Academic Word List Knowledge of Malaysian ESL Undergraduates

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ABSTRACT

Academic words are specialised vocabulary of academic texts. The knowledge of these words is vital for comprehension and communication purposes, particularly among university students, to enable them to engage with authentic complex input, such as textbooks and journal articles. Limitation of academic vocabulary in their mental lexicon may restrict students 'comprehension to grasp the academic concepts they are learning. The current study investigated Malaysian English as a Second Language (ESL) undergraduates' knowledge of academic words, based on Coxhead's (2000) Academic Word List (AWL). The AWL consists of academic words commonly used in academic texts across four general disciplines of studies namely arts, commerce, law, and science. The list consists of 570 word families categorised in 10 sub lists based on frequency and range. One hundred and eleven first year undergraduates with different levels of English language proficiency and from different academic disciplines at a research university in Malaysia participated in this study. Data were collected using a questionnaire, which comprised a list of words derived from the AWL. Findings show that AWL words from sub lists 8 until 10 (which consist of low frequency and low utility academic words) had the highest percentage of unknown AWL words reported by students compared to the other sub lists. The distributions of unknown academic words reported were also different among students with regards to their academic disciplines and English language proficiency. Although the findings in general are rather evident, identifying unknown academic word among undergraduates from different academic programmes is significant to instructors and learners so as to enable them to focus on the right words during valuable class and independent study time.

Keywords: Academic Word; AWL; Academic Vocabulary Knowledge; ESL undergraduates; tertiary education

INTRODUCTION

Vocabulary is the primary foundation for comprehension and is the key to communication. The lack of vocabulary will restrict one's capacity to linguistically function competently. By having a robust vocabulary, learners can grasp ideas and concepts better, which will positively affect their academic achievement. However, the process of acquiring vocabulary involves a complex cognitive process which results in language learners having difficulties in

remembering the large amounts of words necessary to achieve fluency (Oxford, 1990). Learning words is not done by simply memorising long lists of words; it involves understanding the meaning and the use of the words as well as their stylistic appropriateness, pronunciation and grammar. Learning words is indeed a daunting task faced by many English as a Second Language (ESL) learners (Nation, 2006). In the context of Malaysia, many Malaysian university students are found to have insufficient vocabulary size; far from what university student should have, despite studying the English language formally since the age of seven (Ahmad Azman et al., 2010; Asgari & Mustapha, 2012; Kamariah, Mahani & Bordin, 2016).

This situation is worrisome as English is an integral tool to access knowledge particularly in academic contex. English has been approved as the medium of instruction for some technical areas and post-secondary courses at private higher education institutions, and in twinning programmes with overseas institutions as well as offshore branch campuses (Education Act 1996, Private Higher Education Institution Act 1996). English is also much emphasized in public universities in Malaysia. Many Science, Technical, Engineering and Mathematics (STEM) courses in public universities in Malaysia (expect for those at The National University of Malaysia, which upholds the Malay language through the courses they teach), are conducted in English. Even though English appears to play an important role only to STEM courses and English Language Studies programmes in public universities in Malaysia, the knowledge of English language is still significant to students from other disciplines, especially in enhancing their employability skills to enter the job market.

Because of the obvious importance of English, university students in Malaysia need to master a large range of English vocabulary for the development of their literacy skills and communication within and outside of the academic world. Having a wide vocabulary is vital in assisting students to excel in their studies. This is due to the fact that, regardless of the disciplines of studies, most academic reading materials (e.g., journal articles, report, academic textbooks), particularly those on the latest academic research, are mostly published in English. A strong fundamental vocabulary (i.e., technical vocabulary, academic vocabulary) is required in comprehending the content of such academic texts. It also helps students to complete some, if not all, of their oral and written assignments in the English language. The knowledge of academic words enhances students' confidence to convey ideas and information in academic writing as well as for academic presentation (Choo Lin, Singh & Ganapathy, 2017).

