Corpus-Based Analysis of Phrasal Verbs in High School English Textbooks*

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Previous research developed lists of the most frequently used phrasal verbs in native English corpora. This study aims to discover how these high frequency phrasal verbs were presented in high school English textbooks in Korea. A high school English textbook corpus comprising 189,203 words taken from the listening scripts and reading passages of eight different textbook series was developed for the study. A corpus-based analysis of phrasal verbs revealed that each textbook series covered only 30% of most commonly used phrasal verbs in native corpora. In addition, the phrasal verbs used in the different textbook series rarely overlapped, suggesting a lack of systematic selection process. Among the recursive phrasal verbs appearing in the textbook series, high frequency phrasal verbs were more likely to be recursive and evenly distributed. A comparative analysis conducted with a referential corpus revealed that the textbooks employed fewer phrasal verbs than their comparative counterparts. In terms of meaning, 91% of high frequency phrasal verbs in the textbooks delivered their most frequent meanings while the rest 9% did not. The results of this study support the necessity of pedagogical guidelines for phrasal verbs.

[corpus analysis/phrasal verbs/high frequency/frequent meaning, 코퍼스 연구/구동사/고빈도/빈출 의미]

I. Introduction

Formulaic language has raised increasing attention among researchers and teachers recently as the growth of computer technology enables corpus research. A formulaic sequence is broadly defined as a string of words that has a meaning or function different from that of its component parts, and which is processed holistically (Wray, 2002). Although researchers differ in their analysis and classification of formulaic language, examples of such combinations mostly include idioms (e.g., *kick the bucket*), phrasal verbs (e.g., *bring out*), stock phrases (e.g., *how do you do*), prefabs (e.g., *the point is*), and other multi-word structures (Gardner & Davies, 2007).

Many EFL teachers have noted the importance of multiword knowledge in developing their learners' native-like fluency (Moon, 1997; Wray, 2002). Among the various kinds of multi-word structures, phrasal verbs are the most frequent (Crutchley, 2007). Phrasal verbs are extremely common in English, with native English speakers regularly using them in both speech and writing. Gardner and Davies (2007) claim that "learners will encounter, on average, one [phrasal verb construction] in every 150 words of English they are exposed to" (p. 347). In addition, new phrasal verbs are constantly being invented, especially in slang (e.g., *I zoned out for a while*) and in scientific and technical areas (e.g., *I was bumped off the Internet*) (Darwin & Gray, 1999). Phrasal verbs were once thought to be common only in speech and informal writing, yet it is now accepted that phrasal verbs are ubiquitous regardless of the registers from daily conversations to the most academic expressions (Cornell, 1985). Considering the highly productive nature of phrasal verbs in English as well as pervasive usage across registers, mastering phrasal verbs is a prerequisite to English proficiency.

These high frequency multi-word verbs, however, have presented great difficulties to EFL learners. Phrasal verbs are acquired early by native-speaking children, but late, if ever, by foreign learners (Darwin & Gray, 1999). Most learners, even advanced ones, find the use of phrasal verbs difficult and try to keep avoiding them (Dagut & Laufer, 1985; Laufer & Eliasson, 1993; Liao & Fukuya, 2004). Indeed, empirical studies have confirmed that L2 learners use more single-word verbs and fewer phrasal verbs than native speakers executing similar tasks (Neagu, 2007; Rudzka-Ostyn, 2003; Siyanova & Schmitt, 2007). A couple of

domestic studies have discovered that the phrasal verbs avoidance phenomenon is also witnessed among Korean students (Ko, 2005; You, 1999). The weak learnability of phrasal verbs indicates their pedagogical significance in EFL contexts. Most EFL students including Koreans, Japanese, and Chinese learn English through formal educational settings where textbooks are the primary source of input. For this reason, English textbooks have significant implication in EFL settings. Many researchers have conducted textbook analysis with various perspectives so far (Jung, 2004; Kim & Park, 2012; Kwon, 2004; Lee & Kim, 2013; Park & Park, 2013). Unfortunately, however, there was little research providing systematical corpus-based analysis of English textbooks in light of phrasal verbs. When we consider systematicity of teaching materials, corpus data is the key reference point for what to teach because it demonstrates how language is actually used in real world. This information includes: 1) how often phrasal verbs occurred, 2) which phrasal verbs are used more frequently than others, and 3) what are their dominant meanings out of many. To investigate how phrasal verbs are dealt with in the Korean English classroom, this study scrutinized high school English textbooks in terms of phrasal verb presentation.

II. Literature Review

1. Definition of Phrasal Verbs

Diverse definitions of phrasal verbs have been raised by researchers according to syntactic and semantic criteria (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Bolinger, 1971; Celce-Murcia & Larsen-Freeman, 1983; Courtney, 1983; Fraser, 1976; Quirk, Greenbaum, Leech, & Svartvik, 1985). According to Quirk et al. (1985), a phrasal verb is "a verb followed by a morphologically invariable particle, which functions with the verb as a single word lexically or syntactically"(p. 1,150). As they revealed, however, distinction between phrasal verbs and other multi-word verbs is gradient rather than clear-cut. Gardner and Davies (2007) once noted that "linguists and grammarians struggle with nuances of phrasal verb definitions" (p. 341). Accordingly, there has been little agreement among researchers on what exactly qualifies as a phrasal verb.

From diverse definitions, there are two conflicting viewpoints in terms of

syntactic nature. Courtney (1983) defines phrasal verbs as "idiomatic combinations of a verb and adverb, or a verb and preposition (or verb with both adverb and preposition)" (in preface). According to her definition, the term phrasal verb is an umbrella term that covers these three different combinations of a verb and particle. In contrast, some researchers use the term phrasal verb as a subcategory of a larger class labeled multi-word verbs (Biber et al., 1999; Quirk et al., 1985). Multi-word verbs include phrasal verbs, prepositional verbs, phrasal-prepositional verbs, and other multi-word verb constructions. The underlying confusion needs to be clarified here for the further discussion.

