Creativity and Innovation
2024, VOL. 8, NO. 2, 26-37
DOI: 10.47297/wspciWSP2516-252703.20240802

An Investigation of Lexical Bundles Used in English Writing Textbook

Xiaoqian He, Huimin Shi

College of International Studies and Education, Tongren University, Tongren, Guizhou, China

ABSTRACT
This study investigated the lexical bundles used in English writing textbook titled *A Handbook of Writing*. A corpus was constructed by selecting 124 texts from this book. Word combinations, appearing at least 3 times and being distributed in more than 3 different texts, were identified as lexical bundles. The results showed that: 1) overall, a total of 199 word combinations were found in this corpus. Out of these, 39 lexical bundles were identified, the highest frequency being 10 times, the lowest frequency being 3 times. 2) In terms of structure, the noun and prepositional phrase lexical bundles were dominate. The verb phrase lexical bundles and dependent clause fragments lexical bundles were relatively rare in the textbook. 3) In terms of function, 80% of the lexical bundles were research-oriented and participant-oriented, while few bundles were text-oriented, accounting for 20% of the total.

KEYWORDS
Lexical Bundles; English Writing; Corpus

1 Introduction

Lexical bundles are high-frequency word combinations that are used to perform certain functions in discourse. Although they are important as building blocks in discourse, a variety of factors may cause learners to deviate in the use of lexical bundles. These include external acquisition environments, such as language input and teaching mode, as well as individual differences of learners, likely leading to difficulties in using lexical bundles (Wray, 2002). Milton and Freeman's study (1996) of lexical bundles, regarding Hong Kong EFL learners' compositions, found that learners were excessively dependent on certain regular expressions. Lexical bundles seems more important than grammar for learners. This is due to the substantial overlap between language proficiency and the comprehensive understanding of lexical bundles (Widdowson, 1989). These clusters of words encapsulate not only the essence of communication but also the cultural nuances embedded within a language. As such, they serve as the building blocks of expression, enabling learners to construct sentences that resonate with native-like fluency and precision.

In order to solve this dilemma, a number of scholars have previously done relevant research (e.g. Hu & Shao, 2022; Lou & Wang, 2021; Song, 2018). Particularly, Becker (1976) proposed the concept of lexical bundles, emphasizing the use of prefabricated frameworks when expressing ideas, rather than constructing words with grammatical structures one by one. By learning lexical bundles, EFL learners (English as a Foreign Language learners) are able to organize their language more effectively, thus improve their writing fluency and accuracy.

Therefore, the primary goals of this research were to examine the overall distribution of structural and functional characteristics of lexical bundles found in textbooks for EFL learners. This study

classified them by using Biber's structural and Hyland's functional framework for the purpose of answering the following research questions:

1) What lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

2) What structural categories of lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

3) What functional categories of lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

In the present study, lexical Bundles refer to extended collocations, sequences of 3 or more words that satisfy the cut-off point of 3 occurrences in a range of 3 separate texts, such as, *the results of* and *It has been suggested that*. The reasons were explained as follows. First of all, 3 words were chosen as the lowest cut-off point in identifying lexical bundles for the purpose of getting a wide range of lexical bundles. This was motivated by the fact that many important recurrent words combinations are actually 3-word lexical bundles (Simpson-Vlach & Ellis, 2010). Second, they should occur at least 3 times, since DeCock (1998) (cited in Chen & Baker, 2010) suggested that a cut-off frequency for relatively small corpora is often ranged from 2-10 times. Third, the distribution threshold, which helps avoid the idiosyncrasies of individual writers, was restricted to occurrences across at least 3 different texts (Biber & Barbieri, 2007).

2 Review of Literature

In recent years, an array of scholars has delved into the exploration of lexical bundles' evolution across diverse disciplines (e.g. Hu & Huang, 2017; Liu & Han, 2018; Li & Li, 2022). For example, Yang and Chen (2017) analyzed lexical bundles identified in the abstracts written by English undergraduate students. The analysis revealed that the structure of frequent lexical bundle covered all the 12 categories proposed by Biber et al (1999). The lexical bundles were predominantly research-oriented, serving a functional purpose that is deeply entrenched in the academic discourse of English undergraduates students, while the use of researcher participation and discourse-oriented lexical bundles appeared to be insufficiently diverse in the corpus.