It is estimated that at least 98% of the vocabulary in texts needs to be understood by ESL learners to ensure the comprehension of a text (Schmitt, Jiang & Grabe, 2011). To achieve this, Paquot (2010) postulates that university students need to master three types of vocabulary lists: a core vocabulary of 2000 high frequency words, academic vocabulary, and technical terms. High frequency words are words that most frequently occur in written materials and those that are most commonly used in the language. This includes function words (e.g., a, about, the, by, to) and content words (e.g., bag, lesson, person, put). Technical terms are words that have specific meanings within a specific discipline of knowledge (e.g., voltage, radiation, enzyme). Academic vocabulary refers to a group of words that describe the inquiry, method, and functions of research (Nation, 2001), that are most frequently encountered and used in academic texts (e.g., assume, acquire, conclude, convene). Academic words can be very challenging and difficult to understand, even among proficient readers (Krashen, 2011) as they are not frequently encountered in non-academic texts.

Most universities in Malaysia introduced courses such as English for Academic Purposes (EAP) that are made compulsory to all students. These EAP courses are aimed at assisting students to enhance their language skills in academic contexts. However, to design EAP courses that meet the right vocabulary knowledge needed for ESL students' academic

endeavour is a challenge. To date, few studies have assessed the vocabulary knowledge of Malaysian undergraduate students (e.g., Kamariah et al., 2016; Harji, Balakrishnan, Bhar & Letchumanan, 2015; Ahmad Azman et al., 2010); however, none of these studies have specifically examined the academic word knowledge of students in the Malaysian context. Hence, the current study aims at investigating the knowledge of academic words among Malaysian ESL undergraduates based on Coxhead's (2000) Academic Word List (AWL).

LITERATURE REVIEW

SECOND LANGUAGE VOCABULARY LEARNING

First language learners acquire vocabulary knowledge by experimenting with words in a large range of contexts (Carter, 1998). However, this is not the case for second language (henceforth, L2) learners. L2 learners may experience a great hurdle in acquiring and storing words which may probably be morphologically or phonologically different from their first language. This is because the coding and storing of words depend on learner's prior knowledge in phonology and morphology. L2 words contain sounds or letters that may be unfamiliar to the learners and this will impede the process of storing the words either in isolation or in clusters (Hulstijn, 2001).

In addition, learning a new word encompasses the notion of understanding its meanings, its relation to other lexical items, derivations, collocations, frequency, and grammatical rules (Read, 2000). Read further asserts that learning a new word also includes grasping the knowledge of its orthographical and phonological forms. In other words, knowing a word includes being able to recognize its pronunciation and form, recall its meaning related to the context of its occurrence, and make various associations with other related words (Nation, 1990). All these make the acquisition of vocabulary a demanding process especially for L2 learners. All these justify why L2 learners perceive the learning of new words as one of the most difficult knowledge to master (Kalajahi & Poursahanian, 2012).

Past L1 and L2 vocabulary acquisition studies have shown that most vocabulary items are acquired incidentally, as a product of learners' engagement in listening, reading, speaking or writing activity. In particular, Nagy, Anderson and Herman (1987, p. 27) state that the development of large scale vocabulary growth takes place through the incidental learning of words during reading. Nagy (1997, p. 70) further argues that the explosive growth of vocabulary among learners stems from a variety of oral and written tasks which not only expose them to new words and concepts, but which also force them to process this lexical information repeatedly. This is due to the fact that learners need to be conscious and to actively pay attention to the meaning of unfamiliar words during reading in order for vocabulary learning to occur (Hulstijn, 2001). Furthermore, learners (particularly those at tertiary level) need to be independent in conducting self-directed learning which will eventually enable them to enhance the development of vocabulary learning.

In the context of teaching and learning, vocabulary learning is commonly integrated in the learning of other language skills (i.e., reading, writing, speaking, and listening). Bastanfar and Hashemi (2010) assert that the teaching of vocabulary is understated by the overly emphasis on reading, writing and grammar. In other words, not enough weightage is put on appropriate vocabulary development in language or learning instruction. This is particularly evident at the tertiary level, as claimed by Fan (2003), who states that little attention is given to vocabulary development at universities in Asian countries.