The current study follows the latter version of definition, phrasal verb as a combination of verb and adverbial particle, in order to make a meaningful comparison between the findings in high school textbooks and the phrasal verbs listed in two referential studies (Garnier & Schmitt, 2015; Liu, 2011). Later, for research purpose, Gardner and Davies (2007) modified Biber's definition of phrasal verb as any two-part verb comprising "a lexical verb proper··· followed by an adverbial particle either contiguous to that verb or noncontiguous" (p. 341). This simplified definition of phrasal verbs was adopted in studies of Liu's (2011) as well as Garnier and Schmitt's (2015). Following the referential studies, prepositional verbs (e.g., I am looking for someone) are not included in the subjects of the present study whereas phrasal-prepositional verbs such as come up with and do away with are counted as phrasal verbs.

2. Studies on Most Frequently Used Phrasal Verbs

1) Biber et al. (1999)

Corpus linguistics has enabled researchers to better identify the most frequently used phrasal verbs, which is of considerable importance in learning and teaching English. Biber et al. (1999) provide the most common 31 phrasal verbs across registers and their criterion for inclusion was that an item must "occur over 40 times per million words in at least one register" (p. 410) of their particular corpus. In other words, they listed relatively frequent phrasal verbs produced by corpus statistics.

(1) Gardner and Davies' (2007) frequency list

Instead of struggling with arguable tests for phrasal verbs allowing considerable exceptions, Gardner and Davies (2007) chose "a more functional and objective definition of phrasal verbs" (p. 341) for their research purpose. That is, they assumed all two-part verbs consisting of a lexical verb and an adverbial particle as phrasal verbs regardless of their adjacency. Then they discovered the most prolific 20 lexical verbs and 16 adverbial particles that are producing phrasal verb constructions through analyses of the British National Corpus (BNC). The phrasal forms of the 20 lexical verbs and 16 adverbial particles (i.e., 20 verbs × 16 particles) were reorganized by frequency and the highest top 100 phrasal verbs were listed as a final product.

When it comes to vocabulary, it is well known that most frequent 2,000 words of English, also known as General Service List account for more than 80% of common written texts (West, 1953). Interestingly, this study revealed that the same idea could be applied to phrasal verbs proving that the listed 100 most frequent phrasal verbs account for more than 50% of all phrasal verb occurrences in the BNC. It explains why materials designers should take high frequency phrasal verbs into consideration when developing EFL textbooks.

(2) Liu's (2011) frequency list

Liu (2011) extended his research scope to the multi-corpus data analyzing the Corpus of Contemporary American English (COCA) along with the BNC, two representative large corpora focusing on American and British English, respectively. In addition to validating the findings of previous studies, he provided a comprehensive list of the 150 most frequent phrasal verbs comprising ones that occur at least more than ten times per million words in either COCA or the BNC. His list also informs register-specific frequency for each phrasal verb on the list regarding spoken, fiction, magazine, newspaper, and academic registers.

(3) Garnier and Schmitt's (2015) frequent meaning list

More recently, Garnier and Schmitt (2015) extended the previous research incorporating polysemy of phrasal verbs. The study pointed out most frequent meanings need to be addressed in addition to the phrasal verbs list because dictionaries usually provide exhaustive information for an entry, which is not ideal

for pedagogical purpose. Research indicates that phrasal verbs are highly polysemous, having on average 5.6 meanings (Gardner & Davies, 2007), although many of these are infrequent and peripheral. To answer the question of which meanings are the most useful among several senses in a dictionary, a set of 100 concordance lines in COCA were randomly selected and examined. Then, another set of 100 lines was analyzed for confirmation. Their pedagogical list of phrasal verbs, as a final product, lists the 150 most frequent phrasal verbs, and provides information on their key meanings with meaning frequency percentages. An excerpt is provided below.

TAKE ON
1. Undertake or handle (role, task, responsibility issue) (42%)
Nobody was willing to *take on* such an awful job.
2. Acquire or assume as one's own (quality, meaning, shape) (41.5%)
The story *takes on* a whole new meaning when you read it again.

These studies related to the relative frequency of phrasal verbs carry significant pedagogical implications for teachers, learners, and materials developers. Teachers and learners can benefit from these findings by focusing on those phrasal verbs most frequently used, as uncovered by corpus examinations, rather than on those selected randomly or based on teachers' intuitions.

3. Previous Research on Phrasal Verbs in Textbooks

Studies analyzing phrasal verbs in English textbooks in Korea broadly fall into three categories. First, corpus based analysis of phrasal verbs has been conducted from different perspectives. Lee (2005), for instance, compared phrasal verbs in secondary school English textbooks with those found in *Longman Grammar of Spoken and Written English* and concluded that English textbooks need to deal with more common phrasal verbs in English. Similarly, Yook (2006) analyzed the frequency distribution of phrasal verbs in textbooks and compared it with that of referential corpora of English and pointed out that textbooks failed to present commonly used phrasal verbs with their major functions. Jung (2012) selected twelve target phrasal verbs and investigated the most frequent meanings and

collocations of the target phrasal verbs in both COCA and high school English textbooks. Based on her research, she claimed that more frequently used phrasal verbs, and the preferred expressions and collocations of each phrasal verb, should be presented in textbooks.

The second category of studies centers on cognitive analyses of phrasal verbs in textbooks (Kim, 2011; Kim & Park, 2002; Min & Park, 2008; Park, 2008). These studies commonly note that English textbooks in Korea fail to introduce the polysemous quality of phrasal verbs. They tend to present figurative meanings rather than literal meanings and abstract meanings rather than prototypical meanings.

Lastly, comparative analyses between British-American and Korean English textbooks have been carried out, and have revealed that Korean English textbooks employ fewer phrasal verbs compared to British-American English textbooks (Hong, 2007; Jung, 2004).

