

# 高中英語教科書中的片語動詞分析： 與美國當代英語語料庫之比較

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## 摘要\*\*

片語動詞由動詞與介系詞或副詞組成，不易教學，卻是語言流暢的指標。但臺灣的英語教學忽略之，政府未提供片語動詞列表，使教師、教科書書商、測驗發展者無所適從。為瞭解英語教科書中片語動詞選用與其本質，本研究以市佔率最高的高中英語教科書 M 與 L 兩版本為例，分析其片語動詞，以探究語言真實性。研究者利用 Excel 公式 VLOOKUP，比較書中所列片語動詞與美國當代英語語料庫前 100 個最廣泛使用的、學術寫作最常使用的，並計算重疊率、列出重疊的片語動詞。同時，針對重疊的片語動詞，研究者利用兩個線上英語辭典與英語教科書，列出其多重意義，並計算平均值。結果顯示，M 版本有 21.1% ( 23.7% ) 的 ( 學術寫作 ) 片語動詞與語料庫重疊；L 版本則有 28.8% ( 30.4% ) 的重疊率。研究亦發現，兩版本中的片語動詞平均只有 1.10 個意義，與線上字典的 4.5 個意義相差甚遠。上述結果將對臺灣的高中英語教師、教科書書商、測驗發展者有很大啟發。本研究亦提出片語動詞的教學建議。

**關鍵詞：**片語動詞、英語教科書、教科書分析、語言真實性、語料庫

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# An Analysis of Phrasal Verbs in English Textbooks for Senior High Schools: A Comparison with COCA Corpus

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## Abstract\*\*

Phrasal verbs (PVs), grammatical elements that consist of a verb and a preposition or an adverb, represent one of “the most notoriously challenging aspects of English language instruction” (Gardner & Davies 2007 339); nevertheless, some mastery of PVs is essential in the development of language fluency. However, PVs are sometimes inadequately covered in Taiwan’s English education programs due to a lack of availability of any systematic word lists of PVs that might provide guidance for English teachers, textbook editors, or language test designers. With the purpose of examining the selection of PVs and their characteristics, this study investigates examples of PVs in two of the most widely used senior high school level English textbooks (M Book and L Book) to determine whether the language use is authentic. With the Excel formula VLOOKUP, the researcher compares the listed PVs in English textbooks with the top 100 most frequently used PVs in general use and academic written forms in Corpus of Contemporary American English (COCA), quantifies the overlapping ratio, and lists the overlapped PVs. The researcher also analyzes two online English dictionaries and the English textbooks to list the meanings of the overlapped PVs and calculate the average. The results show that 21.1% (23.7%) of the (academic written) PVs in M Book are overlapped with the corpus data, while the overlapped ratio of the PVs in L Book is around 28.8% (30.4%). It is also found that the PVs in the two textbooks have only 1.10 meanings on average, compared to 4.5 meanings in online dictionaries. These findings have implications for high school English teachers, English textbook editors, and language test

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designers in Taiwan. Pedagogies for teaching and learning PVs are also suggested.

**Key words:** Phrasal verb, English textbook, textbook analysis, authenticity, Corpus of Contemporary American English (COCA)

## 1. Introduction

While vocabulary knowledge is essential in second language learning, multiword units, such as collocations, compounds, phrasal verbs, idioms, and cliches, also play a part in the development of language fluency (Boer 2013; Garnier & Schmitt 2015). Among these words, most linguists and English teachers consider phrasal verbs (PVs) as “the most notoriously challenging aspects of English language instruction” (Gardner & Davies 2007 339). PVs are a combination of words – a verb and one or two prepositions or adverbs. Different combinations of verbs and prepositions or adverbs create different meanings; for example, the meanings of the verb *come* vary when it is in combination with prepositions like *in*, *about*, *out*. This is why language learners have difficulty in understanding and memorizing PVs. More specifically, El-Dakhs (2016) pointed out such difficulty in productive language is due to limited language exposure.

The above difficulties draw particular attention to and efforts in the instruction of English PVs. However, PVs are rather ignored in Taiwan’s English teaching and learning. There are two major problems. On one hand, the lists of PVs are much shorter in each unit of the English textbooks for senior high students, compared to single-word vocabularies. For instance, in a commonly-used textbook in Taiwan, there are about twenty vocabularies versus only three to five PVs. Such “limited contact” is the cause that students cannot successfully learn PVs (Cornell 1985 273). On the other hand, Taiwan’s government does not offer any systematic word lists of PVs as a guidance for English teachers, textbook editors, or test designers. This echoes with Darwin and Gray (1999), who indicated the dilemma that researchers, instructors, and curriculum designers determine the commonest or most need-to-be-learned PVs “by intuition” (qtd. in Gardner & Davies 2007 342). Without confronting and resolving the above problems, students will still have difficulty in learning PVs and developing their fluency in English.

Being aware of the significance of PVs and the aforementioned issues in Taiwan’s English education, this research thus aimed to investigate the selection of PVs in the English textbooks. The specific research purposes were twofold: (1) to examine whether the listed PVs are worth learning for students by comparing them with authentic COCA corpus data, and (2) to explore the nature of the overlapped PVs. This study was guided by the following research questions:

- (1) To what extent do the phrasal verbs in Taiwan’s English textbooks for senior high schools overlap with the authentic English use in

COCA in terms of (1) general use and (2) academic use?