ACADEMIC VOCABULARY

Vocabulary is the key element in language and its acquisition. Without sufficient vocabulary, students cannot read, write or speak effectively. In the academic setting, vocabulary plays an important role in ensuring academic success. Hence, many studies have been conducted to investigate the vocabulary needed for academic study. The number of academic word lists has been compiled to meet the specific vocabulary needs of students, particularly for those in higher education settings (Xue & Nation, 1984; Coxhead, 2000; Paquot, 2010).

Academic vocabulary is a set of lexical items that are frequently utilised in academic texts such as journals articles, theses/dissertations, research papers, conference papers, academic books etc. Paquot (2010) defined academic vocabulary as a set of options that refer to those activities which characterize academic works, organise scientific discourses and build the rhetoric of academic texts. Other terms such as sub-technical vocabulary (Nation, 2001; Baker, 1988), semi-technical vocabulary (Farrell, 1990), non-technical terms (Goodman & Payne, 1981) and specialised non-technical lexis (Cohen et al., 1988) are also related to academic vocabulary. Donley and Reppen (2001) categorised academic vocabulary into two types of words: content-specific words that include technical words related to a specific academic discipline, and general academic vocabulary that consists of words that cut across disciplines and those that appear in different content areas. Examples of content-specific words are 'radius' in mathematics or 'velocity' in physics. General academic vocabulary is words that occur most frequently in academic texts across the content academic disciplines (e.g., access, evident, vary).

Since vocabulary learning is an incremental process, students should be exposed to academic vocabulary at early stage of education to gradually develop their understanding of the words. Students who have less exposure to academic words may have more difficulty in dealing with the words (e.g., Townsend, Filippini, Collins & Biancarosa, 2012). However, Amerrudin, Nor Liza and Sarimah's (2013) study claims that students' vocabulary knowledge gained at Malaysian secondary schools did not equip the students with the vocabulary needed for higher level of education, i.e., tertiary institution. Their study that analysed words that appeared in the Malaysian English language syllabus booklets, found that only 0.93% of a total of 322 words in Form Four and Form Five syllabus booklets are academic words. In the Forms One to Form Three syllabus booklets, only 4 out of the 994 words listed are academic words. The findings implicate that the Malaysian secondary English Language syllabus mainly caters for the learning of the most common and frequent of words of English, and neglects the academic vocabulary required in academic reading.

ACADEMIC WORD LIST (AWL)

The academic word list (AWL) compiled by Coxhead (2000) is widely used in language teaching, testing and the development of pedagogical material. AWL is also included in vocabulary textbooks, vocabulary test (Schmitt, Schmitt & Clapham, 2001), computer-assisted language learning (CALL) materials, and dictionaries. AWL focuses on the non-subject specific English language vocabulary that students need to master in order to comprehend English academic texts and to produce well-written academic works. AWL is considered a general academic vocabulary, which means that the words in AWL is not restricted to a specific field of study and covers consistently around 10% of various university-level corpora. The list consists of 570 word families that are commonly found in academic texts across four general disciplines of studies namely arts, commerce, law, and science (a word family is a base word and all its inflections and derivatives, for example, the base word for accessible, accessibility, inaccessible, inaccessibility is access).

Coxhead's AWL is categorised into 10 sub lists based on word frequency and range, from the most frequent to least frequent. The first sub list (sub list 1) contains the most frequent words (e.g., approach, area, assess, assume) while the tenth sub list (sub list 10) comprises of the least frequent words (e.g., adjacent, albeit, invoke, levy). Coxhead's selection criteria for the AWL word forms was based on the fact that each word form is not included in the word families of the most frequent 2000 general English words listed by West (1953). The words should occur at least ten times in each of the four academic areas and must occur at least 100 times in the entire corpus. The AWL is predominantly aimed at enhancing text comprehension among students and is an important tool for vocabulary learning in EAP contexts (Coxhead, 2011). In addition, the importance of AWL is highly acknowledged among Malaysian ESL students not only for academic reading and comprehension, but also for academic writing, presentations and understanding (Choo et al., 2017). However, Choo et al.'s study did not reflect the level of AWL knowledge of university students per se. Therefore, there is a need to address the specific knowledge of the words represented in the AWL among Malaysian ESL university students in order to them assist in their vocabulary learning in academic setting.