Although several studies have endeavored to describe the phrasal verbs used in textbooks, few studies have provided a thorough overview of the presentation of the phrasal verbs in the books. Moreover, none of the studies have adopted the list of the most frequently used phrasal verbs developed by Liu (2011) as their reference. Given that COCA and the BNC are the two most representative large corpora of English, high frequency phrasal verbs extracted from them should be taken into consideration as a primary starting point for the development of pedagogical guidelines. The current study is the first attempt to carry out a corpus analysis of phrasal verbs in high school English textbooks in terms of frequent meanings as well as frequency of occurrence. The analysis will be addressed according to the following three research questions:

(1) Do high school English textbooks provide comprehensive presentation of high frequency phrasal verbs?
(2) Is there any difference between high school English textbooks and the comparable corpus in terms of high frequency phrasal verbs occurrences?
(3) Does the meaning distribution of frequently used phrasal verbs found in the textbooks match the meaning distribution in native corpora?

III. Methodology

1. Database

1) High School English Textbooks Corpus

According to the 2009 revised English curriculum, implemented in 2013, English as a school subject comprises 15 elective courses (1 basic English course, 8 general English courses, 6 advanced English courses) and high schools are granted full autonomy regarding course adoption and textbook selection. Of the 15 available English courses, high school English I and English II were chosen as the subjects of analysis for the current study. The rationale for their inclusion is that, since 2015 (Ministry of Education: MOE, 2014), English I and English II have been expected to provide the foundation for the English portion of the Korean College Scholastic Ability Test (CSAT). In other words, the CSAT evaluates examinees' English performance based on the content which is supposed to be covered in English I and English II. Considering the influence of CSAT on the high school curriculum in Korea, it is reasonable to assume that most high school students would receive a similar education in English I and English II.

There are eight different English textbook publishers currently in Korea, and they all produce English I and English II textbooks. As a result, 16 English textbooks, one for each course from the eight textbook publishers, were analyzed. The most recent textbooks were used, those following the 2009 revised English curriculum. Table 1 contains the details of the selected materials.

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TABLE 1
List of Analyzed Textbooks

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Textbook	Author	Publisher	Code	Publication Year
	Kim, K. H.	Kumsung	(A)	
	Kim, J. W.	Chunjae Education	(B)	
	Shin, J. H.	YBM Sisa	(C)	
English I,	Yang, H. K.	Mirae-N	(D)	2009
English II	Yoon, M. W.	Doosan Dong-A	(E)	(Most recent)
	Lee, C. S.	Neungyule Education	(F)	
	Lee, C. B.	Chunjae Education	(G)	
	Hong, M. P.	Visang Education	(H)	

Note: The code letters are used to represent each textbook series hereafter.

At the textbook level, the scope of analysis was limited to the two major sources of language input in each chapter: listening scripts and reading passages. Given that phrasal verbs are extremely common in colloquial English, listening scripts, generally consisting of conversation and dialogue were expected to provide substantial phrasal verb input to students, as were reading passages. The High school English Textbook Corpus (HETC) consists of 189,203 words.

2) Graded Readers Corpus

Along with the HETC, a Graded Readers Corpus (GRC) was created for the comparative analysis of phrasal verb occurrences. The national curriculum for English provides a 2,988-word essential words list to serve as a pedagogical guideline for vocabulary teaching (Ministry of Education and Science Technology: MEST, 2011), and English publishers are expected to abide by it when designing textbook contents. However, native English corpora cover a wide range of authentic texts, from spoken to academic registers, which comprise an enormous amount of vocabulary. Hence, the phrasal verb frequency rate in native corpora might not be directly applicable to EFL textbooks. In order to ensure comparability, graded reader books were employed as an alternative.

Graded readers are books of graduated levels of difficulty, intended for use by students learning to read or learning a foreign language. The vocabulary sizes of Penguin Graded Readers, according to levels, are described in Table 2.

TABLE 2
Penguin Graded Readers Vocabulary Size by Level

Level	Target Learners	Vocabulary Size	
1	Beginner	300	headwords
2	Elementary	600	headwords
3	Pre-intermediate	1,200	headwords
4	Intermediate	1,700	headwords
5	Upper intermediate	2,300	headwords
6	Advanced	3,000	headwords

In the Penguin series, level 6 covers 3,000 headwords, a vocabulary size similar to that of the national curriculum (2,988). For this reason, the GRC comprises four level 6 graded reader books. The four books were carefully chosen to avoid genre

bias: Brave New World, representing the classic novel; The Testament, representing contemporary fiction; The Double Helix, representing science biography; and Business at the Speed of Thought, representing business nonfiction. Table 3 shows the composition of the GRC.

TABLE 3
The Composition of the Graded Readers Corpus

Level	Title	Word Counts
Level 6 (3,000 headwords)	Brave New World (Watson, 2008)	16,262
	The Testament	16,494
	The Double Helix	14,248
	Business at the Speed of Thought	15,654
	Total	62,658

2. Tools of Analysis

1) TagAnt (ver. 1.1.2)

TagAnt is a freeware part-of-speech tagger, which was developed by Dr. Laurence Anthony (2014b), a professor of Science and Engineering at Waseda University. This tagging software is based on the Tree Tagger engine, a tool for annotating text with part-of-speech and lemma information. The Tree Tagger has a set of 58 tags which hold grammatical relation output (see Table 4).

TABLE 4
Excerpt of Tree Tagger Tag Set (58 Tags)

POS	Description	Example
NN	Noun, singular	table
VV	Verb, base form	take
JJ	Adjective	green
RB	Adverb	however, usually
RP	Adverbial particle	give up
IN	Preposition	in, of, like
DT	Determiner	the

(Source: http://www.laurenceanthony.net)

TagAnt takes either an input text or an input list of text files and automatically

assigns parts-of-speech tags to them. The present study employed this tagging tool to annotate the HETC and GRC. Phrasal verbs were tagged as RP through the annotation, thereby allowing for easier extraction. It is downloadable from Anthony's website (available at http://www.laurenceanthony.net).