- (2) What are the high-frequency PVs missing in Taiwan's English textbooks for senior high schools?
- (3) What are the characteristics of the overlapped PVs in Taiwan's English textbooks for senior high schools?

It is hoped that through such exploration the present study could find out problems of the PVs selection, propose corresponding solutions, and pay contribution to the PVs in English textbook editions and PVs instruction in Taiwan.

## 2. Literature Review

### 2.1. Phrasal Verbs

#### 2.1.1. Definition of Phrasal Verbs

Multi-word verbs are combinations of verbs and include phrasal verbs, prepositional verbs, and phrasal-prepositional verbs (Cambridge Dictionary, n.d.). Often used to refer to all of the three, the term "phrasal verb" is first introduced by Smith (1975) as "one of the most striking idiosyncrasies" of English, and is seldom used in languages other than English (Thim 2012 3). By definition, PVs are "verbs that consist of a verb and a particle" (McCarthy & O'Dell 2004 6) and the particles are "typically homonymous with an adverb or a preposition" (Thim 2012 10). The particles following the verbs can be either adjacent to them or not contiguous (Gardner & Davie 2007), which means there may or may not be intervening words between the verb and its particle. More specifically, PVs in Modern English may at least include the following particles: "*aback, aboard, about, above, across, after, ahead, along, apart, around, ashore, aside, astray, asunder, away, back, behind, by, down, forth, for-ward(s), home, in, off, on, out, over, past, round, through, to, under, up*" (Thim 2012 11). In the present study, for the convenience of data collection, the target PVs were operationally limited to the verb-particle combinations without intervening words.

#### 2.1.2. Characteristics of Phrasal Verbs

In addition to defining PVs, numerous linguists have also been trying to divide PVs into different categories in terms of their syntactic or semantic characteristics (Liu 2011 663). To the researcher's knowledge, one of the latest categorizations is Thim's (2012 13) semantic classification of PVs

into “compositional” and “idiomatic (non-compositional).” Being compositional means that the meaning of a PV is literal (13). One can understand what PVs refer to directly from their combinations of verbs and particles. A clear example is *come in*, with a simple verb *come* and a directional preposition *in* (11). Apart from directional particles, particles can also be used as aspectualizer expressing complete, repeated, or continuous actions (12). Examples include *talk on* (continue to talk) and *drink up* (finish drinking). In contrast, if a PV is non-compositional or idiomatic, it has to be decoded within certain contexts where the combination is put. Its compositionality or idiomaticity can be either concrete or abstract (12). For instance, *take in* has entirely different meanings in the following three sentences: (1) We have to *take in* the cloth before it starts to rain. (2) She *takes in* laundry for a living. (3) It’s hard for me to *take in* the news that he is dead. The first *take in* is much more literal whereas the second one is context-dependent and the third is far more abstract.

The above categorization divides PVs into literal and idiomatic meanings, and other researchers may have different classifications. Nevertheless, the nuances of the definitions and categories of PVs are of no instructional value for language learners (Gardner & Davies 2007 341), and the polysemous meanings of PVs may not be cut so clearly. As a set of words, each verb-particle combination has polysemous meanings. One PV has 5.6 meanings on average, and the 100 top PVs in British National Corpus potentially involve 559 meanings (Gardner & Davies 2007 353). Such multiplicity demonstrates the difficulty of learning PVs and “the need for language learners to be exposed to these structures in multiple and varied contexts,” and calls for careful examination of language teaching materials like English textbooks.

## 2.2. Corpus-Based Analysis of Phrasal Verbs in English Textbooks

English textbooks are essential materials for teaching and learning English. English textbooks vary from one publisher to another, needless to say among different countries. In Taiwan, teacher-researchers have been conducting different types of textbook analysis, such as text difficulty (Cheng & Chang 2022), vocabulary size and frequency (Lee 2011), speech acts (Huang & Pai 2009) or multi-word sequence (Lin 2014). Only a very

small number of them, nonetheless, put focus on PVs or the authenticity of language use.

Three Taiwanese researchers, Wang (2013), Hill (2016), and Cheng et al. (2019) had tried to conduct corpus-based analysis of PVs in Taiwan's English textbooks for secondary students. Wang (2013) investigated the frequency and presentation of PVs in Joy English textbooks for junior high students by making a comparison with COCA corpus data, with an eye to dispelling the myth that PVs are regarded as informal language use. She pointed out that many PVs were introduced in an inappropriate way in the English textbooks, and that the PVs which were not listed in English textbooks were actually of high-frequency use. Wang (2013) thus suggested that textbook designers should mark and make a list of PVs for junior high students. English teachers should also provide students with more knowledge of PVs.

Hill (2016), targeting at 232 PVs and idioms in the four volumes of Far East Publisher's English textbooks for senior high students, calculated the frequency of each multi-word and reviewed the provided word knowledge of those multi-words according to the authentic pieces of evidence in COCA. She found that the majority of PVs and idioms in the English textbooks were not used that frequently in the corpus, with only 10% falling within the frequency ranges of 25,000 to 159,999. She also specified that 25 multi-words had problems in their Chinese and English definitions, example sentences, and collocations. Hill (2016) then concluded that the lack of full and correct word knowledge of PVs in English textbooks might lead to students' confusions and inaccuracies in English.