ASSESSING VOCABULARY

Nagy and Scott (2000) states that "a person who knows a word can recognize it, use it in novel contexts, and use the knowledge of the word, in combination with other types of knowledge, to construct meaning for a text" (p. 273). A great deal of vocabulary research involves the assessment of vocabulary in one way or another. Many studies employ vocabulary tests as instruments in their studies. The purpose of assessing vocabulary is not only to identify what learners have learned in the context of teaching and learning but also to understand the processes involved in vocabulary acquisition (Read, 2000). Two common objectives of vocabulary assessments are estimating learner's vocabulary size and assessing the quality (or depth) of vocabulary knowledge.

Adequate knowledge of words is vital for effective language use. Measuring vocabulary size enables researchers to estimate how many words are known by learners at various levels. Therefore, it is important to determine the pre-existing vocabulary knowledge of the students at a point in time before preparing any learning program. In the same vein, Steinberg (1997) states that measures of lexical knowledge are among the best predictors of reading comprehension ability. Reliable estimation of words known by learners would provide useful information for instructors, teachers and course planners to design or choose relevant materials than can provide rich and ample exposures for learners in their journey to seek knowledge.

In the case of specific target words (i.e., academic vocabulary and technical words), the estimation of the vocabulary size of these words would lend a better basis for preparing specialised vocabulary instructions to cater for the need of students at the tertiary level. There are many vocabulary tests that have been developed over the years (e.g., Passive Vocabulary Test (Nation, 1990), Productive Vocabulary Levels Test (Laufer & Nation, 1999), and Receptive Vocabulary Size Test (Nation & Belgar, 2007) to measure vocabulary size. Each has its own dimensions of English vocabulary knowledge. In a vocabulary size study, the selection of suitable test format depends on the purpose of assessment. The test formats that are commonly used includes getting participants to answer multiple choice items of various kinds, getting participants to match words with their synonyms or definitions, asking participants to supply L1 equivalents for each L2 target word, and using a (yes-no) checklist test, which requires test takers to simply indicate whether they know the word or not (Read, 2000, p. 87).

Tests such as the Vocabulary Levels Test by Schmitt, Schmitt and Clapham (2001) contain a section using the AWL, and similarly, the Lexical Frequency Profile (LFP) by Laufer and Nation (1995) also includes AWL that measures vocabulary richness in written discourse. However, to the knowledge of the researchers, a specific test that solely looks at the vocabulary size of academic vocabulary has not been developed so far.

METHODOLOGY

SAMPLING

This study was conducted to investigate the knowledge of academic words among Malaysian ESL undergraduates based on Coxhead's (2000) Academic Word List (AWL). Research ethics approval was obtained for this purpose (Reference No: UKM PPI/111/8/JEP-2018-598). In order to obtain rich data that suits the purpose of the study, the respondents were selected using purposive sampling. One hundred and eleven first year students of a research university in Malaysia were chosen as participants of this study because naturally, first year students are at the starting point in building their tertiary level of academic literacy. Hence, it can be assumed that the likelihood of knowing the academic words from AWL is low. The respondents of this study were from three different programmes, namely, English Language Studies, Health Sciences, and Economy and Management programmes. The students from Health Sciences and Economy and Management programmes were taking a preparatory course on English for Academic Purpose (EAP) while students from English Language Studies programme will be taking the second level EAP course in the following semester. They were categorised into low and high proficiency groups based on their Malaysian University English Test (MUET) results. Respondents who obtained Bands 1-3 were categorized as low proficiency learners whereas those who obtained Bands 4-6 were categorized as high proficiency learners. Table 1 shows the distribution of respondents based on their English language proficiency level and their study programme.

