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Vu, Duy Van; Michel, Marije

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# An exploratory study on the aspects of vocabulary knowledge addressed in EAP textbooks

Duy Van Vu<sup>1,3</sup> and Marije Michel<sup>2,3</sup>

<sup>1</sup>*KU Leuven* | <sup>2</sup>*University of Groningen* | <sup>3</sup>*Lancaster University*

**Abstract** Vocabulary knowledge, which plays an important role in foreign or second language (L2) learning, involves a range of aspects such as form and meaning, grammatical functions, or word parts. Little research, however, has investigated how aspects of vocabulary knowledge are addressed in L2 textbooks. This study aims to fill that gap by examining the aspects of vocabulary knowledge that English for Academic Purposes (EAP) textbooks pay attention to. To that end, four EAP textbooks of upper-intermediate and advanced levels were investigated. A total of 873 vocabulary activities were identified and analysed based on Nation (2013) and Brown's (2011) frameworks. Results show that grammatical functions, associations, and word parts receive the most attention in the EAP textbooks while written form, constraints on use, and spoken form receive the least attention. The findings also demonstrate variations among the EAP textbooks in their amounts of attention to different aspects of word knowledge.

**Keywords** vocabulary knowledge, English for academic purposes, textbooks, academic language, vocabulary teaching

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## Corresponding author

Duy Van Vu, vuvan.duy@kuleuven.be

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Duy Van Vu, conceptualization, methodology, investigation, data analysis, writing – original draft, writing – review and editing; Marije Michel, supervision, conceptualization, methodology, writing – review and editing

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## Supporting information

None

## 1 Introduction

Vocabulary knowledge is crucial in learning a second or foreign language (L2) (Nation, 2013) and also central to communicative competence (Schmitt, 2000). A number of studies have demonstrated the positive relationship between L2 vocabulary knowledge and overall proficiency in the L2 (e.g., Stæhr, 2008; Zhang & Anual, 2008). As put by Milton (2013), “the more words a learner knows, the more they are likely to know about them, and

the better they are likely to perform whatever the skills” (p. 71). Because of the importance of vocabulary knowledge for L2 proficiency, adequate attention to vocabulary is required from not only L2 learners but also L2 teachers, materials writers, and researchers.

While an increasing number of studies have investigated L2 learners’ vocabulary acquisition from different types of input such as extensive reading (e.g., Pigada & Schmitt, 2006; Vu & Peters, 2020) or audiovisual input (e.g., Peters & Webb, 2018; Rodgers & Webb, 2011), very few studies focus on vocabulary activities in textbooks (see Brown, 2011; Neary-Sundquist, 2015 for exceptions) even though textbooks are also a potential source for L2 vocabulary learning (e.g., Milton & Vassiliu, 2000; Vassiliu, 2001). Besides, previous research has examined vocabulary knowledge in general English textbooks (e.g., Brown, 2011) while no studies to date have examined vocabulary activities in English for Academic purposes (EAP) textbooks. Because a distinction is often made between general English and English for specific purposes (ESP) or EAP (e.g., Hutchison & Waters, 1987), it remains unknown how vocabulary knowledge is addressed in EAP textbooks and whether there is a difference between general English and EAP textbooks. The answers to these questions, which are explored in the current study, could provide significant implications for EAP textbook writers, teachers, and learners.

## 2 Background

### 2.1 Aspects of vocabulary knowledge

There have been different approaches to categorising vocabulary knowledge. A common distinction is made between receptive knowledge and productive knowledge (see Nation, 2013; Schmitt, 2010), or breadth and depth (see Milton, 2009; Read, 2004). Daller et al. (2007) and Meara (2005) even put forward a third dimension of vocabulary knowledge called “vocabulary accessibility” or “lexical fluency”. Whatever approach is taken, there is a consensus among vocabulary researchers that vocabulary knowledge is multi-faceted (Laufer et al., 2004; Milton, 2013). In other words, much more is involved in acquiring a word rather than just the link between form and meaning.