Also focusing on English textbooks for senior high students, Cheng et al. (2019) examined FC Book, FS Book, L Book, and S Book. After extracting their PVs corpora with the use of Sketch Engine, they compared the data with one of the most famous high-frequency PVs lists, the PHaVE List of 150 PVs (Garnier & Schmitt 2015), using the website Venny 2.0. They also made contrast within and among the four Books. According to Cheng et al. (2019), each Book's overlapping ratio ranges from 40% to 47%. However, more than half of PVs in the PHaVE List were not included in the English textbooks of the four publishers. PVs of academic use received the least attention. From their results, Cheng et al. (2019) proposed that textbook publishers have to work harder on the authentic functionality of PVs and specifically pay more attention to academic PVs.

Wang (2013), Hill (2016), and Cheng et al. (2019) had shed light on the issues of PVs in Taiwan's English textbooks for secondary students, which are the disregard of PVs, the improper definitions of PVs, the lack of

authenticity, and the overlook of academic PVs. Still, further studies, especially those into the English textbooks for senior high schools, are needed for the following two reasons. Firstly, Wang's research (2013) revealed that PVs receive less attention in the English textbooks for junior high schools, which means that these teaching materials may not be as worthy of being studied as those involving lists of PVs, namely textbooks for advanced English learners. Secondly, these three studies were all done before the revolutionary educational transformation into the 12-year Basic Education Curriculum Guidelines, which proposes that "learning should consider real-life scenarios" (MOE 2014 5). The new curriculum guideline for English education particularly highlights the importance of actual language use outside classrooms, hoping to cultivate students' ability of problem-solving in daily lives with acquired knowledge. It is hence worth discussing if any changes regarding language authenticity are made in the latest English textbooks.

As stated so far, considering the above reasons, the difficulty of teaching and learning PVs, and the aforementioned issues in Taiwan's English education, this research aimed to analyze the linguistic authenticity of PVs in the new English textbooks for senior high schools, to seek for any missing high-frequency PVs in the teaching materials, and to explore the nature of PVs.

### **3. Methodology**

A corpus-based analysis of the PVs in Taiwan's English textbooks for senior high students was conducted in the quest for the following research questions – (1) To what extent do the phrasal verbs in Taiwan's English textbooks for senior high schools overlap with the authentic English use in COCA in terms of (a) general use and (b) academic use? (2) What are the high-frequency PVs missing in Taiwan's English textbooks for senior high schools? (3) What are the characteristics of the overlapped PVs in Taiwan's English textbooks for senior high schools?

#### **3.1. Data Sets**

Two versions of English textbooks for general high school students were analyzed, which are respectively published by M Book Co., Ltd and L Book Co., Ltd. Both M Book and L Book are leading publishers of English textbooks for senior high schools. M Books' and L Book's English textbooks of fall 2022 were chosen since both were easily available online. In each



unit of the two Books is a vocabulary list and a list of idioms and phrases; the PVs in the latter list were one of the data sources. The other data source is the main reading text, from which PVs were also collected manually.

In terms of the selection of PVs, both the verb-particle combinations of a verb and a preposition or adverbial were collected as data sets. Some of the words needed some revisions before being put into the data:

- (1) PVs written in passive forms, like *be filled with* and *be fed up*, were changed into the active form, *fill with* and *feed up*. After the changes in forms, these PVs were included in the data sets.
- (2) The nouns following after the verbs were deleted, such as *roll up (one's sleeves)* or *take (day) off*, only if this will not change the word meanings. That is, *take off* still means taking a day off without the noun *day*. After deletions, these PVs were included in the data sets.
- (3) If, without nouns following after the verbs, the meaning of PVs changes, these PVs were excluded from the data sets; for example, the meanings of *make up one's mind* and *clean up one's act* are different, when without the nouns, from *make up* and *clean up*.
- (4) The PVs that need a noun intervening between its verb and particle, like *scare someone off*, *refer to something as*, or *win someone or something back* etc., were excluded from the data sets, for the convenience of data collection and analysis.

In total, 156 PVs were collected from the M Book and 125 PVs from the L Book (see Table 3.1.). Two complete lists of PVs were displayed in Appendix A and B.

Table 3.1. Data Sets

	Volumes	Units	Target PVs
M Book	5	42	156
L Book	5	46	125

## 3.2. Instruments

### 3.2.1. Reference List

For the reference list of PVs, the researcher did not choose existing lists high-frequency PVs (Liu 2011; Garnier & Schm 2015) because it has been some years since their creation and language has been changing constantly. Therefore, in the present study, the reference for the evaluation of the linguistic authenticity of PVs was from the latest pieces of evidence in Corpus of Contemporary American English (COCA). COCA is a corpus of spoken and written modern American English, consisting of one billion words of data and covering a wide range of genres, such as fiction, magazine, newspaper, academic, website, and TV/movies. COCA was chosen as a referencing data source not only because it is the most widely-used corpus but also because the language style presented in Taiwan's English textbooks are more American, rather than British.