TABLE 1. Distribution of Respondents

Programme/English Proficiency Level	High Proficiency	Low Proficiency
English Language Studies	56	1
Health Sciences	-	38
Economy and Management	-	16
Total	56	55

MEASUREMENT

This study is descriptive in nature. It employed the survey research design where information from samples that have been identified from a selected population was collected. The study utilised a questionnaire comprising of a list of academic words by Coxhead's (2000) AWL, and was specifically designed by the researcher to investigate the undergraduates' knowledge of academic word.

The questionnaire consisted of a total of 570 word families in 10 sub lists and 4 demographic items. The list of AWL words presented is in the form the headword (or base word) of each word family (e.g., the word 'occur' is the headword of the word family that includes occurrence, reoccur and reoccurring). Coxhead's (2000) AWL is as follows: sub list 1 (57 words), sub list 2 (60 words), sub list 3 (60 words), sub list 4 (60 words), sub list 5 (59 words), sub list 6 (60 words), sub list 7 (55 words), sub list 8 (60 words), sub list 9(59 words), sub list 10 (30 words).

The questionnaire was designed by the researcher in the form of a checklist test (also called the Yes/No questions) following Meara and Buxton's (1987) and Meara and Jones's (1988) test format. The checklist test format is considered as a self-report assessment where learners judge their own knowledge of the target words. Typically, the test requires the respondents to read a list of lexical items in isolation and indicate whether or not they know the words by writing a tick ($\sqrt{}$ for yes), or cross (X for no) on a paper-pencil version of questionnaire, or click on the box in a computerized version of the same questionnaire. In this study, however, the respondents were asked to read the list of words presented in isolation and circle the words whose meaning they did not know. The researcher explicitly described to the respondents the criteria of 'not knowing' as 'not being able to recall the meaning of the word even though the form is recognized'. The checklist test suits the purpose of the study better because it is the most simple format for testing vocabulary and can be used to cover a large number of words.

Data gathered was analysed descriptively based on percentage and frequency of each reported unknown AWL words. The percentages of unknown AWL words were also calculated according to sub lists. An AWL with high percentage indicates that the word is highly not known by respondents. The comparison of unknown AWL words in terms of their total percentage in each sub list was conducted and was further analysed based on the respondents' English language proficiency and academic programmes.