Drawing upon a corpus compiled from articles published in international journals, Gao and Yang (2018) conducted a comparative analysis of the use of lexical bundles between Chinese graduates in the field of science and engineering and their native English-speaking peers. The findings of this study uncovered a marked preference. That is, Chinese graduates tended to use 4-word bundles more frequently rather than their native English-speaking peers. Regarding the structure, Chinese graduates preferred these bundles, for example, noun lexical bundles, prepositional lexical bundles, "passive verb + prepositional phrase", "be verb + noun/preposition/adjective phrase" and "pronoun/noun phrase + verb phrase" lexical bundles. Regarding discourse function, Chinese graduates preferred research-based lexical bundles instead of cohesive lexical bundles.

Hu, Shao and Ji (2020) explored the structure and pragmatic function of lexical bundles by analyzing the speech of learners. This study compared monologue speech by Chinese undergraduates, participating in the Test for English Majors (Band 4) with Michigan academic speech by native speaker, examining the structural and functional characteristics of the oral chunks of English learners. The findings of this study reveal that 1) there was a notable convergence between EFL learners and native speakers in terms of the distribution of structural types, as well as the frequency with which lexical bundles were employed; 2) most of lexical bundles were verb bundles and served as discourse organizers. However, there were considerable disparities between EFL learners and native speakers in terms of the frequency of lexical bundles. Specifically, the features of lexical bundles in the two corpora were characterized as more clausal fragments

containing verbs and less phrasal ones containing nouns. While both EFL learners and native speakers exhibited similarities in their use of frequent lexical bundles, a strike contrast emerged when examining the use of bundles with low frequency. That is, the lexical bundles used by EFL learners often falls short in terms of the structural complexity and pragmatic versatility demonstrated by native speakers.

Song (2021) identified lexical bundles occurring in the dissertations written by business English undergraduates. The results showed that: 1) there was a predilection for the reuse of certain lexical bundles; 2) in terms of structure, learners exhibited a preference for the structure of "the + noun + of genitive noun"; 3) in terms of function, the preference of lexical bundles for textual organization was a rational choice, exemplifying the rigorous logical framework and academic rigor that are hallmarks of a dissertation; and 4) in terms of style, the text was marked by an abundance of collations, including word combinations like "*there be*" and "*we can see that*".

Xiang (2023) conducted a comparative analysis of the lexical bundles employed in agricultural science research article written by Chinese authors and their native speaker counterparts. This study probed into the differences in the structure of lexical bundles frequently used by the 2 groups of authors, and further analyzed the differences from the discourse function of lexical bundles. The analysis revealed that Chinese authors, as a whole, exhibited the frequent use of lexical bundles compared to their native speaker counterparts. The discrepancy in the frequency of occurrence was most pronounced, with clause-based bundles being heavily utilized and phrase-based bundles being comparatively infrequent in application.

It can be concluded that lexical bundles have become the focus of research in English learning. Since previous studies mainly concerned with the use of lexical bundles in research papers (Gao & Yang, 2018; Song, 2021), there was few research on the lexical bundles employed in textbooks for EFL learners. As a result, this study aimed to fill in this research gap by looking into the structural and functional classification of lexical bundles commonly used in textbooks for writing in English .

3 Research Methodology

3.1 Research Questions

The current study analyzed the lexical bundles frequently used in the textbook "*A Handbook of Writing*". It was initially released in 1984, followed by a second edition in 1984 and a third in July 2009. The third edition served as the corpus for this investigation with an attempt to answer the following research questions:

1) What lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

2) What structural categories of lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

3) What functional categories of lexical bundles are frequently employed in *A Handbook of Writing* for EFL learners?

3.2 The Selection of the Textbook

To address the research objectives, *A Handbook of Writing* (third edition) was purposely selected for the reasons below:

1) This textbook has gained widespread adoption in the teaching for writing and claimed the first prize in the third National Excellent Textbook Awards, indicating that it has certain authority and credibility in teaching.

2) Serving as a teaching material, the digital edition of this text book offered relative ease of

access and conversion into a manageable TXT file format. This feature enhanced the convenience and practicality of constructing a corpus.

3) *A Handbook of Writing* covers various types of writing, including manuscript form, summary, book report, and research paper, providing a deeper understanding of lexical bundles in enhancing language proficiency and academic expression.