The categorisations of vocabulary knowledge mentioned above, however, still do not sufficiently reflect the complexity of vocabulary knowledge (Milton, 2009). Nation (2013) classifies nine aspects of vocabulary knowledge in three general categories: (a) knowledge of word form; (b) knowledge of word meaning; and (c) knowledge of word use. Knowledge of word form covers spoken form, written form, and word parts. Knowledge of word meaning includes form and meaning, concept and referents, and associations. Knowledge of word use involves grammatical functions, collocations, and constraints on use. This useful and insightful categorisation (Milton, 2013) not only covers both receptive and productive knowledge but also demonstrates the breadth and depth of vocabulary knowledge. It has been widely used in vocabulary research (e.g., González-Fernández

& Schmitt, 2020; Zhong, 2018), despite its failure to indicate the relationships between the components and complexity to apply in research (González-Fernández & Schmitt, 2020). Considering its comprehensiveness and wide application, this categorisation was employed as a theoretical framework in this study.

There exist different perspectives on how different aspects of vocabulary knowledge should be learnt and taught. For example, Ellis (1997) suggests that form, collocations, and grammatical functions can be learnt incidentally through reading or listening if there is sufficient exposure, but explicit instruction or raising students' consciousness might enhance their acquisition. Aspects of meaning require intentional learning (Ellis, 1997). Schmitt (2008) suggests that word form and word meaning should be explicitly taught while more contextualized aspects such as collocations should be learnt incidentally. Meanwhile, Nation (2013) recommends incidental learning for form aspects, grammatical functions, collocations, and intentional learning for meaning aspects and constraints on use. However, experimental research has shown that productive knowledge of form (i.e., form recall) can be more difficult for learners to gain than productive knowledge of meaning (i.e., meaning recall, cf., Vu & Peters, 2020) and collocations can be difficult for learners to use and acquire (e.g., Nesselhauf, 2003; Peters, 2016). Therefore, our view in this study is that all aspects of vocabulary knowledge deserve adequate attention, though not necessarily equal, from L2 learners, teachers, and textbook writers.

## 2.2 Vocabulary knowledge in textbooks

Learners can acquire a large number of words from textbooks (Vassiliu, 2001). Written materials in combination with oral interactions in class can contribute significantly to learners' vocabulary development (Milton, 2009). Nonetheless, "except for the few vocabulary textbooks that explicitly cover vocabulary, most ESL [English as a second language] textbooks do not systematically deal with vocabulary" (Folse, 2004, pp. 162–163). Besides, only a few empirical studies have examined vocabulary activities in textbooks (e.g., Brown, 2011; Neary-Sundquist, 2015).

Brown (2011) analysed nine general English textbooks from beginner to intermediate levels. He found that the textbooks primarily focus on one aspect of vocabulary knowledge, which is form and meaning (51.8% of all vocabulary activities), and also pay some attention to grammatical functions (29.0%) and spoken form (14.8%). Meanwhile, the other aspects of vocabulary knowledge receive little or even no attention in the textbooks. He maintains that textbooks should address all aspects of vocabulary knowledge to benefit learners' learning, raise teachers' and students' awareness about vocabulary learning, and help students with limited L2 exposure. Similarly, Neary-Sundquist (2015) who examined five textbooks of German as a foreign language for beginners found that form and meaning together with grammatical functions are heavily emphasised, occupying 46.4% and 36.4% respectively of all vocabulary activities. Other aspects of vocabulary knowledge are largely ignored in those textbooks. To the best of our knowledge, to date,

no studies have explored EAP textbooks; therefore, it remains unanswered how EAP textbooks address different aspects of vocabulary knowledge and whether they differ from general English textbooks.

### 2.3 Vocabulary knowledge in EAP textbooks

Academic language can be defined as “the specialized language, both oral and written, of academic settings that facilitates communication and thinking about disciplinary content.” (Nagy & Townsend, 2012, p. 92). When designing vocabulary activities, EAP textbook writers should consider characteristics of academic language.

First and foremost, as can be seen from the above definition, academic language is used in academic settings including educational institutions. This indicates that EAP learners need to be aware of appropriate language they should use in such settings. Thus, EAP textbooks should address the aspect of constraints on use, an aspect of vocabulary knowledge that involves knowing where, when, and how often a word can be encountered and used. In addition, the distribution of part-of-speech categories (e.g., nouns, adjectives, prepositions) in written academic language has been found to be different from spoken language (e.g., Biber, 2006; Schleppegrell, 2001). Accordingly, learners need to be aware of the patterns where words can be used, which is knowledge of grammatical functions of words. Similarly important for appropriate language use in academic contexts is knowledge of collocations, which has been shown to be crucial for L2 proficiency (Crossley et al., 2015).

