.

These 994 different collocations then were manually examined for their highlighting types, which were determined based on the collocation surrounding text. For example, a collocation or part of a collocation shown with boldfacing or underlining or in italics or a different color is considered as having highlighting that draws students' attention to it.

The frequency of occurrence of those legitimate verb-noun lexical collocations in each series of textbooks was then calculated by using the Collocation Analysis Program especially designed for the current study by Ching-Chi Chen, 2006. Because the Collocation Analysis Program uses a matching method to identify the occurrences of collocations sentence by sentence in texts, it requires both a text corpus file and a keyword file containing collocations. The keywords here consist of the verb and noun in each collocation, including all variations of the verb and the noun and ignoring determiners such as a or the, and possessives such as one's, somebody's, his or my, used between the verb and noun. The program generated a KWIC, Key Word In Context, listing for each collocation which were scrutinized manually to eliminate false identification of some verb and noun combinations as collocations.

The mean occurrences per type were obtained by taking the total number of occurrences and dividing it by the total number of types of collocations. In other words, the mean tells us on average how frequently each collocation occurs throughout a series of textbooks.

4 Results and Discussion

4.1 Research Question 1: The number of verb-noun lexical collocations in reading passages and the significant difference among the three series of textbooks.

This study is the first of its kind to investigate the occurrence of collocations included in high school English textbooks in Taiwan. This study distinguishes itself from previous studies in the way that we examined different verb-noun lexical collocations types instead of tokens. Hsu, 2006 or collocation patterns. Gitsaki, 1999. Table 3 displays the series totals, volume means and lesson means for the different verb-noun lexical
Each of these statistics represents different collocations or types. Among the three publishers, San Min Chen appears to include the most collocations. Nonetheless, the three series have a similar number of verb-noun lexical collocations in each volume: 60% and each lesson: 5%.

### Table 3: Different Verb-Noun Collocations in the Readings by Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Far East</th>
<th>Lung Teng</th>
<th>San Min Chen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series Totals</td>
<td>391</td>
<td>372</td>
<td>428</td>
</tr>
<tr>
<td>Volume Means</td>
<td>652</td>
<td>623</td>
<td>713</td>
</tr>
<tr>
<td>Lesson Means</td>
<td>572</td>
<td>572</td>
<td>572</td>
</tr>
</tbody>
</table>

Note: There are six volumes in each of the three series, however, the numbers of lessons differ: 72 in both Far East and San Min Chen, and 68 in Lung Teng.

To investigate whether there is a significant difference among the number of collocations in the three series, we conducted a one-way ANOVA test using SPSS 10.0 (1999). The independent variables are the three publishers and the dependent variables are the numbers of collocations. The results of the one-way ANOVA test are presented in Table 4:

### Table 4: ANOVA for the Number of Different Verb-Noun Lexical Collocations

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>11,680</td>
<td>2</td>
<td>5,840</td>
<td>535</td>
<td>0.586</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2,280</td>
<td>209</td>
<td>10.911</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2292</td>
<td>211</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows between-group and within-group variability in the number of collocations in the three series. The statistical results indicate that the difference between groups did not reach the 0.05 significant level (p = 0.05), as shown by the significance level (Sig). These data provide evidence for us to conclude that approximately the same quantity of verb-noun lexical collocations appears in the reading passages of each of the three examined series of textbooks.

The issue of how many collocations should be taught or learned has been raised in several studies. Bahns and Eldaw (1993), Hill (2000), Nesselhauf (2003), only Hill's 2000 and 61 proposes a specific number of no more than 10 new collocations in general per lesson to be explicitly taught. Instead of giving a definite number, some researchers (Conzett 2000, Hill, Lewis, Lewis 2000) simply assert that not all collocations need to be taught, while others (Bahns and Eldaw 1993, Nesselhauf 2003) address this question indirectly by giving criteria for selecting collocations to be taught. The common guideline suggested is to teach collocations that do not have a direct translation equivalent between the target language and learner's first language. Gitsaki (1999) and Nesselhauf (2003) which seems to suggest that the major problems learners have with collocations are due to first language influence.

The findings in the present study reveal that the publisher's practice is to incorporate 5 to 6 verb-noun lexical collocations per lesson. These perhaps constitute an implicit upper limit of the number that EFL students in Taiwan should learn. This number seems to meet the recommendation of fewer than 10 new collocations in general to be taught in class proposed by Hill (2000).