3.3 The Construction of Corpus

The construction process of the corpus in this study required a detailed explanation. First of all, OCR software was used to convert PDF files of *A Handbook of Writing* into TXT format. Since there was no word files of this text book, manual scanning and conversion were required. Secondly, to ensure the accuracy of the text, all the converted files had been proofread carefully and were saved as text files with names ending in ".txt". In the end, the 124 articles from the textbook were encoded. To be specific, the file named "b1.txt" represents the first text of part 2. Then, the file named "c3.txt" represents the third text of part 3.

Table 1 Tokens and Types

Word Count	Word Tokens	Word Types
39 644	39 644	6 502

3.4 The Computer Program for the Identification of Lexical Bundles

AntConc3.5.8 was used to search lexical bundles due to the reasons as follows. First, AntConc3.5.8 has a user-friendly interface that is relatively easy for beginners to learn, allowing researchers to quickly learn how to use the software for effective data analysis and processing. Second, AntConc3.5.8 is a freeware program, developed by Laurence Anthony, a Japanese scholar. AntConc3.5.8 has an economical advantage for researchers. Researchers can obtain the software free of charge and perform the frequency statistics and structure analysis of lexical bundles without additional costs. Third, AntConc3.5.8 can be used to automatically extract lexical bundles from the corpus by using N-gram.

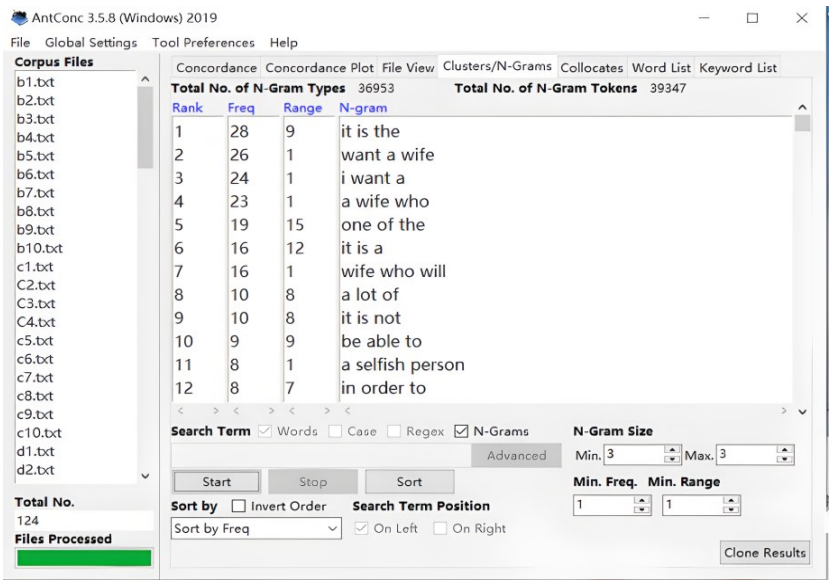

Figure1 An Example of Retrieving 3-Word Lexical Bundles

3.5 The Framework for Classifying Lexical Bundles

In the present study, 2 frameworks were used for classifying lexical bundles functionally and structurally.

First of all, the framework for functional categorization was grounded in the work of Hyland (2008a).

This classification provided researchers with a robust framework to analyze the lexical bundles into three categories: research-oriented bundles, text-oriented bundles, participant-oriented bundles.

Concerning the classification of structure, Biber's framework (2004) was used to group lexical bundles into three categories:

1) lexical bundles incorporating verb phrase fragments;

2) lexical bundles incorporating dependent clause fragments; and

3) lexical bundles incorporating noun phrase and prepositional phrase fragments.

Since these 2 frameworks have been widely cited and validated in various academic publications, their credibility and reliability have been firmly established.

3.6 The Criteria for the Selection of Lexical Bundles

In this study, the selection of lexical bundles was driven by the 3 criteria: cut-off frequency, distribution threshold and length of bundles.

First of all, as suggested by De Cock (1998) (cited in Chen & Baker, 2010), a cut-off frequency for relatively small corpora often ranged from 2-10 times. We set the cut-off point to 3 times instead of 2 times due to the fact that the present study aimed to look for lexical bundles typically found in one text book.

Second, the distribution threshold which helps avoid the idiosyncrasies of individual writers was restricted to occurrences across at least 3 different texts (Biber & Barbieri, 2007).

Third, the length of lexical bundles was limited to 3 words or more because many important recurrent words combinations were actually 3-word lexical bundles (Simpson-Vlach & Ellis, 2010).