Secondly, EAP learners are expected to perform a range of academic skills in academic settings, such as reading and writing, which requires their knowledge of several aspects of vocabulary. For example, to properly understand their lectures and reading materials, learners need to have knowledge of the form and meaning as well as concept and referents of words. To show a wide range of vocabulary in academic writing and speaking tasks, learners need to master the aspect of associations, which involves knowledge of synonyms, antonyms, and categories of words. Learners also need to master the spoken form and written form of words in order to accomplish academic writing and speaking tasks successfully.

Thirdly, academic language tends to involve nominalisation (i.e., turning other parts of speech into nouns) and contain morphologically complex words (Hiebert & Lubliner, 2008; Nagy & Townsend, 2012). In other words, affixes, which includes prefixes (such as *dis-* in *disconnect*) and suffixes (such as *-ation* in *consideration*), are typical of academic language. Therefore, EAP textbooks should also pay attention to word parts, an aspect of vocabulary knowledge that deals with affixes.

Given the nature of language in academic settings, EAP learners require a range of different aspects of vocabulary knowledge. Therefore, EAP textbooks should pay attention to those aspects of vocabulary knowledge to best prepare EAP learners for their academic studies.

**Table 1** Textbooks used in this study

Title	Level	Author(s)	Publisher	Year
Cambridge Academic English	Upper – intermediate (B2)	M. Hewings	Cambridge University Press	2012
Cambridge Academic English	Advanced (C1)	M. Hewings & C. Thaine	Cambridge University Press	2012
Oxford EAP	Upper – intermediate (B2)	E. de Chazal & S. McCarter	Oxford University Press	2012
Oxford EAP	Advanced (C1)	E. de Chazal & J. Moore	Oxford University Press	2013

## 2.4 Research gaps and research question

In general, very little work has examined the nature of vocabulary knowledge addressed in L2 textbooks and there remain major gaps. Firstly, no studies have explored the aspects of vocabulary knowledge addressed in EAP textbooks. Considering the nature of EAP, it is important to investigate if there are any differences between EAP and general English textbooks in their way of handling different aspects of vocabulary knowledge. The findings can provide EAP learners, teachers, and textbook writers with useful information on the lexical activities in EAP textbooks and offer relevant suggestions. Secondly, previous research (e.g., Brown, 2011) investigates L2 textbooks for learners from beginning to intermediate levels only and does not include higher levels. In the current study, textbooks for upper-intermediate and advanced levels were investigated to compare their results with the earlier work. Specifically, we aim to answer the following research question: What aspects of vocabulary knowledge are addressed in EAP textbooks?

## 3 Methodology

### 3.1 Textbooks

In this exploratory study into the aspects of vocabulary addressed in EAP textbooks, EAP textbooks written by well-established authors and published by two major publishing houses were selected for investigation: four printed Oxford and Cambridge EAP integrated skills textbooks intended for upper-intermediate (B2) and advanced (C1) levels (see Table 1). The criteria for the textbook selection in this study include the coverage of all the four English language skills and inclusion of a range of vocabulary activities to

give learners many opportunities for vocabulary exposure and facilitate the extraction of vocabulary activities for analysis. Upper-intermediate and advanced levels were chosen because previous research explores lower levels (e.g., Brown, 2011) while higher levels also deserve scientific attention.

### 3.2 Procedure

All chapters in each textbook were analysed. The first author and another English teacher were involved in identifying 873 vocabulary activities satisfying Brown's (2011) description of a vocabulary activity: "any activity that focuses on form, meaning or use of an item or items" (p. 87), which means these activities could be in any section, not limited to those labelled vocabulary across the textbooks. Additional or supplementary materials, references, glossaries, appendices, and transcripts were excluded because they did not contain vocabulary activities.