The following steps were carried out in order to generate two reference lists of PVs in authentic use: (1) the list of the most frequently-used PVs in general and (2) the list of the most frequently-used academic PVs. For the PVs of general use (spoken and written), firstly, the researcher searched with the keywords "VERB \_rp" and set 500 as the number of results (see links<sup>1</sup>) to gather as much data as possible at once. Secondly, she changed all the PVs from variation forms, like verbs with *-ing*, *-(e)s* or *-ed*, into the original ones. Thirdly, she deleted any repeated PVs and selected the top 100 most frequently-used PVs of general use (see Table 3.2.). Similarly, these steps remained the same for the reference list of academic (written) PVs, instead of the very first step. The researcher added one more step beforehand to limit the section of search results to academic written language. The top 100 most frequently-used PVs of academic use are presented in Table 3.3.

The number stopped at 100 for two reasons. On one hand, most lists of high-frequency PVs (Liu 2011; Garnier & Schmitt 2007 2015) contain around 100 to 150 PVs. The researcher hence decided to start with the first 100 frequently-used PVs. On the other hand, this study made use of the raw linguistic data from COCA, where the frequency of PVs varies significantly from one to another. If the number were further expanded, the gap of the

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<sup>1</sup> PVs of general use (spoken & written): <https://www.english-corpora.org/coca/?c=coca&q=115032376>  
PVs of academic use (written): <https://www.english-corpora.org/coca/?c=coca&q=115041534>

frequency for each PV might have grown far larger. To avoid this, the PVs in the reference lists stopped at around (from 203,871 and 45,293, to) 5,000 and (from 4,463 and 1,208 to) 200 frequencies respectively for PVs of general and academic uses (COCA 2008-).

### 3.2.2. Analysis Tool

Different tools were adopted in the quest for different research questions. To answer the first and second research questions, Microsoft Excel was used to make a comparison between the PVs gathered from the two Books and the most frequently-used PVs collected from COCA. Excel was selected because it is an easily accessible tool, in contrast with other linguistic analysis tools. The researcher was trying to demonstrate with Excel's accessibility that linguistic analysis of English textbooks is manageable for English teachers, and further encourage similar future studies. To answer the third research question, the Cambridge Dictionary and Merriam-Webster Dictionary are used to search for the (polysemous) meanings of the overlapped PVs so as to explore the characteristics of these PVs. Excel was used again to present, organize, and calculate the average number of meanings.

Table 3.2. The 100 Most Frequently-Used PVs of General Use

The 100 Most Frequently-Used PVs of General Use			
1. back up	26. get back	51. keep on	76. set off
2. break down	27. get down	52. keep up	77. set out
3. break up	28. get in	53. lay out	78. set up
4. bring in	29. get off	54. line up	79. show up
5. bring up	30. get on	55. live in	80. shut down
6. call out	31. get out	56. lock up	81. shut up
7. calm down	32. get up	57. look	82. sign up
8. carry on	33. give up	around	83. sit down
9. carry out	34. go	58. look back	84. slow down
10. catch up	around	59. look down	85. stand up
11. check out	35. go back	60. look out	86. start out
12. clean up	36. go down	61. look up	87. take off
13. come back	37. go in	62. make out	88. take on
14. come down	38. go off	63. make up	89. take out
15. come in	39. go on	64. move on	90. take over
16. come on	40. go out	65. open up	91. take up

17. come out	41. go over	66. pay off	92. turn around
18. come over	42. go	67. pick up	93. turn out
19. come up	through	68. point out	94. turn up
20. cut off	43. go up	69. pull out	95. wake up
21. cut out	44. grow up	70. put down	96. watch out
22. end up	45. hang on	71. put on	97. welcome
23. figure out	46. hang out	72. put out	back
24. find out	47. hang up	73. put up	98. wind up
25. get along	48. hold on	74. reach out	99. work out
	49. hold up	75. run back	100. worry
	50. hurry up		about

Table 3.3. The 100 Most Frequently-Used PVs of Academic Use

The 100 Most Frequently-Used PVs of Academic Use			
1. bear out	26. cut off	51. hold up	76. show up
2. bound up	27. date back	52. keep up	77. shut down
3. break down	28. draw up	53. lay down	78. single out
4. break out	29. drop out	54. lay out	79. sit down
5. break up	30. end up	55. leave out	80. slow down
6. bring about	31. engage in	56. live in	81. sort out
7. bring back	32. figure out	57. look back	82. speak out
8. bring in	33. fill out	58. make up	83. speed up
9. bring on	34. find out	59. move on	84. spell out
10. bring out	35. fit in	60. open up	85. spread out
11. build up	36. focus on	61. participate	86. stand out
12. carry on	37. follow	in	87. stand up
13. carry out	through	62. pass on	88. start out
14. catch up	38. follow up	63. pick up	89. strike down
15. check out	39. get back	64. play out	90. sum up
16. clean up	40. get out	65. point out	91. take on
17. close up	41. get up	66. put on	92. take over
18. come about	42. give up	67. put out	93. take up
19. come back	43. go back	68. put up	94. trace back
20. come down	44. go down	69. reach out	95. turn out
21. come in	45. go on	70. rule out	96. turn over
22. come out	46. go out	71. seek out	97. turn up
23. come up	47. go up	72. send out	98. usher in

24. control over	48. grow up 49. hand down	73. set off 74. set out	99. work out 100. write down
25. cut down	50. hold on	75. set up	