3.7 Reliability Assurance for the Identification of Lexical Bundles

A professor was invited to participate in the identification of lexical bundles, who has extensive teaching experience and linguistic background. By employing effective communication, 2 raters can achieve a comprehensive understanding of the process by which lexical bundles can be identified via N-grams. Additionally, this approach allowed for a analysis of the structural and functional characteristics of these bundles, thereby improving the reliability and accuracy of identification for lexical bundle.

4 Results and Discussion

4.1 The Lexical Bundles Frequently Used in the Textbooks

Concerning RQ1, we preliminarily obtained a total of 199 word combinations. Due to the fact that some of the word combinations were not identified as lexical bundles (e.g. "*you for your*", "*American society and*"), we went further to exclude them.

At last, 39 lexical bundles were found, the highest frequency being 10 times, the lowest frequency being 3 times.

They were present in Table 2 below.

Table 2 The List of Identified Lexical Bundles

Number	Lexical bundles	Frequency	Range
1	a lot of	10	8
2	be able to	9	9
3	out of the	8	6
4	in order to	8	7
5	as well as	7	7
6	the most important	6	4
7	the end of	6	6
8	on the other hand	6	5
9	in the world	6	6
10	as soon as	6	5
11	a sense of	6	5
12	was one of	5	3
13	the spirit of	5	3
14	the history of	5	4
15	at the same time	5	5
16	a copy of	5	3
17	would like to	4	3
18	the problem of	4	3
19	the meaning of	4	3
20	in front of	4	4
21	did not know	4	3
22	there has been	3	3
23	the second time	3	3
24	the same thing	3	3
25	the only way	3	3
26	the first place	3	3
27	the essence of	3	3
28	make sure that	3	3
29	it would be	3	3
30	is likely to	3	3
31	in the middle of	3	3
32	from time to time	3	3
33	first of all	3	3
34	by no means	3	3
35	at the university	3	3
36	as a result	3	3
37	are engaged in	3	3
38	a number of	3	3
39	a great deal	3	3

This set of bundles offers a initial insight into the favored utilization of lexical bundles found in "*A Handbook of Writing*". These bundles represent the subsequent phase for analysis in our research.

4.2 The Classification of Structure

In line with Biber's (2004) structural categorization, lexical bundles were classified into three primary groups, each further subdivided into sub-categories. It is instructive to quantify the presence of lexical bundles within each category by calculating their respective percentages. Refer to the Table 3 provided below for a comprehensive overview.

Table 3 The Structural Distribution of the Identified Lexical Bundles

Categories	Sub-categories	Percentages	Frequency	Lexical Bundles
Lexical bundles that incorporate *verb phrase* fragments	1a. Verb phrase (with non-passive verb)	8%	14	would like to (4) did not know (4) it would be (3) is likely to (3)
	1b. Verb phrase with passive verb	3%	6	there has been(3) are engaged in (3)
	(Total)	(11%)	20	
Lexical bundles that incorporate *dependent clause* fragments	2a. (verb/adjective+) to-clause fragment	5%	9	be able to (9)
	2b. That-clause fragments	2%	3	make sure that (3)
	(Total)	(7%)	(12)	
Lexical bundles that incorporate *noun phrase and prepositional phrase* fragments	3a. (connector +) Noun phrase with of-phrase fragment	42%	74	a lot of (10) out of the (8) the end of (6) a sense of (6) was one of (5) the spirit of (5) the history of (5) a copy of (5) the problem of (4) the meaning of (4) in front of (4) the essence of (3) in the middle of (3) first of all (3) a number of (3)
	3b. Other noun phrase expressions	8%	15	the second time (3) the same thing (3) the only way (3) the first place (3) a great deal (3)

Table 3 The Structural Distribution of the Identified Lexical Bundles(Continued).

Categories	Sub-categories	Percentages	Frequency	Lexical Bundles
	3c. Prepositional phrase expressions	21%	37	in order to (9) on the other hand (6) in the world (6) at the same time (5) from time to time (3) by no means (3) at the university (3) as a result (3)
	3d. Comparative expressions	11%	19	as well as (7) the most important (6) as soon as (6)
	(Total)	(82%)	(145)	
Total		(100%)	(177)	

The number after the lexical bundles represents the frequency of the lexical bundles observed in the corpus.