After the vocabulary activities were identified, they were coded according to the aspects of word knowledge they address based on the framework of vocabulary knowledge proposed by Nation (2013) with reference to Brown's (2011) aspect-activity definition (cf. Table 2). According to Brown (2011), activities on spoken form draw students' attention to or involve their production of the spoken form of words whereas activities on the written form require students to pay attention to the spelling of words. Activities on word parts concentrate students' attention on parts of words, such as prefixes and suffixes. In activities on form and meaning, students are required to match forms and meanings while students have to decide the specific meanings words have in certain contexts in activities on concepts and referents. Activities on associations check students' knowledge of synonyms, antonyms or categorisation of words. Activities on grammatical functions involve students' correct use of words in sentences. Activities on collocations ask students to form collocations whereas those on constraints on use test students' knowledge of different registers that words belong to.

When coding the activities, we based our categorisations of the activities on the textbook writers' intentions through explicit instructions for each vocabulary activity provided in the textbooks. Similar to Brown (2011), this study also employed the third level of the materials evaluation framework proposed by Littlejohn (1998) with a focus on the aims of the materials writers in designing each activity. Because of the complex relationships among different aspects of vocabulary knowledge (González-Fernández & Schmitt, 2020), it was sometimes difficult to decide which aspect of vocabulary was addressed in an activity. For example, in activities where learners are asked to put words into different categories (which is labelled as an activity on the aspect of associations), learners need to think about the aspect of form and meaning as well since the meaning of a word needs to be known before one can think of a suitable category (see Table 2 for further examples). Given the activity instructions, we assumed that the textbook writers in such cases are primarily aiming at learners' knowledge of associations rather

**Table 2** Examples of activities on aspects of vocabulary knowledge in EAP textbooks

Aspect	Activity
Spoken form	'Underline the main stressed syllable in the words in this word family.' (Cambridge Academic English C1, p. 32) 'Watch Extract 2 of the presentation and note down the key words the speaker stresses.' (Oxford EAP B2, p. 196)
Written form	'Research shows that the most common reporting verb in integral references (the author + date system) is find (e.g. Liu (2000) found ...). What do you think are the next most common? 2 sh__w 3 su__t' (Cambridge Academic English C1, p. 58) 'Correct sentences 1–10 and identify the type of mistake from the following list.' [The list includes preposition, word form, incorrect technical word, formality, missing prefix and spelling] (Oxford EAP B2, p. 198)
Word parts	'Change words 1–10 into verbs by selecting from the list of verb suffixes.' (Oxford EAP B2, p. 102) '... What are the adjective forms of these nouns (1–10)?' (Cambridge Academic English C1, p. 102)
Form and meaning	'Match 1–5 with the correct diagram.' (Oxford EAP B2, p. 28) 'Can you explain the meaning of <i>one from another</i> ?' (Cambridge Academic English C1, p. 30)
Concept and referents	'Which definition, 1 or 2, best suits the meaning of the word as it is used in Text 2 on page 015.' (Oxford EAP B2, p. 22) 'Which of the two dictionary meanings is closest to the meaning used in the text?' (Cambridge Academic English C1, p. 72)
Associations	'Make a list of your daily activities and put them into categories.' (Oxford EAP B2, p. 55) 'Complete the following sentences using an adjective from the box with a similar meaning to the word or phrase in brackets.' (Cambridge Academic English B2, p. 19)
Grammatical functions	'Complete the questions with <i>do, does, is or are</i> .' (Oxford EAP B2, p. 9) 'Put the words in order to form a phrase to introduce a clarification.' (Cambridge Academic English C1, p. 31)
Collocations	'Decide which nouns below collocate with <i>all</i> the adjectives in each line 1–4.' (Oxford EAP B2, p. 86) '... Match the verbs in the box to the nouns to make typical verb-noun collocations.' (Cambridge Academic English B2, p. 25)
Constraints on use	'... Which language features are more formal/specialized and which are more informal/for a non-expert audience.' (Oxford EAP C1, p. 139) '... In pairs, discuss which example in each of the following pairs is more appropriate for academic writing and why.' (Cambridge Academic English B2, p. 109)



than knowledge of form and meaning. It was the connections between such different aspects of vocabulary knowledge that caused difficulties during categorising. Closely following Nation (2013) and Brown's (2011) frameworks, we decided to use the writers' aims whenever stated explicitly. Two coders worked on 36 sample activities that addressed nine aspects of vocabulary knowledge in the four EAP textbooks and discussed the outcomes to reach an agreement on a general coding scheme. Then, all identified vocabulary activities were coded. Half of the total activities were double coded and the inter-rater reliability was high ( $r = 0.87, p < .001$ ). Activities where the two coders disagreed were discussed until a consensus was reached.