### Research Question 2: Highlighting collocations and highlighted units

As the results in Table 5 show when collocations as single units are highlighted at all in the reading passages of the three series of textbooks, color and boldface are the preferred techniques. However, boldface is also a common practice for drawing students' attention to the single-word vocabulary. This is probably due to the MRC (1995) guidelines requiring publishers to boldface new single-word vocabulary items in readings. Using the same highlighting for both collocations and single-word vocabulary, such as Lung Teng does, may prevent students from distinguishing between them and make
collocations as whole units less salient as such. On the other hand, students using Far East and San Min-Chen where color is used for collocations and boldface for single word vocabulary may be more likely to differentiate them as two different kinds of linguistic items to be learned. This may encourage students to acquire the collocations as whole units. This could be especially beneficial for learners acquiring certain collocations that are without direct translation between their native language and the target language. 

Table 5: Highlighting Types of Verb Noun Lexical Collocations in the Readings and Their Percentages

<table>
<thead>
<tr>
<th>Highlighted Unit</th>
<th>Highlighting Types</th>
<th>Far East</th>
<th>Lung Teng</th>
<th>San Min-Chen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collocation</td>
<td>Boldface</td>
<td>—</td>
<td>27%</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Color</td>
<td>18%</td>
<td>4%</td>
<td>24%</td>
</tr>
<tr>
<td>Word</td>
<td>Boldface</td>
<td>121%</td>
<td>30%</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>Italics</td>
<td>—</td>
<td>—</td>
<td>116%</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
<td>254%</td>
<td>64%</td>
<td>263%</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>393%</td>
<td>100%</td>
<td>373%</td>
</tr>
</tbody>
</table>

Notes:
1. The totals are not equal to the series totals because some collocations receive one highlighting type for their whole unit as well as another one for their component elements.
2. The percentages were obtained by dividing the number of collocations with different highlighted units by the total number of collocations.

The percentages in Table 5 reveal that very few collocations were highlighted as whole units in the main texts only 4% in Far East, 7% in Lung Teng, and 5% in San Min-Chen. It is worth noting that although Lung Teng has the fewest number of verb noun lexical collocations among the three series, a higher percentage of them were highlighted. Though the percentage of collocations highlighted is quite low for all series. With regard to the highlighting of some constituent elements in collocations, there were approximately 30% in both Far East and San Min-Chen and much less in Lung Teng. For all three series, most verb noun collocations between 64% and 70% were not highlighted in any way.

Speaking of the low percentage, less than 8% of complete verb noun lexical collocations highlighted and the high percentage, more than 64% of no elements of collocations highlighted with less than one third of collocations highlighted even partially in the readings. We may conclude that all three series focus very little on marking whole collocations or making them salient for learners. There are at least three possible explanations for this. First, it is the heavy emphasis on single word vocabulary in EFL education in Taiwan. Single word vocabulary books are advertised and sold everywhere. Moreover, when only one element of a collocation was boldfaced or colored in a text, it was in fact because it was a new vocabulary item introduced in the lesson rather than as an aid for identifying collocations. Another explanation is that textbook writers may believe that it is not necessary to explicitly highlight every collocation that appears in a lesson. Perhaps publishers are aware that limiting the number of collocations to be taught and learned has been recommended by researchers. For example, Conzett 2000, Harwood 2002, Hill 2000, Hill & Lewis 2000, in consideration of learners' limited capacity to cope with too many new items at one time. A third possibility is the impracticality of marking all collocations. The verb noun collocations examined in this study represent just two of the seven lexical collocation categories and there are also eight grammatical categories as shown in Tables 1 and 2. Highlighting them all would not be practical.