It should be noted that lexical bundles incorporating noun phrase and prepositional phrase fragments were used most frequently, accounting for 82% of the total, while lexical bundles incorporating verb phrase and dependent clause fragments accounted for 11% and 7% of the total. This was consistent with the findings of Xu (2012), revealing that Chinese learners predominantly employed noun collocations and prepositional collocations in their language use. The noun lexical bundles and prepositional lexical bundles were further classified into four sub-categories, including (connector+) Noun phrase with of-phrase fragment, other noun phrase expressions, prepositional phrase expressions and comparative expressions. Nearly 42% of the lexical bundles in prose were constructed from noun phrases paired with 'of-phrase' fragments (*e. g. the end of, a lot of , the essence of).* The subsequent examples serve to exemplify this phenomenon.

Examples:

1) *They devoted a lot of time and spent a lot of money on this.*（*f26.txt*）

2) *I hope they manage another one before the end of the month.*（*J13.txt*）

3) *That is the essence of the poetic temper.*（*f27.txt*）

*The use of prepositional phrase fragments serves the functions of structural organization and information reorganization, representing 21% of the total. This enhances the text's readability, thus ensuring a smoother and more coherent narrativ*e flow. Writers overuse some lexical bundles in their writing, such as "*in order to*" and "*a lot of*". The overuse of prepositional bundles can be attributed to a lack of variety in their synonyms, prompting writers to repeatedly use a limited array of expressions. As a result, their writing may suffer from monotony and a lack of precision.

Examples:

1) *Whatever job it may be, one has to learn in order to be qualified.*（*f15.txt*）

*2) In the liberal arts college, on the other hand, the student is encouraged to explor*e new fields and old fields, to wander down the bypaths of knowledge.（f16.txt）

At the same time, nearly 11% of lexical bundles were comprised of verb phrases. Specifically, 8% of them included verb phrases with non-passive verbs, for example "*would like to*", "*did not know*". An additional 3% of these verb phrases were with passive verbs (e. g., *are engaged in*). Lexical bundles incorporating both dependent clause fragments and verb phrase fragments accounted for

18% of the total. In comparison to the preponderance of prepositional phrase fragments, the percentage of other noun phrase lexical bundles appeared limited, constituting only 8%.

Examples:

1 *In 1866, he visited the United States for the second time, during which he gave a series of public performances.*（*g6.txt)*

2 *My parents have placed all their hopes on me and sacrificed a lot to make sure that their only son will have a bright future. (f26.txt)*

3 *I would like to apologize for being unable to keep our 9 o'clock appointment. (g2.txt*）

4.3 The Classification of Function

In this section, we analyzed the functions of identified lexical bundles based on the framework of Hyland (2008a). The 39 lexical bundles were categorized into 3 categories and further subdivided into 7 sub-categories. The frequencies, types and proportions were calculated (See in Table 4).

Table 4 The List of the Functional Distribution of the Identified Lexical Bundles

Categories	Sub-categories	Percentages	Frequency	Lexical Bundles
Research-oriented	Location	23%	26	the end of (6) in the world (6) at the same time (5) at the university (3) the second time (3) first of all (3)
	Procedure	6%	7	the meaning of (4) the essence of (3)
	Quantification	19%	21	a number of (3) was one of (5) a lot of (10) a great deal (3)
	Description	3%	3	in the middle of (3)
	(total)	(51%)	57	
Text-oriented	Transition signals	12%	13	on the other hand (6) as well as (7)
	Resultative signals	8%	9	as a result (3) as soon as (6)
	(total)	(20%)	15	
Participant-oriented	Stance features	29%	32	is likely to (3) did not know (4) would like to (4) it would be (3) the most important (6) be able to (9) by no means (3)
	(total)	(29%)	32	
Total		(100%)	(111)	

Note: The number after the lexical bundles represents the frequency with which the lexical bundles appears in the corpus.

Table 4 presents that 1) research-oriented lexical bundles dominated the lexical bundles, accounting for 51% of the total; 2) participation-oriented lexical bundles slightly outnumbered text-oriented lexical bundles, accounting for 29% of the total; and 3) text-oriented lexical bundles occurred with the lowest frequency, accounting for a concurrence rate of 20%.

In the research-oriented category, location bundles were utilized more frequently, with lexical bundles primarily serving to indicate the timing and placement of writing. This was predominantly achieved by the use of noun phrases and prepositional phrases (e.g., *the end of*, *in the world*, *at the same time*, *at the university*, *the second time*, and *first of all*). Quantification bundles subcategories were used to describe the number of studies (e. g., *a number of, a lot of*). Description bundles subcategories were employed to provide specific descriptions of entities (e. g., *in the middle of*). Some examples are as follows.