2) AntConc (ver. 3.4.3)

AntConc is a freeware, multi-platform tool for carrying out corpus linguistics research. This toolkit was also developed by Dr. Anthony (2014a). AntConc contains seven tools: concordance, concordance plot, file view, word list, keyword list, clusters, and collocates. The concordance tool shows search results in a 'KWIC' (Key Word In Context) format. This illustrates how words and phrases are commonly used in a corpus of texts. This study used the concordance tool to retrieve phrasal verbs from the corpus data. The latest version of AntConc can be accessed on Anthony's website (available athttp://www.laurenceanthony.net).

3. Procedure

1) Corpus Data Collection

To create the HETC, the listening scripts and reading passages from each textbook were collected and converted into electronic text format chapter by chapter. The four graded reader books were also converted to electronic text format. A total of 126 textbook files, containing 189,203 words, and four graded reader files, containing 62,658 words, were created.

2) Phrasal Verb Extraction

Searching for phrasal verbs by simply entering a lexical verb plus a particle (e.g., *go on*) in the search box is not viable because not every phrasal construction generated by the search term will necessarily be a phrasal verb. For example, the entry *go on* may yield non-phrasal verb cases such as *I'll go on Monday* where *on* is a preposition leading a time adverbial phrase. Thus, to ensure an accurate count of all the phrasal verb occurrences, TagAnt was used to grammatically

annotate the collected corpus data. Then, the entire tagged HETC and GRC data set were imported into AntConc for analysis.

The Tree Tagger system uses RP to stand for adverbial particles. The concordance tool can locate every instance where an adverbial particle is tagged. This was done by keying in a wildcard (∗) followed by an underscore plus RP (i.e., ∗_RP). The wildcard stands for any adverbial particle, and RP identifies the tag code attached behind adverbial particles. The query will generate all the phrasal verb tokens marked with an adverbial particle. The particle could be contiguous or noncontiguous.

3) Tagging Verification

A particular word can behave as a preposition in some contexts but as a particle in others (e.g., *on, in, off, up*, etc.). The overlap entails that some particle tags may be given erroneously, and that some genuine particles may not be recognized as such by the tagger. In other words, due to the syntactic ambiguity, some of the adverbial particles might be tagged with other codes, such as RB (the tag code for adverb) or IN (the tag code for preposition), rather than RP (the tag code for adverbial particle). Likewise, it is possible for prepositions and adverbs to be erroneously tagged with RP. Therefore, a cross-checking process was undertaken to enhance the reliability of the search results. It is worth mentioning that a small number of false tokens and errors were found and discarded as a result.

During the cross-checking process, well-established English dictionaries were used as references in order to discern phrasal verbs from other multi-word verbs: Longman Dictionary of Phrasal Verbs; Collins COBUILD Phrasal Verbs Dictionary; and Oxford Phrasal Verbs Dictionary.

4) Data Analysis

The verified data were analyzed from three different perspectives: the presentation of high frequency phrasal verbs, the relative frequency of high frequency phrasal verbs, and the distribution of their frequent meanings. Most frequent phrasal verbs lists from previous studies (Garnier & Schmitt, 2015; Liu, 2011), were used for comparison. Figure 1 summarizes the data analysis procedure.
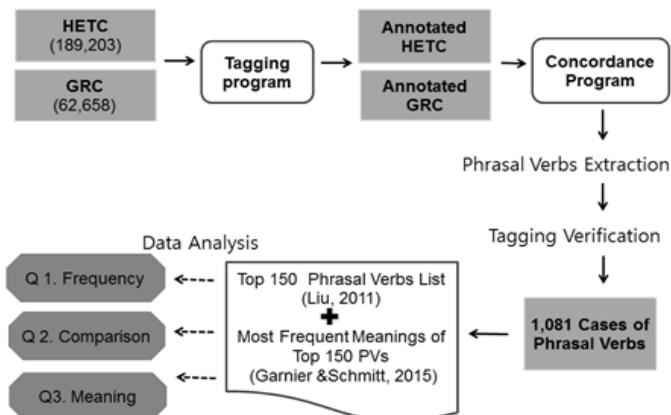
FIGURE 1
Data Analysis Procedure

IV. Results

1. Phrasal Verb Presentation in Textbooks

1) High Frequency Phrasal Verbs in Textbooks

In order to answer the question whether high school English textbooks cover essential phrasal verb knowledge, I compared the textbook phrasal verbs results with Liu's (2011) high frequency phrasal verbs list (Refer to Appendix). Liu developed a comprehensive list of the 150 most frequently used phrasal verbs found in native English corpora. The frequency of occurrence of all phrasal verbs in the textbooks was examined, in addition to the frequency of occurrence of those phrasal verbs found on Liu's (2011) list. The results are shown in Table 5. When it comes to total phrasal verb types per textbook publisher, Neungyule (B) used the widest range of phrasal verbs (114 types), whereas Doosan (C) presented the least (75 types). Each textbook publisher presents on average 89 different phrasal verbs. Out of the 89, an average of 45 were found to be the high frequency phrasal verbs of Liu's (2011), which means that roughly half of the phrasal verbs (51%) encountered in textbooks are high frequency phrasal verbs. Meanwhile, out of the

150 high frequency phrasal verbs on the list, 82 items (30%) are applied in each textbook.

TABLE 5
The Number of High Frequency Phrasal Verbs per Textbook Series

Textbooks	A	B	C	D	E	F	G	H	Mean
HF PVs (a)	45	56	41	48	40	46	42	41	45
Total PVs(b)	82	114	75	95	91	85	82	85	89
(a)/(b)	55%	49%	55%	51%	45%	54%	51%	48%	51%
(a)/150	30%	37%	27%	32%	27%	31%	28%	27%	30%

Note: The letters indicate different textbook series (see Table 1). HF PVs are high frequency phrasal verbs.