Research Question 3: Frequency of occurrence of the verb noun lexical collocations

This question is addressed first by providing mean frequency of occurrence of collocations and then by showing the percentages for different frequency ranges. The findings for the frequency of occurrence of verb noun lexical collocations are summarized in Table 6.
Table 6: Frequency of Occurrence of Verb-noun Lexical Collocations

<table>
<thead>
<tr>
<th>Series</th>
<th>Tokens</th>
<th>Types</th>
<th>R</th>
<th>NR</th>
<th>R NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far East</td>
<td>535</td>
<td>391</td>
<td>1 38</td>
<td>391</td>
<td>1 73</td>
</tr>
<tr>
<td>Lung Teng</td>
<td>548</td>
<td>372</td>
<td>1 45</td>
<td>372</td>
<td>1 93</td>
</tr>
<tr>
<td>San Min Chen</td>
<td>524</td>
<td>428</td>
<td>992</td>
<td>428</td>
<td>1 16</td>
</tr>
</tbody>
</table>

Notes: R = Readings, NR = Non-readings

The mean occurrences per type are calculated by dividing the total number of types into the total number of tokens.

From the frequencies given in the table, we see that learners who use these three series of textbooks are likely to encounter a specific collocation less than five times on average after having completed all six volumes of a series. Among the publishers, Lung Teng is somewhat more likely to recycle verb-noun lexical collocations than the other two while San Min Chen recycles the least. Moreover, taking both the tokens and types of collocations into consideration, we notice that Lung Teng included fewer different verb-noun lexical collocations but recycled them more often throughout the six volumes. San Min Chen had the greatest number of different collocations and the least number of repetitions.

The mean number of occurrences per series is one way to analyze the data. In addition to this, we can look at the frequency ranges of occurrence of the collocations. Table 7 shows that the total number of collocations in a series occurring less than six times is very high. The distribution of the frequency ranges is similar among the three series of textbooks. The data show that most of the collocations around 43% to 48% occurred two to five times. Between 36% and 38%, only appeared once in six-volume textbook series. These two categories combined represent about 79% to 86% of the total verb-noun lexical collocations. In comparison with the large number of low frequency items, it seems that collocations with relatively high occurrences (6 and over) were surprisingly few. Far East 16, 1 Lung Teng 20, 2, 2 San Min Chen 14, 6. This provides an explanation of why the mean occurrence per type was less than five as reported earlier.

Table 7: Frequency Ranges of Occurrence of Verb-noun Lexical Collocations with Examples

<table>
<thead>
<tr>
<th>Frequency Ranges</th>
<th>Far East</th>
<th>Lung Teng</th>
<th>San Min Chen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14 36 8</td>
<td>13 36 8</td>
<td>16 38 8</td>
</tr>
<tr>
<td>meet challenge</td>
<td>file one fingernails</td>
<td>acquire knowledge</td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>18 47 1</td>
<td>16 43 5</td>
<td>20 47 7</td>
</tr>
<tr>
<td>claim one's baggage</td>
<td>deliver a speech</td>
<td>do an assignment</td>
<td></td>
</tr>
<tr>
<td>6-9</td>
<td>3 8 2</td>
<td>3 10 2</td>
<td>2 6 5</td>
</tr>
<tr>
<td>take medicine</td>
<td>change one's mind</td>
<td>live a one's life</td>
<td></td>
</tr>
<tr>
<td>10-13</td>
<td>2 2 3</td>
<td>1 3 8</td>
<td>1 4 2</td>
</tr>
<tr>
<td>pay a bill</td>
<td>take a look</td>
<td>take action</td>
<td></td>
</tr>
<tr>
<td>Frequency Ranges</td>
<td>Far East</td>
<td>Lung Teng</td>
<td>San MinChen</td>
</tr>
<tr>
<td>------------------</td>
<td>----------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>14-17</td>
<td>142600</td>
<td>142700</td>
<td>140300</td>
</tr>
<tr>
<td>ask directions</td>
<td></td>
<td>lose weight</td>
<td>pay attention</td>
</tr>
<tr>
<td>18</td>
<td>143100</td>
<td>143500</td>
<td>142300</td>
</tr>
<tr>
<td>make a mistake</td>
<td></td>
<td>do homework</td>
<td>solve a problem</td>
</tr>
<tr>
<td>Total</td>
<td>391000</td>
<td>371000</td>
<td>421000</td>
</tr>
</tbody>
</table>

Selected examples for each frequency range are listed in the table. It is evident that the publishers are well aware that students are more likely to need or encounter some collocations such as make a mistake and solve a problem than others such as file one's fingernails and claim one's baggage. However, it should be acknowledged that some low frequency items in the textbooks may be more common than their number of occurrences in the textbook series imply. For example, do an assignment and acquire knowledge.