### 3.3. Research Procedure

For frequency and overlaps of PVs, the research procedure included three steps: data selection, reference creation, and data analysis. In step one, the PVs from each unit of the two versions of English textbooks were first listed, including verb-preposition and verb-adverbial combinations. In the second step, the reference lists of authentic language use of PVs were generated from COCA with the steps mentioned in the previous sub-section (see 3.2.1.). In the last step, Microsoft Excel was used to make a comparison between the input list of PVs respectively from M Book's and L Book's English textbooks and the two reference lists from COCA. The operational steps of analysis were as follows. Firstly, import the input list in column A and the reference list in column B. Secondly, in column C, give each PVs of the reference list a code number, 1. Thirdly, insert a formula "VLOOKUP" in column D (see Figure 3.1.). The "VLOOKUP" formula requires information about "lookup\_value" (input list), "table\_array" (reference list and its code number), "col\_index\_num" (column 2), and "[range\_lookup]" (TRUE or FALSE). By TRUE it means that the input partially overlaps with the reference, whereas by FALSE it indicates that the two words are exactly the same. If a phrasal verb in the input list overlaps in the reference list, the results will be "1." If it is not overlapped, the results will be "#N/A." Fourthly, copy and paste the results in another new column (column E), and change "#N/A" into "0." Fifthly, count the overlapping rate by summing up the 0s and 1s, and dividing the sum by the total number of words of the input list in column F.

As for the meanings of PVs, the researcher listed all the overlapped PVs between M Book and L Book and COCA. She then looked up to Cambridge Dictionary and Merriam-Webster Dictionary, taking notes of all the meanings of those overlapped PVs in Excel. The definitions of the PVs from the units of the two Books were also noted down. Lastly, the researcher calculated the average numbers of the meanings of the PVs.

	A	B	C	D	E	F
1	INPUT LIST	REFERENCE LIST	CODE NUMBER	VLOOKUP	OVERLAP	RATE OF OVERLAP
2	account for	back up	1	#N/A	0	0.288
3	add to	break down	1	#N/A	0	
4	base on	break up	1	#N/A	0	
5	blow up	bring in	1	#N/A	0	
6	bring back	bring up	1	#N/A	0	
7	bring in	call out	1		1	
8	call for	calm down	1	#N/A	0	
9	carry out	carry on	1		1	
10	carry through	carry out	1	#N/A	0	
11	cheer up	catch up	1	#N/A	0	
12	choke back	check out	1	#N/A	0	

Figure 3.1. The VLOOKUP Formula in Excel

#### 4. Results

To answer the first research question – To what extent do the phrasal verbs in Taiwan’s English textbooks for senior high schools overlap with the authentic English use in COCA in terms of (a) general use and (b) academic use? – Table 4.1. and 4.2. presents the results of the comparison between the two input lists and the COCA corpus data as references. In Table 4.1., among the 156 PVs in M Book’s English textbooks, only 33 of them were found to overlap with the spoken and written PVs in COCA, and the overlapping ratio between the two lists is 21.1%. In contrast, 36 out of 126 PVs in L Book’s English textbooks also appeared in the corpus data, and the ratio of overlapping is 28.8%. The overlapped PVs from both Books are listed in Table 4.3. In addition, in Table 4.2., only 37 out of the 156 PVs in M Book were found to overlap with the academic written PVs in COCA; the overlapping ratio is 23.7%. Similarly, 36 out of the 126 PVs in L Book were also found in the academic corpus data; the ratio of overlapping between the two lists is 30.4%. The overlapped academic PVs from both Books are listed in Table 4.4.

In terms of overlapping ratio, L Book contains more frequently-used PVS than M Book, be it is of general or academic use, which is a striking dissimilarity. Still, the two Books share some similarities. First, regardless of the ratio, both M Book and L Book contain about 35 most frequently-used PVs. Second, when the PVs in COCA were limited to academic written language, not only M Book’s ratio of overlapping but also that of L Book’s slightly increased. Third, 16 PVs overlapped with spoken and written COCA corpus data can be found in both lists, together with 19 academic PVs. On the other hand, while many of the overlapped PVs were found in both of the two reference lists from COCA, a small number of them appear only in one list. To put it in another way, PVs like *calm down*, *come out*, *come over*,

*get off, go through, hang out, line up, look out, take off, take out, turn around, and wake up* were only for spoken and written use in general. PVs like *break out, bring back, come about, come out, cut down, drop out, engage in, fit in, focus on, participate in, pass on, send out, speak out, speed up, and stand out* were specifically for academic written use. The difference between general and academic uses was self-evident.

To answer the second research question – What are the high-frequency PVs missing in Taiwan’s English textbooks for senior high schools? – Table 4.5. presents the missing top PVs in the two Books. 47 PVs of general use (spoken and written) and 44 PVs of academic use (written) were not found in either M Book or L Book. That is to say, the overall overlapping ratio between the two English textbook publishers and the top 100 general or academic PVs from COCA corpus data ranges from 53% to 56%.

To answer the third research question – What are the characteristics of the overlapped PVs in Taiwan’s English textbooks for senior high schools? – Table 4.6. presents the average number of meanings of PVs. For the overlapped PVs of general use (spoken & written), they have about 4.67 and 4.62 meanings respectively in Cambridge Dictionary and Merriam-Webster Dictionary but only 1.09 meanings in M Books and L Books. Similarly, the overlapped PVs of academic (written) use only have 1.10 meanings in Taiwan’s English textbooks, compared to the 4.33 and 4.16 meanings in the two online dictionaries.