Analysis of the eight textbook series using the concordance tool, AntConc ver. 3.4.3, yielded a total number of 1, 088 phrasal verbs of 372 different types. Out of 1,088 phrasal verb occurrences, high frequency phrasal verbs account for 639 cases (59%), and the remains (41%) are non-high frequency phrasal verbs. Table 6 shows the top 20 phrasal verbs found in the textbooks. The most frequently used phrasal verb was found to be *come up,* appearing 35 times throughout the textbooks. It is also on the high frequency phrasal verbs list, ranking 4th on the list. Most of the phrasal verbs in Table 6 are on the high frequency phrasal verbs list except for *look forward (to), sign up*, and *throw away*.

TABLE 6
Top 20 Phrasal Verbs in HETC

PV	HF	A	B	C	D	E	F	G	H	Total
Total	120	112	187	100	145	138	118	141	147	1088
come up	*	7	7	2		6	5	2	6	35
find out	*		5	4	3	5	3	5	6	31
look forward		1	3	5		2	4	4	6	25
make up	*	3	4	1	2	1	6	1	3	21
give up	*		1	2	5		1	8	3	20
write down	*	8	2		1	2	1	4	2	20
end up	*	1			2	1	2	3	7	16
check out	*	2	2	1	3	7				15
figure out	*	1	1	1	1	1		2	8	15
go out	*		2	1	2		1	7	1	14
go back	*	1	1		1	2	1	5	3	14
come on	*	1	3	2	2		2		3	13

	HF									
go on	*	1	1	1	2	2	1	2	3	13
look up	*	4	1	3			1	3	1	13
pick up	*	1	3	1	3		3	1	1	13
sign up			6	2	2		2			12
throw away		1	3	1		4	2		1	12
go through	*		2			4	2	1	3	12
go up	*			1		8	1		1	11
come out	*	1	2	2	1		3	2		11

Note: HF = High Frequency; '*' indicates the phrasal verb is listed on Liu's top 150 phrasal verbs list

2) Common Phrasal Verbs Across Textbooks

It is important to identify the common phrasal verb items across different textbook series since their level of consistency will be inversely proportional to the degree of arbitrariness in phrasal verb presentation. If the publishers have systematic inclusion criteria when selecting phrasal verb items, the items would be highly consistent among English textbooks. On the other hand, the lack of systematic criteria would result in rare overlap of the phrasal verbs. The HETC yielded overall 372 different types of phrasal verbs, and among them, only 2 items (go *on* and *make up*) were commonly presented by all of the textbooks. 51 phrasal verbs (14%) appeared in half or more of the textbooks whereas more than half of the phrasal verbs (60%) were presented by one single publisher. This finding suggests that high school textbook writers may not have given sufficient attention to phrasal verbs and their teaching.

TABLE 7
Common Phrasal Verbs Across Textbooks

Overlapped Occurrence	Number of PVs	%
8	2	1
4~7	49	13
2~3	96	26
1	225	60
Total	372	100

Note: PVs = phrasal verbs

Despite of their low similarity across textbooks, however, by adding the information of high frequency phrasal verbs per frequency tier, the result provided

another meaningful interpretation. Table 8 demonstrates the percentage of high
frequency phrasal verbs according to the overlapping occurrence of phrasal verbs
across textbooks. As can bee seen, there was an 84% chance of it being a high
frequency phrasal verb if a phrasal verb was used by four or more different
textbook series, whereas phrasal verbs used by a single textbook series had only
a 16% chance. Interestingly enough, the most frequent phrasal verbs in the HETC
seemed to correspond with the high frequency phrasal verbs in English native
corpora. To put this in another light, high frequency phrasal verbs appear many
times in textbook series, increasing the chances of their being learned. The result
of the broader distribution of high frequency phrasal verbs across different
textbooks also supports their relatively high frequency in English.

TABLE 8
Percentage of High Frequency Phrasal Verbs per Frequency Tier

Overlapped Occurrence	PVs	HF PVs (%)
8	2	2 (100)
4~7	49	41 (84)
2~3	96	40 (42)
1	225	37 (16)
Total	372	120 (32)

2. Comparative Analysis with a Referential Corpus

As previously mentioned, Gardner and Davies (2007) estimated that phrasal
verbs occur in about every 150 words of English. This number (150) denotes the
Phrasal verb Frequency Rate (PFR), or the average word count between phrasal
verb encounters. The PFR is calculated by dividing the total number of corpus
words by the total observed frequency of phrasal verbs. To interpret the high
school textbook PFR, it is necessary to compare it with an appropriate reference
corpus. However, the PFR in a native English corpus might not be directly
applicable to EFL textbooks because of some contrasting characteristics between
them. First, textbooks are purpose driven materials. They are specially designed
for educational settings. On the other hand, a native corpus provides
comprehensive description of real usage of English. Second, textbooks are bound
to include the 2,988 words found on the basic vocabulary list provided by the MOE

(Ministry of Education), whereas a native English corpus is not.

Given these discrepancies, graded readers were selected for comparison, in lieu of a native corpus. Graded readers were judged better suited for comparison with textbooks because they are intentionally developed for reading and vocabulary learning, and their texts are simplified according to vocabulary size. For the purpose of this study, graded readers with vocabulary size equivalent to high school textbooks were used to generate a small comparative corpus (62,660 words). The PFR of English textbooks was compared with that of graded readers, and the results are shown in Table 9.

TABLE 9
Phrasal Verb Frequency Rate

	Graded Readers	HETC	BNC
Word count (a)	62,660	189,203	100 million
PVs count (b)	515	1,087	656,641
PVs PFR[1](a)/(b)	122	174	150[2]

Note: [1] PFR is phrasal verb frequency rate, the average word count between phrasal verb encounters; [2] From Gardner and Davies' (2007) study.