#### 4 Findings

Table 3 shows the number of activities for each of the three general categories (form, meaning and use) together with the number of activities attending to each of the nine aspects of vocabulary across the four textbooks. Because of the differences in the number of chapters between the Oxford EAP and Cambridge Academic English textbooks, we focused on the percentages.

Among the three general categories (form, meaning, and use), the general category of use receives the most attention across the four EAP textbooks with a mean percentage of 48.4. However, the distribution of activities on different aspects of vocabulary knowledge in this category is disproportionate. The aspect of grammatical functions accounts for up to 36.0% of the total activities, over four times higher than collocations (7.7%) and seven times higher than constraints on use (4.6%). There are variations among the textbooks in this general category. The Cambridge Academic English textbooks, for both levels, dedicate a larger proportion of activities to the aspect of constraints on use than the Oxford EAP textbooks while the latter attends more to collocations than the former. The differences can also be observed when the level of proficiency increases. For example, attention to collocations slightly drops from 11.6% to 9.8% in the Oxford EAP textbooks but grows from 4.0% to 5.4% in the Cambridge Academic English textbooks when the levels move from B2 to C1. The percentage of activities addressing grammatical functions remains the same in the Oxford EAP textbooks at both levels, but it declines from 41.7% at B2 level to 34.2% at C1 level in the Cambridge Academic English textbooks.

The general category of meaning occupies a mean percentage of 33.1 and ranks second in terms of the amount of overall attention received in the investigated EAP textbooks. The aspect of associations is the most outstanding in this category with 15.2% of the total activities, outweighing the aspects of form and meaning at 10.6% and concept and referents at 7.2%. The Oxford EAP textbooks generally dedicate more attention to this general category than the Cambridge Academic English textbooks, except for the aspect of concept and referents at C1 level. To illustrate, the percentage of the activities in the Oxford EAP textbook at B2 level which attend to this general category more than

**Table 3** The percentage and raw number (in brackets) of activities addressing each aspect of vocabulary knowledge in the EAP textbooks

Aspect		Oxford EAP B2	Cambridge Academic English B2	Oxford EAP C1	Cambridge Academic English C1	Mean %	SD %
Form	Spoken Form	3.6% (10)	13.6% (27)	0.5% (1)	3.3% (6)	5.3	5.7
	Written Form	0.4% (1)	2.0% (4)	0.5% (1)	5.4% (10)	2.1	2.3
	Word Parts	8.3% (23)	14.1% (28)	7.5% (16)	15.2% (28)	11.3	3.9
	Total for Form	12.3% (34)	29.7% (59)	8.4% (18)	23.9% (44)	18.6	9.9
Meaning	Form and Meaning	14.5% (40)	5.0% (10)	13.1% (28)	9.8% (18)	10.6	4.2
	Concept and referents	8.3% (23)	4.0% (8)	8.4% (18)	8.2% (15)	7.2	2.2
	Associations	17.0% (47)	7.5% (15)	23.4% (50)	13.0% (24)	15.2	6.7
	Total for Meaning	39.9% (110)	16.6% (33)	44.9% (96)	31% (57)	33.1	12.4
Use	Grammatical Functions	34.1% (94)	41.7% (83)	34.1% (73)	34.2% (63)	36.0	3.8
	Collocations	11.6% (32)	4.0% (8)	9.8% (21)	5.4% (10)	7.7	3.6
	Constraints on use	2.2% (6)	8.0% (16)	2.8% (6)	5.4% (10)	4.6	2.7
	Total for Use	47.8% (132)	53.8% (107)	46.7% (100)	45.1% (83)	48.4	3.8
Overall total		100% (276)	100% (199)	100% (214)	100% (184)		

doubles that in the Cambridge Academic English textbook for the same level. For C1 level, the Oxford EAP textbook also provides more activities on meaning aspects than the Cambridge Academic English textbook at 44.9% and 31% respectively. The aspects of concept and referents as well as associations receive an increased amount of attention when the level increases. The greatest variation among the textbooks is shown in the percentage of activities on associations with a standard deviation of 6.7% and the Oxford EAP textbooks at both levels generally give more attention to this particular aspect than the Cambridge Academic English textbooks.