Table 4.1. Results of the Overlapping with COCA corpus (Spoken & Written)

	Number of Overlapped PVs	Ratio of Overlapping
M Book	33	21.1%
L Book	36	28.8%

Table 4.2. Results of the Overlapping with COCA corpus (Academic Written)

	Number of Overlapped PVs	Ratio of Overlapping
M Book	37	23.7%
L Book	36	30.4%

Table 4.3. The Overlapped PVs (Spoken &amp; Written)

The Overlapped PVs in M Book		The Overlapped PVs in L Book	
1. break down	21. set up	1. bring in	21. <b>line up</b>
2. <b>calm down</b>	22. show up	2. carry out	22. <b>look out</b>
3. carry out	23. sit down	3. clean up	23. make up
4. come back	24. <b>take off</b>	4. come in	24. move on
5. come down	25. take on	5. <b>come out</b>	25. pick up
6. come in	26. <b>take out</b>	6. <b>come over</b>	26. put up
7. end up	27. take over	7. cut off	27. set out
8. find out	28. take up	8. end up	28. set up
9. go back	29. <b>turn</b>	9. figure out	29. show up
10. go down	<b>around</b>	10. find out	30. sit down
11. <b>go through</b>	30. turn out	11. <b>get off</b>	31. stand up
12. go up	31. turn up	12. get out	32. start out
13. grow up	32. <b>wake up</b>	13. give up	33. <b>take off</b>
14. look back	33. work out	14. go down	34. take on
15. make up		15. <b>go through</b>	35. turn out
16. pick up		16. grow up	36. wake up
17. point out		17. <b>hang out</b>	
18. put on		18. hold on	
19. reach out		19. keep up	
20. set off		20. lay out	

\*The underlined PVs were the overlapped ones in the two input lists.

\*\*The bolded PVs were the overlapped ones generally for spoken and written use.

\*\*\* The rest PVs were for both general and academic uses.

Table 4.4. The Overlapped PVs (Academic Written)

The Overlapped PVs in M Book		The Overlapped PVs in L Book	
1. break down	21. <b>participate</b>	1. <b>bring back</b>	21. make up
2. <b>break out</b>	<b>in</b>	2. bring in	22. move on
3. <b>bring back</b>	22. <b>pass on</b>	3. carry out	23. <b>participate</b>
4. carry out	23. pick up	4. clean up	<b>in</b>
5. come back	24. point out	5. <b>come about</b>	24. <b>pass on</b>
6. come down	25. put on	6. come in	25. pick up
7. come in	26. reach out	7. <b>come out</b>	26. put up
8. <b>cut down</b>	27. set off	8. cut off	27. <b>send out</b>
9. <b>drop out</b>	28. set up	9. end up	28. set out
10. end up	29. show up	10. figure out	29. set up
11. <b>engage in</b>	30. sit down	11. find out	30. show up



12. find out	31. <b>speed up</b>	12. <b>fit in</b>	31. sit down
13. <b>fit in</b>	32. take on	13. <b>focus on</b>	32. <b>speak out</b>
14. <b>focus on</b>	33. take over	14. get out	33. <b>speed up</b>
15. go back	34. take up	15. give up	34. <b>stand out</b>
16. go down	35. turn out	16. go down	35. stand up
17. go up	36. turn up	17. grow up	36. start out
18. grow up	37. work out	18. hold on	37. take on
19. look back		19. keep up	38. turn out
20. make up		20. lay out	

\* The underlined PVs were the overlapped ones in the two input lists.

\*\* The bolded PVs were the overlapped ones specifically for academic use.

\*\*\* The rest PVs were for both general and academic uses.

Table 4.5. Most Frequently-Used PVs Missing in English Textbooks

PVs of General Use (Spoken & Written)		PVs of Academic Use (Written)	
1. back up	26. hurry up	1. bear out	21. go on
2. break up	27. keep up	2. bound up	22. go out
3. bring up	28. live in	3. break up	23. hand down
4. call out	29. lock up	4. bring about	24. hold up
5. carry on	30. look around	5. bring on	25. lay down
6. catch up	31. look down	6. bring out	26. leave out
7. check out	32. look up	7. build up	27. live in
8. come on	33. make out	8. carry on	28. open up
9. come up	34. open up	9. catch up	29. play out
10. cut out	35. pay off	10. check out	30. put out
11. get along	36. pull out	11. close up	31. rule out
12. get back	37. put down	12. come up	32. seek out
13. get down	38. put out	13. control over	33. shut down
14. get in	39. run back	14. date back	34. single out
15. get on	40. shut down	15. draw up	35. slow down
16. get up	41. shut up	16. fill out	36. sort out
17. go around	42. sign up	17. follow through	37. spell out
18. go in	43. slow down	18. follow up	38. spread out
19. go off	44. watch out	19. get back	39. strike down
20. go on	45. welcome back	20. get up	40. sum up
21. go out	46. wind up		41. trace back
22. go over			42. turn over
23. hang on			43. usher in

24. hang up	47. worry	44. write down
25. hold up	about	

Table 4.6. Average of the Meanings of PVs

	Taiwan's English Textbooks (M Book & L Book)	Cambridge Dictionary	Merriam- Webster Dictionary
Overlapped PVs of General Use (Spoken & Written)	1.09	4.67	4.62
Overlapped PVs of Academic Use (Written)	1.10	4.33	4.16