Examples:

1) *The one who chooses to follow this road will, first of all, joint the Communist Party.*（*f36.txt*）

2) *There were quite a number of people but only few bought any clothes.*（*f7.txt*）

3) *In the middle of the rectangular-shaped courtyard stood three magnolia trees, all in full bloom.*（*d12.txt*）

The high proportion of research-oriented bundles shows a focus on laboratory sense to academic writings in science. In the text-oriented category, the bundles were used to express the result (e.g *as a result)*. For the sake of coherence of the text, the transitional conjunctions (e.g. *as well as*) were employed more frequently as parallel conjunctions. For examples:

1) *I will be participating in next month's Asian American literature conference and am writing in advance to seek your advice as well as introduce myself.*（*J-3.txt*）

2) *As a result, it will be possible for huge ships to sail directly from Shanghai to Chongqing.*（*f39.txt*）

3) *But the agreement stops as soon as we try to define "wisdom" and to think about the means to promote it.*（*f33.txt*）

According to the definition proposed by Hyland (2008a), research-oriented lexical bundles are used to organise the author's activities and experience of reality, whereas text-oriented bundles are concerned with the organisation of the text and its meaning in terms of information or inference. As can be seen from the Table 4, the low percentage of text-oriented bundle categories suggests that authors may pay less attention to the organisation of text in terms of information and argumentation. They were apparently concerned with describing their research as well as expressing their opinions and claims. The use of research-orientated phrases may have been overemphasized to the neglect of the fact that there should also be a mastery of various types of lexical bundles in English writing, including text-orientated and participant-orientated bundles. Notably, the engagement features bundles within the participant-oriented category were not found in our study. This was contrary to Hyland's study (2008a). Perhaps, it can be explained by the fact that scholars may be more inclined to express their opinions than to interact with readers.

5 Conclusion

The present study aimed to investigate the lexical bundles identified in an text book for writing English in terms of structure and function. We found that 1) 39 lexical bundles were identified, the highest frequency being 10 times, the lowest frequency being 3 times. 2) In terms of the structure, noun and prepositional phrase lexical bundles identified in the textbook were dominate. The verb phrase lexical bundles and dependent clause fragments lexical bundles were relatively rare in the textbook. 3) In terms of function, 80% of the lexical bundles were research-oriented and participant-oriented, while 20% of lexical bundles were text-oriented.

There may be some bias in the results of this study, which cannot comprehensively summarize the use of lexical bundles in English writing manuals. First of all, some lexical bundles might not be investigated in this study because of corpus size limitation. The size of corpus in this study was smaller than those used in previous studies. Specifically, it consisted of only 39, 644 continuous words, being less than the 3, 500, 000 continuous words of Hyland (2008b) and the 9, 261, 300 continuous words of Conrad and Biber (2004). Second, this study analyzed 3-word or 4-word bundles, but other length of bundles were not covered. Subsequent studies can expand the size of the corpus to identify the bundles with more than 5 words.

The following suggestions are proposed for future investigations: Firstly, it is recommended that a corpus with large sample size should be conducted in the future, reflecting the use of frequent 3-word and 4-word bundles in English writing manuals. Therefore, extensive studies with larger samples are needed in the future. Secondly, further studies should focus on the analysis of lexical bundles of different lengths, as they may reveal unique distributions and features. However, the current study only examined lexical bundles consisting of 3 or 4 words. It is recommended that future research include an exploration of bundles with varying word lengths.

The implications of this study are described as follows: First of all, teachers for academic writing in English are suggested to place a strong emphasis on the comprehensive integration of lexical bundles into their teaching. This aims to enhance learners' awareness of using lexical bundles in academic writing. Second, teachers can provide exercises of lexical bundles for EFL learners. These exercises are designed to expand the linguistic repertoire of EFL learners, enabling them to effectively express similar functions with greater variety in their language use.

Funding

This study was funded by 1)The Reform Project of Teaching Content and Curriculum System of Colleges and Universities in Guizhou Province in 2021: Research on the Construction and Application of SPOC Blended Learning Mode of Academic writing in English [Grant Number: Qian Jiao Han [2021] NO. 113: 2021307; 2)the First-class Undergraduate Education Project of Tongren University, P. R. China (Grant number: YLBK-2022003); and 3) "Sanjin" Research Project of Tongren University: Construction of Blended Learning for the Course of Academic Writing in English (Grant Number: Trxysj2021-026)

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