RESULTS

This section reports the findings of Malaysian ESL undergraduates' knowledge of AWL based on the percentage of unknown AWL sub lists that the undergraduates reported. The study also identified AWL words that were highly unknown by respondents. An analysis of the highest reported unknown academic words in terms of English language proficiency and academic programmes of the respondents were then conducted. Figure 1 shows the percentage of AWL words according to sub lists based on respondents' responses.
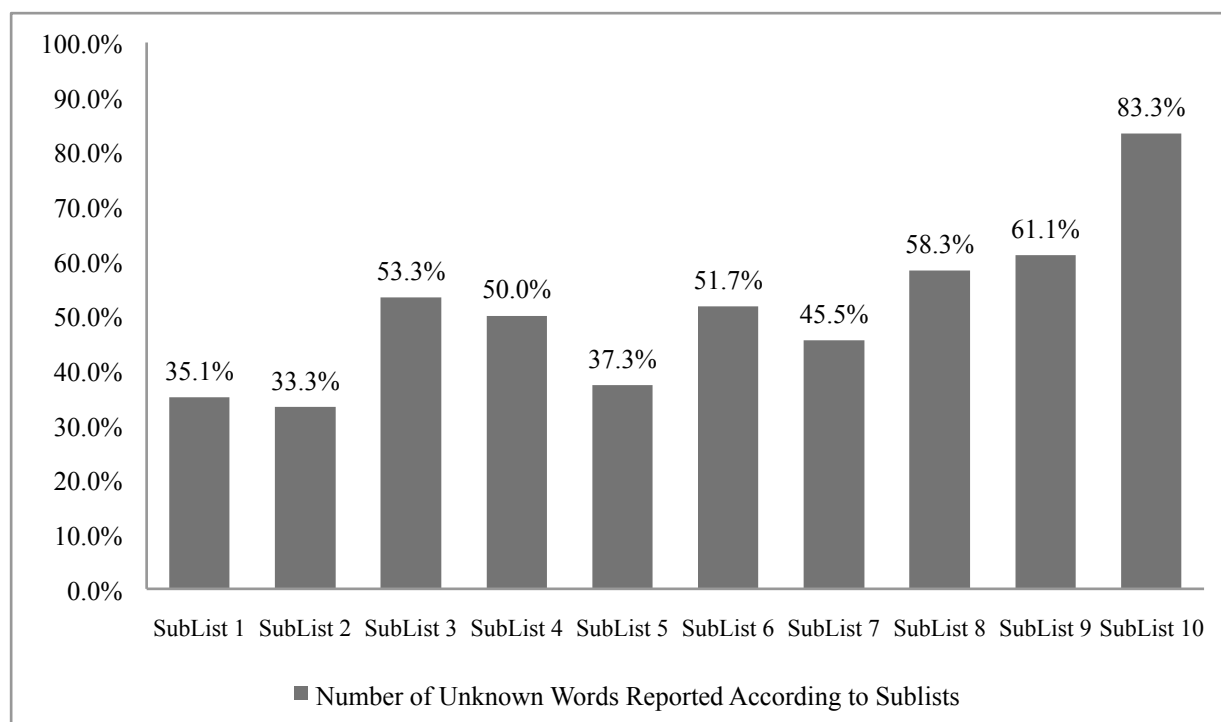

FIGURE 1. Percentage of Unknown Academic Words Based on Sub Lists

The 10th sub list has the highest percentage of unknown words reported by the respondents. The words in the 10th sub list are among the low frequency and low utility words that seldom appear in academic texts; this is probably why respondents are not likely to know a majority of the words in the 10th sub list. Sub list 1 (35.1%), sub list 2 (33.3%) and sub list 5 (37.3%) have among the lowest number of unknown academic words reported by the respondents and this supports the fact that words in these first three sub lists are considered as high frequency words that are also commonly used in academic texts. Although these words are supposed to be high frequency words, the percentage (around 30%) of unknown words for each sub list (sub list 1-3), though the lowest, can still be regarded as high. This suggests that learners' knowledge of academic words is still not sufficient.

Table 2 shows the AWL words for each sub list that have the highest numbers of unknown academic words as reported by the respondents. Percentages of reported unknown AWL word for each sub list in the table indicated that more than half of the respondents did not know the meaning of the word. The word 'legislate' in sub list 1 (74.1%) and the word 'convene' in sub list 2 (72.9%) had the highest percentage. Although according to Coxhead's AWL, these words are among some of the most frequent word families that occur in academic text corpus, more than half of the respondents indicated that they did not to know the meaning of these words. Presumably, words which are uncommon or difficult in English could be among the high frequency words used in academic texts. Corson (1997) asserts that non-native students may encounter difficulties in learning academic words as these words refer to abstract ideas and processes which made the text more complex.

TABLE 2. Lists of Highest Percentage of Unknown Academic Word for Each Sub List

AWL	Sub List	Percentage (Number of Responses)
legislate	1	74.1% (83)
equate	2	47.7% (53)
convene	3	72.9% (81)
negate	3	56.7% (63)
adequacy	4	52.3% (58)
regime	4	48.6% (54)
amend	5	54.1% (60)
precede	6	55.9 % (62)
intervene	7	43.2% (48)
arbitrary	8	45.0% (50)
erode	9	49.5% (55)
albeit	10	68.5 % (76)
levy	10	54.1% (60)