## 5. Discussion

The results presented in the above tables showed that about 70% to 79% of the PVs listed in either M Book or L Book were not used as frequently as the PVs in COCA corpus, and that the limitation from spoken and written language data to academic written made slight significant changes of the coverage. This means that the language use of PVs in both textbook publishers is not that authentic, which echoes with Hill (2016), who found that 90% of PVs in F Book were of very low frequency, from 0 to 9,999. However, if viewed from another angle, the results seemed to be much more positive. It was indicated that the PVs from the two Books covered about 55% of the top 100 PVs from COCA, in terms of the PVs of both general (spoken and written) and academic (written) use. The coverage was close to Cheng et al.'s study (2019), where the PVs from the four textbook publishers accounted for 47% of the 150 PVs in the PHaVE List (Garnier & Schmitt 2015). This suggests that the language use of PVs in both textbook publishers is authentic to a certain extent. To put it in another way, although no more than 30% of the PVs listed in either M Book or L Book were of high frequency, these PVs took up more than half of the top 100 PVs. Contradictory as such findings may seem to be, this was a good sign. We could infer that Taiwanese students may have few opportunities to be exposed to authentic English with English textbooks, but there is evidence that slight improvement has been made in English textbooks with

regard to the language authenticity after the education transformation. The language use in Taiwan's English textbooks, of PVs in particular, are on the way closer to authentic English. Still, more efforts need to be made. If Taiwan's English education is inclined to pursue language authenticity, English textbook designers are highly encouraged to consult corpus data, like COCA. By so doing, our English learning could make further steps toward authentic English in "real-life scenarios" (MOE 2014 5). English teachers are also encouraged to make good use of corpus data so as to present students with more real language use that they may encounter one day outside classrooms.

In addition to the coverage of authenticity, the findings also showed that the average meaning of overlapped PVs in M Book and L Book (about 1.1) was much less than that of online dictionaries (about 4.5). It seems obvious that what Taiwanese students could learn about PVs with our English textbooks is limited. This confirms with the problem Cornell (1985 273) had pointed out – "limited contact" is the cause that students cannot successfully learn PVs. Only knowing one meaning per PV, students are likely to encounter difficulties in extensive English reading or English test taking. To solve such a problem, it is Taiwan's English teachers' responsibility to provide their students with the concept that PVs have polysemous meanings and to supplement them with different meanings of one PV that may be missing in the English textbooks.

Teaching the most-frequently used PVs in the corpus can add the authenticity of language into English classrooms, as those data are from real language use of native speakers. Such word frequency has been "an important criterion of vocabulary selection" (Honeyfield 1977 35); however, there are some problems with it. One of the problems of word frequency is that the word order in frequency lists may not be the suitable order for teaching (Nation 1990). Another problem is that no matter how many high-frequency words students have learned, they will still encounter unknown words (Honeyfield 1977). Still another issue is that the multiple meanings of PVs may discourage students' English learning motivations. To resolve these problems, one better solution, as Twaddell (1972) suggested, is to instruct students how to infer the meanings of unknown words from contexts (qtd. in Honeyfield 1977). Other technique includes teaching PVs by prepositions. English teachers could take advantage of preposition-directed PVs dictionary like *Macmillan Phrasal Verbs Plus* (Macmillan Education 2004). Still other approaches from cognitive linguistics (CL) can be adopted. According to Boer (2013), three common pedagogical methods can make polysemous or metaphorical

words more easily understood and memorable. The first instruction is to “(re)establish associations” with the fundamental use from which the polysemous PVs are derived (212). This can be done by asking students to draw illustrations or make a scaffolded guess at the meanings of PVs. The second pedagogy is to show how PVs “instantiate common conceptual metaphors” (213). Conceptual Metaphor Theory (CMT) refers to our attempts to use our domains of concrete and familiar knowledge to understand domains of abstract ideas (212). For example, teachers can encourage students to explain the reasons behind the abstract meanings of certain PVs. The third method is to present sets of PVs by topics, or to invite students to come up with “a frame” to form a group of PVs (217). The above teaching methods are beneficial to the teaching and learning PVs in three ways. PVs are introduced to students systematically. PVs are more contextualized once put in example sentences or under certain topics. PVs’ polysemous nature is also more acceptable, for students are able to build meaningful and personal mental representations of PVs.

## 6. Conclusion

In conclusion, the present study aimed to (1) examine whether the listed PVs in Taiwan’s English textbooks are worth learning for students by comparing them with authentic COCA corpus data, and (2) to explore the nature of the overlapped PVs. The findings indicated that no more than 30% of the PVs listed in either M Book or L Book were of high frequency but these PVs took up more than half of the top 100 PVs in COCA, which means the language use of PVs in M Book and L Book is authentic to some extent, and there is self-evident slight improvement (55% of coverage). It was also found that Taiwanese students have limited contact (each PV has only 1.10 meaning on average) to the polysemous meanings of PVs with English textbooks. On the way closer to authentic English in “real-life scenarios” (MOE 2014 5) and effective learning of PVs, both English textbook designers and English teachers are encouraged to consult corpus data, like COCA. English teachers should also take responsibility for the introduction of the concept of PVs’ polysemy to their students. Meanwhile, selecting words to be learned according to frequency may be problematic, and PVs’ polysemous nature may also be discouraging. Better solutions include to instruct students to infer the meanings of unknown words from contexts (Twaddell 1972; qtd. in Honeyfield 1977), and to teach PVs by prepositions, and adopt cognitive linguistic pedagogies (Boer 2013).