Graded readers showed the highest phrasal verb frequency (122), followed by the native English corpus (150). Textbooks presented phrasal verbs the least frequently. As can be seen, phrasal verbs tended to occur every 174 words in textbooks, whereas the PFR in graded readers was much higher at one in every122 words. It is clear from these values that phrasal verbs are more prevalent in the referential texts than in textbooks. It is noteworthy that graded readers present phrasal verbs more frequently than even a representative native English corpus as displayed in Figure 2.
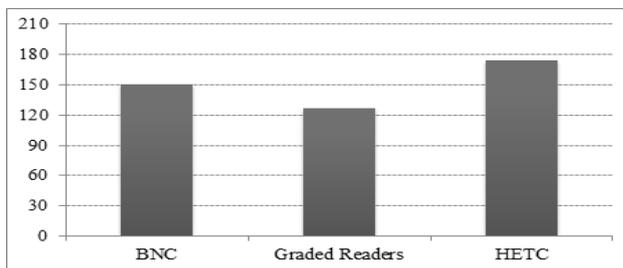
FIGURE 2
Comparative Analysis of Phrasal Verbs Frequency

TABLE 10
Phrasal Verb Frequency PTWs

	Graded Readers	HETC
Word count	62,660	189,203
PVs count (a)	515	1,087
PVs PTWs	**8.2**	**5.7**
150 PVs count (b)	295	639
150 PVs PTWs	**4.7**	**3.4**
% of 150 PVs among (b)/(a)	**57%**	**59%**

Note: PVs = phrasal verbs; 150 PVs = high frequency phrasal verbs; PTWs = per thousand words.

In other words, graded readers present phrasal verbs an average of 2.5 times more than textbooks PTWs. Regarding high frequency phrasal verbs, the frequency gap between graded readers and textbooks diminishes to 1.3 times, with the graded readers still outperforming the textbooks. High frequency phrasal verbs accounted for over half of the total phrasal verb occurrences in both corpora.

To determine if high frequency phrasal verbs were presented at different rates in the two corpora, a chi-square test was conducted with the total observed frequencies of the 150 phrasal verbs measured against the total number of words of their respective corpora minus the total number of tokens of the 150 phrasal verbs. The results (Table 11) indicate that the frequencies of the phrasal verbs are significantly different between the two corpora (χ^2 = 22.558, Asymp. Sig = .000).

TABLE 11
Comparison of the Most Common 150 PVs' Frequency

	Graded Readers	HETC	*df*	χ^2	Sig.
Total observed frequency of the 150 PVs	295	639	1		
Total number of words – the 150 PVs' total tokens	62,365	188,564	1	22.558	.000**
Frequency PTWs of the 150 PVs	**8.2**	**5.7**			

** $p < .01$

To answer the question of whether high school textbooks present an appropriate amount of phrasal verbs to students, a comparison of phrasal verb frequency among comparable corpora is a fundamental starting point. Such a comparison not only provides information on relative frequencies between corpora,

but may carry significant implications for phrasal verb teaching. The present results suggest that phrasal verbs could be employed in textbooks in greater quantity.

3. Phrasal Verbs and Their Frequent Meanings

Research indicates that phrasal verbs are highly polysemous, having on average 5.6 meanings (Gardner & Davies, 2007). However, "an average of two meaning senses is usually enough to cover 75% of the most frequent phrasal verbs occurrences" (Garnier & Schmitt, 2015, p. 659). That justifies the attempt to examine phrasal verbs in terms of meaning distribution. This study sought to demonstrate how the key meanings of phrasal verbs are delivered in textbooks by analyzing the meaning of extracted phrasal verbs in their given context.

In general, the key meanings of high frequency phrasal verbs were found to be well presented in high school English textbooks. Out of 643 sentences, 585 cases conveyed the key meanings of the phrasal verbs at a rate of 91%, while only 58 cases employed unlisted peripheral meanings at a rate of 9% (See Table 12).

TABLE 12
Semantic Analysis of High Frequency Phrasal Verbs in HETC

HF PVs with	Sentence	%
Most frequent meaning (listed)	585 / 643	91
Peripheral meaning (unlisted)	58 / 643	9

Some of the high frequency phrasal verbs which were used recursively in textbook series were found to have been used with different meanings. According to Garnier and Schmitt (2015), *come up* is mainly used for the following two meanings in native corpora (the numbers in parentheses indicate the frequency percentages).

COME UP
1. (+ *with*) Bring forth or produce (34%)
2. (*Be coming up*) Be happening soon (esp. be broadcast soon) (27.5%)

In the English 1 textbook published by Kumsung, both of the key meanings are presented in one chapter.

> (1) Almost fifty years later, a Hungarian named Laszlo Biro **came up with** a solution to this problem. (Kumsung, English 1, Ch. 8)
> (2) His birthday **is coming up** pretty soon. (Kumsung, English 1, Ch. 8)

In example (1), *come up* was used in its first meaning. In example (2), the phrasal verb carries the second meaning. The English 1 textbook published by Visang shows another example of multiple meaning presentation with *take on*. This phrasal verb is mainly used as follows.

TAKE ON
1. Undertake or handle (role, task, responsibility, problem, and issue) (42%)
2. Acquire or assume as one's own (quality, meaning, color, shape) (41.5%)

The textbook introduces these key meanings in different chapters. As an illustration, *take on* means to handle in example (3) and to acquire in example (4).

> (3) He drops back, knocks down another defender, and then **takes on** more defenders while Tony completes a pass. (Visang, English 1, Ch. 7)
> (4) When a boy puts on a vampire costume, for a brief period of time, he **takes on** the power of the legendary Dracula. (Visang, English 1, Ch. 6)

In order to understand the polysemy of phrasal verbs, contextual exposure to various examples with different senses is beneficial for learners. Despite the fact that the meaning distribution of textbook phrasal verbs mostly corresponds with their meaning frequency, 9% of the phrasal verb presentation cases do not convey the most frequent meanings associated with the verbs. Sometimes, the most

frequent meaning of a phrasal verb is not presented in the textbooks. For example, according to the PHaVE list (Garnier & Schmitt, 2015), *check out* is used mostly to mean to examine.

CHECK OUT
1. Have a look at, examine STH/SB (97%)

However, some textbooks do not provide its frequent meaning to the students. They only used *check out* as to borrow.

(5) How many DVDs can I **check out** at a time? (Mirae-N, English 2, Ch. 3)

(6) Can I **check out** this book? (Visang, English 1, Ch. 1)

Similarly, *come down* is mainly used in the following three ways in native corpora.