Figure 2 illustrates the sub lists of unknown academic words reported according to respondents' the English language proficiency. Analysis revealed that the low proficiency students reported a higher number of unknown academic words, indicating a low level of academic word knowledge compared to high proficiency students. Sub lists 5, 6, 7, and 8 show a relatively high difference between low proficiency and high proficiency students compared to the other sub lists.
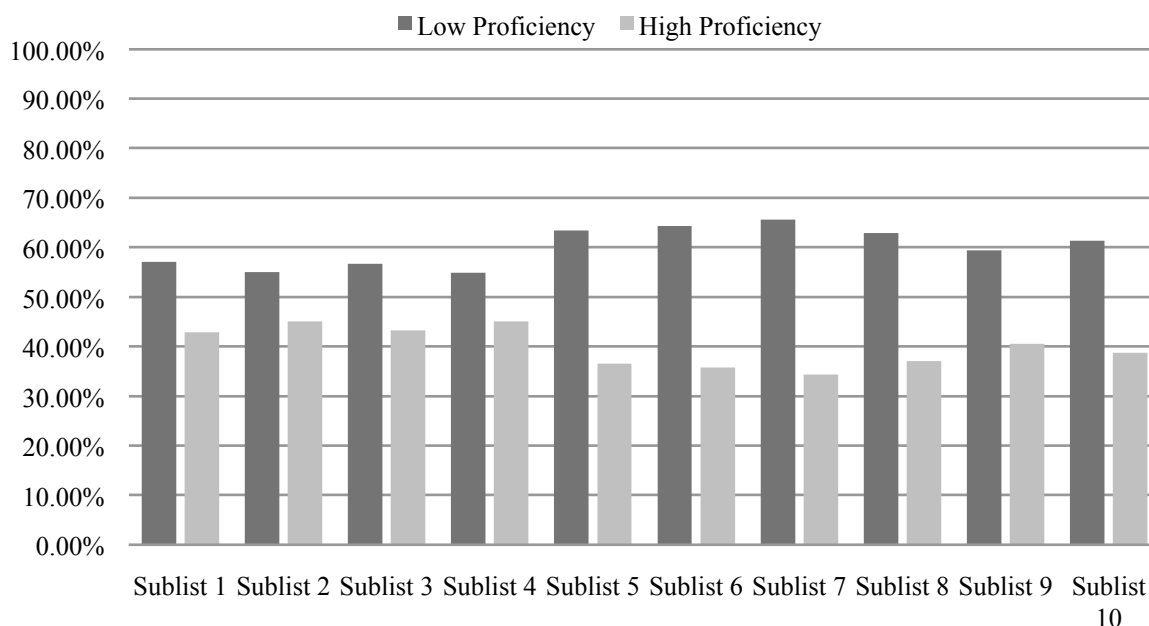
FIGURE 2. Unknown Academic Words Based on English Language Proficiency

Table 3 displays the percentage and lists of academic words that the students did not know based on the respondents' English language proficiency. The comparison was made based on words that were unknown by the two groups of learners. Although overall low proficiency students did not know more AWL words compared to high proficiency students, for certain words, high proficiency learners had a higher percentage of not knowing the meaning of these words. For example, the word "aggregate", "fluctuate", "integral", and "adjacent" which are in sub lists that contain least frequent words (Sub lists 6-10) had a relatively high difference of percentage of not knowing between the two groups of students, with more high proficiency students not knowing the meaning of these words compared to low proficiency students.

TABLE 3. Lists of Unknown Academic Words Based on English Language Proficiency

Item	Group	Low Proficiency	High Proficiency
Confer	4	52.7% (29)	62.5 % (35)
Aggregate	6	7.4% (4)	33.9%(19)
Fluctuate	8	12.7% (7)	23.4% (13)
Integral	9	3.6% (2)	17.8% (10)
Adjacent	10	10.6%(6)	16.0% (28)
Derive	1	16.4%(9)	23.2 % (13)

Table 4 demonstrates the unknown AWL words reported by the respondents based on their academic programmes at the university. However, the number of respondents is not equally distributed according to academic specialisations. This is because the respondents were chosen using the purposive sampling method. As can be seen in Table 4, the unknown academic words selected shows relatively different percentage reported by the respondents with regards of their academic programmes.