The general category of form receives the least amount of attention in the EAP textbooks with a mean percentage of 18.6. Within this general category, the aspect of word parts receives the most attention, accounting for 11.3% of all activities, while the aspect of written form attracts the least attention with only 2.1%. The Cambridge Academic

English textbooks in both levels of proficiency pay almost two times as much attention to the aspect of word parts as the Oxford EAP textbooks. To be more specific, while the aspect of word parts occupies 14.1% and 15.2% of the vocabulary activities in the Cambridge Academic English textbooks at upper-intermediate and advanced levels respectively, it only accounts for 8.3% and 7.5% in the Oxford EAP textbooks. The aspect of spoken form has the second-highest standard deviation of 5.7, showing the variations among the EAP textbooks with the Oxford EAP textbooks providing considerably fewer activities on this aspect than the Cambridge Academic English textbooks. This aspect also seems to receive a lower level of attention when the level of English proficiency increases from B2 to C1, which can be observed in all of the EAP textbooks.

## 5 Discussion

### 5.1 The aspects of vocabulary knowledge addressed in EAP textbooks

This study examines the aspects of vocabulary knowledge that the EAP textbooks for upper-intermediate (B2) and advanced (C1) learners address. The findings demonstrate that the general category of use receives the most attention while the general category of form receives the least attention. Among the individual aspects, the aspect of grammatical functions (in the general category of use) occupies the highest percentage of activities across the four textbooks, followed by the aspects of associations (in the general category of meaning) and word parts (in the general category of form). These findings are different from Brown's (2011) study which found that the aspect of form and meaning is the most prominent in general English textbooks, followed by grammatical functions and spoken form. This indicates the differences between general English and EAP textbooks in their ways of addressing vocabulary knowledge.

The most attention to the general category of use in the EAP textbooks seems to be reasonable since these textbooks aim at learners of high levels of proficiency (upper-intermediate and advanced) who are more proficient users of language and should be able to go beyond mere knowledge of form and meaning of words. In this category, the aspect of grammatical functions receives the most attention, which might be justifiable as academic language differs from spoken language in terms of the distribution of part-of-speech categories (Biber, 2006). Knowledge of grammatical functions enables learners to use words in proper patterns in order to satisfy the specific requirements of academic language. However, the EAP textbook writers' little attention to constraints on use, in Oxford EAP textbooks in particular, might be problematic because academic language is used in academic settings (Nagy & Townsend, 2012) and EAP learners should have awareness of where, when, and how often certain words can be used in those settings. Nation (2013) also suggests that constraints on use could influence the understanding of communication. Therefore, we would argue that there should be more vocabulary

activities addressing this aspect in EAP textbooks. The aspect of collocations might also deserve more attention, especially in the Cambridge Academic English textbooks, since it plays an important role in L2 performance (Crossley et al., 2015) and research has shown that learners struggle with this aspect (e.g., Nesselhauf, 2003; Peters, 2016).

Concerning the general category of meaning, it is useful that the textbook writers pay the most attention to the aspect of associations, considering the high lexical demands of EAP as well as the targeted proficiency levels. EAP textbook writers probably intend to help learners develop a broad lexical repertoire. This aspect can be particularly useful in academic speaking and writing tasks where proficient learners are often required to demonstrate an ability to use a wide range of vocabulary with great flexibility. Knowledge of synonyms, antonyms, and categories of words could also facilitate EAP learners' reading and listening, potentially helping them process academic written and spoken texts more easily. The aspect of form and meaning generally seems to receive a fair amount of attention from the EAP textbooks, except for the Cambridge Academic English textbooks aiming at B2 level which only dedicate a very small number of activities to this aspect. As for the aspect of concept and referents, we would suggest EAP textbooks, especially the Cambridge Academic English textbooks, introduce more vocabulary activities on this aspect. Inadequate knowledge of the concept and referents of words might result in miscommunication and lower level of comprehension of academic texts, subsequently affecting learners' academic performance.