Many scholars have strongly recommended that collocations be recycled regularly and systematically in teaching materials for recognition and production purposes in order to help learners to integrate them into their mental lexicon. From the high percentage of items that occur only one to five times totally in each series, we might conclude that they are not encountered enough by senior high school students in Taiwan to acquire those collocations even after three years of study. This conclusion assumes their total contact with English is through their textbooks which is possibly too pessimistic a view.

The findings for mean frequency and frequency ranges of the verb-noun lexical collocations in this study are quite similar to those of single-word vocabulary counts done by Nation 1990 for 10 ELT textbooks worldwide. These similarly low numbers of occurrences in coursebooks allow us to infer that generally speaking, textbook writers do not pay much attention to the recycling of either collocations or single-word vocabulary. This deserves special attention because as Harwood 2002 indicates, many teachers worldwide including language teachers are required by schools to follow their textbooks closely. Deficiencies in the textbook can translate into deficiencies in teaching and learning. Senior high school English teachers in Taiwan are unlikely to be an exception. In fact, as we noted, Chen 2000 and Hsu 2004 studies showed that more than 90% of English teachers at senior high schools in Taiwan relied heavily on the contents of their English textbooks in their teaching. Nation 1990 warns teachers about possible deficiencies in textbooks and since Taiwan is an EFL environment where students have little non-classroom exposure to English, English teachers need to be wary of relying on the inadequate number of repetitions in textbooks. Through the current study, teachers can understand the possible limitation in terms of the recycling of collocations. Teachers may need to supplement what is currently available in senior high school English textbooks.

Conclusion and Implications

This study shows first that English textbooks for EFL learners at senior high schools in Taiwan have a similar number of verb-noun lexical collocations found in their reading texts. Moreover, it is apparent that the attention given to verb-noun lexical collocations by all three publishers is far from adequate if active acquisition is the goal because only a very small percentage of them were highlighted as whole units in the textbooks and most of the collocations students are exposed to occur only from one to five times throughout a series.

Because of the importance of collocations in helping learners process language faster in receptive skills and in productive skills as well as our findings that most verb-noun lexical collocations are only partially or not at all highlighted and are recycled only a few times in Taiwan EFL textbooks it is suggested that textbook writers could make collocations salient in coursebooks by highlighting more collocations as a whole unit in the readings and recycling collocations more than five times throughout the six-volume series. Highlighting may promote students' awareness of collocations so that they can become more aware that English is composed of more than just individual
single words and idioms. The need for the repetition of collocations has been strongly recommended by many researchers. Conzett 2000, Gitsaki 1999, Harwood 2002 and Lewis 1997. The need for revisiting collocations in EFL textbooks can be justified because of the lack of exposure to the target language outside of the classroom. One way the reoccurrence of the same collocations could be increased is by providing supplementary readings in related topics.

Second, EFL teachers who use textbooks with little or no explicit attention given to collocations are advised to compensate for this deficiency. Yuan and Lin 2001 encourage the teaching of word collocability in addition to single-word vocabulary instruction. Previous empirical studies have shown that direct collocation instruction has positive effects on learners' collocation learning. Chan & Liou 2005 and Lien 2003, Hsu 2002 as well. Teachers' explicit instruction on collocations may raise learners' awareness of word collocatability. Hill & Lewis 2000, Lewis 1997, McCarthy 1984 awareness of noticing are essential in all learning. Moreover, it may provide the number of exposures needed to ensure acquisition.

Finally, the authority setting EFL curriculum guidelines in Taiwan, the Ministry of Education, might consider providing more detailed criteria for collocations for new editions of high school English textbooks that textbook writers can follow. Upon examination of the guidelines established in 1995, we find that there is no collocation specification except for a stipulation that English textbooks include example sentences and exercises for common collocations in the non-reading section for vocabulary practice. It is possible that the lack of specific guidelines for collocations in the MOE 1995 online Curriculum Guidelines may contribute to the little attention given to collocation highlighting and repetitions found in this study.

Analyzing a corpus made up of the English textbooks students use in senior high schools in Taiwan gives us a clearer picture of one kind of collocation that they are exposed to. Understanding the input students receive allows us to make suggestions for promoting the acquisition of collocations which we believe will enhance their ability to comprehend and produce them and contribute to their language competence and fluency.

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