COME DOWN
1. Move from a higher spatial location to a lower one; fall/land onto the ground (32.5%)
2. (+ *to*) Reduce itself to one particular thing that is the most important or essential matter (20.5%)
3. Become lower in amount or value (11%)

Nonetheless, high school English textbooks do not present the most frequent meanings. Instead, they introduce *come down with*, which means to catch a cold.

(7) I'm **coming down** with a cold. (Chunjae (Lee), English 2, Ch. 7)

(8) Last winter you **came down** with a cold twice. (Kumsung, English 1, Ch. 1)

Garnier and Schmitt (2015) noted that *set up* is used to mean to establish or to create in more than half of its occurrences (64.5%). However, Mirae-N only includes a peripheral meaning of *set up* in the English 1 textbook. In example (9),

to set up means to do something that makes it likely or possible for (someone) to do, get, or experience something

> (9) Set realistic goals and you will not be ***setting*** yourself ***up*** for
> disappointment. (Mirae-N, English 1, Ch. 1)

It should be noted that frequency has twofold pedagogical implications; one relates to which phrasal verbs should be taught, and the other to which meanings should be introduced first. Considering that classroom teaching time is limited, textbook phrasal verbs should yield priority to more frequently used meanings, as well as to high frequency items.

As noted in the literature review, phrasal verbs are classified into three semantic categories: literal, completive, and figurative combinations. Despite of the semantic overlaps, it is undisputable that phrasal verbs are generally distinguished between two groups, namely semantically compositional phrasal verbs on the one hand, and idiomatic phrasal verbs on the other hand. Cognitive analysis studies on phrasal verbs in English textbooks have pointed out the problematic tendency of textbooks failing to provide the literal and figurative meanings of phrasal verbs together (Kim, 2011; Kim & Park, 2002; Min & Park, 2008; Park, 2008). The current study selected 24 phrasal verbs, which have both literal and figurative meanings as their key meanings, from the most frequently used phrasal verbs list and analyzed which meanings were primarily covered by textbooks. Those 24 phrasal verbs under scrutiny are as follows:

> bring in, come around, come down, come in, come off, come out, get in, get off, go down, go out, go over, hold up, look down, look out, look up, pass on, pull back, put on, stand up, step back, take off, take out, turn around, turn back

The results confirm the findings of previous studies. In only 15% of the cases were phrasal verbs presented with both literal and figurative meanings, and in about one third of the cases (30%), only figurative meanings were given, even though the target phrasal verbs were most frequently used in their literal senses in native corpora (See Table 13).

TABLE 13
Meaning Distribution of 24 Target Phrasal Verbs

Textbooks	A	B	C	D	E	F	G	H	Mean (%)
Both	2	2	1	0	1	1	3	0	1 (15%)
Literal only	4	5	5	5	3	4	6	6	5 (55%)
Figurative only	3	3	0	5	1	3	1	5	3 (30%)
Total	9	10	6	10	5	8	10	11	9(100%)

Note: The total number of occurrences (69) is larger than the number of target phrasal verbs (24) because the target phrasal verbs were presented by more than one textbook series.

For example, *step back* has two meanings; first meaning refers to a physical activity of moving one's body backwards, and second meaning refers to a mental activity of trying to think calmly about a situation. Although *step back* is mainly used in its literal sense in native corpora, high school English textbooks only introduce the figurative meaning to students.

(10) By analyzing and **stepping back** from the problem, you can evaluate its importance. (Kumsung, English 1, Ch. 7)

(11) Instead, **step back** and turn your attention to possible solutions. (Neungyule, English 1, Ch. 6)

One might argue that it is not necessary to explain literal or non-idiomatic phrasal verbs in textbooks because their meanings are easy to deduce if the verb element is known. However, as Cornell (1985) pointed out, "the lack of a receptive problem does not mean that the learner can himself use these non-idiomatic phrasal verbs productively" (p. 270). Therefore, along with idiomaticity, frequency should not be ignored for a systematic process of phrasal verbs selection.

V. Discussion & Conclusion

The findings of the current study can be described as follows. First, out of 150 high frequency phrasal verbs, less than one third (30%) of them are covered in each textbook series. This was a relatively lower rate than expected and argues for more high frequency phrasal verbs being included in textbooks. Gardner and Davies (2007) reported that the top 100 phrasal verbs account for more than half

of the total phrasal verb occurrences in the BNC, a representative corpus of English. Frequency is the key factor in deciding the coreness of vocabulary. By this rationale, Liu's (2011) list of 150 high frequency phrasal verbs is of critical value to EFL classrooms and should be the designated starting point of phrasal verb learning and teaching.

Second, the analysis of eight different textbook series yielded a total of 1,088 phrasal verb tokens and 372 different phrasal verbs. Each textbook series introduces 89 phrasal verbs on average, with the total number of different phrasal verbs used across all eight textbook series standing at 372. These results demonstrate that the lists of phrasal verbs used in the eight different textbook series rarely share items in common, suggesting an arbitrary selection of phrasal verbs for textbooks. The current national English curriculum does not provide pedagogical guidelines for phrasal verbs, which may offer one explanation for this arbitrariness. Taking the significance of phrasal verb learning into account, it is highly recommended that a pedagogical phrasal verbs list be developed to accompany the essential words list (MEST, 2011).

Third, only 51 phrasal verbs out of 372 frequently occur in over half of the textbooks. The relatively small number of phrasal verbs, held in common across textbooks (14%) reveals the lack of systematic criteria for phrasal verb selection. Interestingly, however, those phrasal verbs which were found in more than four different textbook series were shown to have an 84% chance of being a high frequency phrasal verb, whereas phrasal verbs used in only one series had only a 16% chance. In other words, the more a phrasal verb overlaps between series, the more likely it is to be a high frequency phrasal verb. This provides additional confirmation of the validity of Liu's (2011) list.