Last but not least, the limitations of the present study are threefold. Firstly, the direct adaption of the raw data from COCA corpus as the reference lists may be problematic, in comparison with the existing carefully-examined lists of high-frequency PVs, like the PHaVE List (Garnier & Schmitt 2015). Secondly, the researcher chose to use an easily accessible tool Excel as an analytic tool, the results of which may thus be questionable. Other linguistic-related tools like AntWordProfiler (Laurence 2022) may be more suitable and convincing for similar analysis between reference and input lists. Lastly, this study only examined two versions of English textbooks for general senior high students. The English teaching materials from the two Books for vocational high students could be sources of data. Also, aside from the PVs collected from the main reading texts and the vocabulary list, there may be more PVs in the rest sections of a unit. PVs in other sections like grammar or listening could also be gathered as data sets. Future researchers are suggested to take the above three into consideration, which could make further corpus-based studies on PVs sounder and more compelling.

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## Appendix

### Appendix A. List of PVs in M Book's English Textbooks

The PVs in M Book	
1. act on	79. live out
2. add to	80. log in
3. agree with	81. look after
4. appeal to	82. look back
5. apply to	83. look for
6. ask for	84. look forward to
7. base on	85. make of
8. belong to	86. make sure
9. break down	87. make up
10. break out	88. mess up
11. breath in	89. mix up
12. bring back	90. move out
13. burn down	91. participate in
14. burn out	92. pass away
15. call off	93. pass on
16. call on/upon	94. pick up
17. calm down	95. point out
18. carry out	96. pop out
19. cash in	97. pop up
20. cash out	98. punch in
21. cater to	99. put aside
22. check on	100. put behind
23. cheer up	101. put forward
24. come across	102. put in
25. come back	103. put on
26. come down with	104. reach out
27. come in	105. refer to
28. come off	106. rely on



29. come together	107. result in
30. come up with	108. rise up
31. communicate with	109. round up
32. consist of	110. run away
33. contribute to	111. run off
34. cope with	112. sank into
35. cover up	113. search for
36. crowd into	114. set in
37. crowd out	115. set off
38. cry out	116. set up
39. cut down	117. settle on
40. deal with	118. show up
41. devote to	119. sit down
42. die of	120. speak for
43. die off	121. speed up
44. dig in	122. spice up
45. dig into	123. stand by
46. dispose of	124. stand up for
47. divide into	125. stay up
48. drag on	126. step out
49. drive out	127. stick to
50. drop out	128. take away
51. embark on	129. take back
52. end up	130. take off
53. engage in	131. take on
54. fall for	132. take out
55. fend off	133. take over
56. fight off	134. take up
57. fill with	135. talk about
58. find out	136. tear apart
59. fit in	137. think about
60. focus on	138. think of
61. get to	139. think through
62. give in	140. throw away
63. give off	141. tuck in
64. go back	142. turn around
65. go by	143. turn down
66. go down	144. turn into
67. go through	145. turn out
68. go up	146. turn to

69. grow out	147. turn up
70. grow up	148. use up
71. hand out	149. wait for
72. help out	150. wake up
73. hit on	151. walk away
74. hunt down	152. win back
75. join with	153. wipe up
76. keep out	154. work on
77. lead to	155. work out
78. light up	156. work toward

## Appendix B. List of PVs in L Book's English Textbooks

## The PVs in L Book

1. account for	64. light up
2. add to	65. line up
3. base on	66. live out
4. blow up	67. look after
5. bring back	68. look for
6. bring in	69. look forward to
7. call for	70. look out
8. carry out	71. look to
9. carry through	72. make sure
10. cheer up	73. make up
11. choke back	74. meet with
12. clean up	75. move on
13. clear out	76. pack up
14. come about	77. participate in
15. come across	78. pass away
16. come along	79. pass on
17. come around	80. pick up
18. come from	81. put in
19. come in	82. put up
20. come out	83. refer to
21. come over	84. rely on
22. come to	85. result in
23. come up with	86. rise above
24. come with	87. rise to
25. contend with	88. rise up
26. contribute to	89. roll up

27. cut off	90. run out
28. deal with	91. send out
29. depend on	92. send off
30. die away	93. set apart
31. die from	94. set on
32. dream of	95. set out
33. dress up	96. set up
34. drown out	97. show up
35. end up	98. sit down
36. fall for	99. speak out
37. fall into	100. speed up
38. feed on	101. stand for
39. feed up with	102. stand out
40. figure out	103. stand up
41. fill in	104. start off
42. fill with	105. start out
43. find out	106. stir up
44. fit in	107. take away
45. focus on	108. take down
46. get away	109. take in
47. get off	110. take off
48. get out	111. take on
49. give up	112. take place
50. go about	113. take away
51. go down	114. talk about
52. go through	115. tear apart
53. grow up	116. tend to
54. hand out	117. think about
55. hand over	118. think of
56. hang out	119. think up
57. help out	120. throw up
58. hold on	121. turn out
59. hold out	122. turn to
60. keep up	123. turn down
61. lay out	124. turn into
62. lead to	125. wake up
63. let out	

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