As regards the general category of form, the aspect of word parts receives the most attention in all the EAP textbooks, which seems reasonable because of the morphological richness and prevalence of nominalisations in academic language (Hiebert & Lubliner, 2008; Nagy & Townsend, 2012). Nation (2013) also suggests that learning about word parts is an important vocabulary learning strategy for learners of high levels of proficiency. Little attention to the aspects of spoken form and written form, especially in the Oxford EAP textbooks, indicates the textbook writers' assumption that these aspects can be learnt incidentally by learners with higher levels of proficiency through listening and reading. Although that might well be the case, these two form aspects are important for academic skills and more activities on these aspects in the textbooks can still benefit learners.

## 5.2 The discrepancies among the EAP textbooks

The study also shows the differences among the EAP textbooks in all the three general categories of form, meaning, and use. While the Oxford EAP textbooks give more attention to the general category of meaning than the Cambridge Academic English textbooks, the latter attends to the general category of form more than the former does. For the general category of use, the Cambridge Academic English textbooks generally have a higher proportion of activities on grammatical functions and constraints on use than the Oxford EAP textbooks, but it is the opposite for collocations. These variations

between Oxford EAP and Cambridge Academic English textbooks could perhaps be attributed to the textbook writers' preferences. Only interviews with these writers could confirm this, which is beyond the scope of the current exploratory study. Nonetheless, research has indicated a range of useful activities for vocabulary learning and teaching (see Nation, 2013); therefore, we suggest that EAP textbook writers could base their choice of vocabulary activities on research that calls for more diversity and systematicity.

## 6 Conclusion

This study investigates the aspects of vocabulary knowledge that EAP textbooks pay attention to. The findings reveal that the general category of use receives the most attention in the EAP textbooks, followed by the general category of meaning. These findings are interpreted with consideration for the nature of EAP, the textbook writers' preferences and assumptions as well as the levels of proficiency. Some aspects of vocabulary knowledge (e.g., word parts, associations, grammatical functions) seem to receive adequate attention in the EAP textbooks while other aspects (e.g., constraints on use, collocations) might deserve more attention. Our study also shows the differences among the EAP textbooks in their amounts of attention to the nine aspects of vocabulary knowledge and the variations among different levels of proficiency. Hence, we suggest that EAP textbook writers could develop more consistent foundations for their inclusion of vocabulary activities in their textbooks.

## 7 Implications

This study has several practical implications for EAP textbook writers and teachers. The findings show that EAP textbooks differ in their targeted aspects of vocabulary knowledge, which implies an inconsistency in the selection of vocabulary activities among EAP textbook writers. They could consider justifying their decisions on the activities on different aspects of vocabulary knowledge in their textbooks. In addition, a lack of attention to certain aspects of vocabulary knowledge in EAP textbooks should be addressed. The current practice might limit EAP learners' opportunities to master several aspects of vocabulary knowledge necessary for their academic achievements since textbooks are one of the main sources of input for many learners, especially those who have limited access to other input types such as learners of English as a foreign language. EAP teachers who aim to ensure that their learners receive sufficient exposure to all aspects of vocabulary knowledge in their classrooms could try to focus on those aspects that textbooks might not give adequate attention to.

## 8 Limitations and suggestions for further studies

The findings of this study should be interpreted with caution because it has several limitations. First of all, we only analysed 4 textbooks; therefore, the findings remain tentative and exploratory. Further studies could include more textbooks and levels of proficiency to yield more comprehensive findings. Second, the aspects of vocabulary knowledge were not always clearly distinguishable because, as Zhong (2018) commented, they are often interrelated and at times interfere with one another. Nation's (2013) table of aspects of vocabulary knowledge does not give precise descriptions of the constructs (Milton, 2013) and it is quite complex to apply in research (González-Fernández & Schmitt, 2020). Indeed, in our study, it was sometimes not easy to decide which aspect of word knowledge was targeted. Studies in the future could aim to have more precise descriptions of different aspects of word knowledge so that their differentiation would be clearer and more convenient. Also, it would be interesting to investigate what aspects of vocabulary knowledge EAP teachers and learners pay attention to in their classrooms. Findings from such research combined with results from this study could provide further insights into the relationships and interactions between textbooks, learning, and teaching, giving a more complete picture of the teaching and learning of EAP in general and vocabulary in particular.

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