Fourth, the comparative analysis between graded readers and English textbooks revealed that the textbooks employed fewer phrasal verbs compared to the referential texts of equivalent vocabulary size (3,000 headwords). In fact, the use of phrasal verbs in graded readers outpaced that of a native English corpus. High school textbooks, on the other hand, included far fewer phrasal verbs than both the graded readers and the native English corpus. A probable explanation for this result is that textbook publishers prefer one-word verbs rather than phrasal verbs. Considering the fact that textbook publishers are obliged to include not less than 80% of the essential words list provided by MEST (2011), it is unsurprising that

phrasal verbs would appear less frequently than one-word verbs in textbooks. Along with the limited coverage of high frequency phrasal verbs described in section 4.1, the results suggest that textbook publishers should be encouraged to provide more coverage of phrasal verbs, high frequency phrasal verbs in particular.

Fifth, the semantic analysis of high frequency phrasal verbs shows that several opportunities exist for the improvement of phrasal verb presentation in terms of meaning. In most cases, the key meanings of high frequency phrasal verbs are well presented in high school English textbooks. However, 58 cases out of 643 total occurrences (9%) are used to convey peripheral meanings rather than more frequently used phrasal verb meanings. Furthermore, in some cases, figurative meanings tend to outnumber literal meanings, regardless of the literal sense being the one more commonly used in native corpora. In other words, even if the literal meaning is the dominant sense in which a certain phrasal verb is used in native corpora, textbooks tend to use its figurative meaning rather than its literal meaning. Unlike native speakers, who are often able to understand the literal meaning simply based on intuition, EFL learners may not be able to interpret the meaning properly unless a lexical explanation is provided. For this reason, literal meanings should be introduced in textbooks in addition to figurative meanings, especially if a literal meaning accounts for the dominant meaning in terms of frequency. When phrasal verbs are presented to learners, which meanings are employed should be considered as carefully as which phrasal verbs are chosen.

The findings of this study suggest that the textbooks are arbitrary in their presentation of phrasal verbs. Ministry of Education announced that one of the objectives of high school curriculum of English is to cultivate the ability to communicate about general topics in daily English conversation (MEST, 2011). Considering the fact that phrasal verbs are extremely common in colloquial English and daily conversation, the pedagogical significance of them should not be ignored any longer. The national curriculum of English should provide a specific guideline including a list of essential phrasal verbs focusing on high frequency phrasal verbs to guarantee their systematical teaching.

In order to decide which phrasal verbs to focus on, practitioners should think about a 'core' of phrasal verbs for effective teaching, considering various aspects of learnability such as idiomaticity, replaceability, restrictions, and frequency (Cornell, 1985). Of these aspects, frequency can now be effectively measured

thanks to the development of corpus linguistics. Previous findings related to the highest frequency phrasal verb constructions in native corpora (Biber et al., 1999; Gardner & Davies, 2007; Garnier & Schmitt, 2015; Liu, 2011) present significant pedagogical implications to teachers, practitioners, and materials developers.

The results of this study showed that the most frequent phrasal verbs in the HETC seemed to correspond with the high frequency phrasal verbs in English native corpora. In addition, high frequency phrasal verbs were found to be more evenly distributed across textbook chapters. Despite the lack of consistency in presenting phrasal verbs, the result showed that the more a phrasal verb overlaps between series, the more likely it is to be a high frequency phrasal verb. This corresponding similarity between the HETC and native English corpora strongly supports validity of Liu's (2011) list. At the same time, it justifies the necessity of adopting Liu's list into the textbook curriculum.

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Huxley, A. (2008). *Penguin readers: Brave new world.* Harlow: Pearson.

Watson, J. (2008). *Penguin readers: The double helix.* Harlow: Pearson.

Appendix

High Frequency PVs List of Liu's (2011)

Rank	PVs	Rank	PVs	Rank	PVs
1	go on	35	wake up	69	wind up
2	pick up	36	carry out	70	turn up
3	come back	37	take over	71	line up
4	come up	38	hold up	72	take back
5	go back	39	pull out	73	lay out
6	find out	40	turn a/round	74	go over
7	come out	41	take up	75	hang up
8	go out	42	look down	76	go through
9	point out	43	put up	77	hold on
10	grow up	44	bring back	78	pay off
11	set up	45	bring up	79	hold out
12	turn out	46	look out	80	break up
13	get out	47	bring in	81	bring out
14	come in	48	open up	82	pull back
15	take on	49	check out	83	hang on
16	give up	50	move on	84	build up
17	make up	51	put out	85	throw out
18	end up	52	look a/round	86	hang out
19	get back	53	catch up	87	put on
20	look up	54	go in	88	get down
21	figure out	55	break down	89	come over
22	sit down	56	get off	90	move in
23	get up	57	keep up	91	start out
24	take out	58	put down	92	call out
25	come on	59	reach out	93	sit up
26	go down	60	go off	94	turn down
27	show up	61	cut off	95	back up
28	take off	62	turn back	96	put back
29	work out	63	pull up	97	send out
30	stand up	64	set out	98	get in
31	come down	65	clean up	99	blow up
32	go ahead	66	shut down	100	carry on
33	go up	67	turn over	101	set off
34	look back	68	slow down	102	keep on

Rank	PVs	Rank	PVs	Rank	PVs
103	run out	119	wind up	135	set down
104	make out	120	slow down	136	sort out
105	shut up	121	wind up	137	follow up
106	turn off	122	turn up	138	come through
107	bring about	123	line up	139	settle down
108	step back	124	take back	140	come a/round
109	lay down	125	lay out	141	fill in
110	bring down	126	take down	142	give out
111	stand out	127	get on	143	give in
112	come along	128	give back	144	go along
113	play out	129	hand over	145	break off
114	break out	130	sum up	146	put off
115	go a/round	131	move out	147	come about
116	walk out	132	come off	148	close down
117	get through	133	pass on	149	put in
118	hold back	134	take in	150	set about

예시언어(Examples in): English
적용가능 언어(Applicable Languages): English
적용가능 수준(Applicable Levels): Secondary

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