TABLE 4. List of Unknown Academic Words Based on Academic Specialisation

Item	English Language Studies (57)	Health Sciences (38)	Economy and Management (16)
Compute	35.1% (20)	31.6% (12)	37.5%(6)
Constrain	19.6% (11)	52.5% (20)	12.5% (2)
Regime	24.6% (14)	73.7% (28)	75.0% (12)
Clause	-	68.4% (26)	43.7% (7)
Aggregate	33.3% (19)	7.9% (3)	6.3% (1)
Cite	-	39.5% (15)	25.0%(4)
Interval	17.5% (10)	2.6%(1)	6.3%(1)
Precede	33.3% (19)	86.8 %(33)	62.5% (10)
Advocate	21.1%(12)	57.9%(22)	37.5%(6)
Contrary	12.3%(7)	57.9% (22)	37.5%(6)
Ambiguous	5.3%(3)	55.3%(21)	6.3%(1)
Arbitrary	8.8%(5)	89.5%(34)	68.8%(11)
Contradict	5.3%(3)	38.8%(14)	25.0%(4)
Fluctuate	24.6% (14)	2.6%(1)	17.5%(5)
Practitioner	31.6%(18)	21.1%(8)	56.3%(9)
Predominant	24.6% (14)	-	56.3%(9)
Diminish	22.8%(13)	2.6%(1)	25.0%(4)
Integral	17.5% (10)	2.6%(1)	6.3%(1)
Subordinate	-	38.8%(14)	6.3%(1)
Adjacent	29.8%(17)	2.6%(1)	25.0%(4)
Enormous	8.8%(5)	50.0%(19)	56.3%(9)
Intrinsic	47.4%(27)	7.9% (3)	50.0%(8)
Invoke	17.5% (10)	60.5%(23)	37.5%(6)

DISCUSSION

The findings of this study reveal that low frequency and low utility academic words from Coxhead's (2000) AWL showed a higher percentage of unknown words by respondents compared to high frequency academic word according to the sub lists. The AWL words in the questionnaire were presented in isolation and decontextualized manner. Therefore, the students' assessment of the words was solely based on their prior knowledge of the word. The frequency and range of words indicated in AWL are only applicable in academic discourse.

According to Gardner (2013), low frequency words in general English may attain high frequency status in a specific context whereas words that are common and considered easy in English might not be common in terms of usage in academic context. On the other hand, words which are uncommon or difficult in English may be among the high frequency word use in academic texts. The frequency of the words (high and low), the concreteness and abstractness of the words, their semantics, grammatical classes and phonological forms are some of the features that affect vocabulary acquisition and retrieval by learner (Steinberg, 1997). These arguments reflect the findings of this study. Freshman undergraduates like those who participated in this study, might not be familiar with the academic words used in academic texts. Reading academic written materials only may not provide enough input for the first year undergraduates to acquire AWL. The fact that little attention was given in the development of academic vocabulary in secondary education (Amerruddin et al., 2013) justifies why the first year undergraduates' knowledge of AWL is low. The absence of explicit academic or specialised vocabulary instruction for teaching the words at the beginning level of tertiary education may also impede the development of vocabulary among university students (Kamariah et al., 2016). Consequently, students may face difficulty comprehending reading materials at university level.

In terms of English language proficiency, the findings reveal that low proficiency students reported a higher number of unknown academic words, indicating a low level of academic word knowledge compared to high proficiency students. Although it is generally assumed that high proficiency students know more words compared to low proficiency students, in the case of AWL, there are words that high proficiency students showed a higher percentage of not knowing the words. Academic words are specialised vocabulary of academic texts and are less likely to be encountered in texts of other genres. The task of learning the academic words and to be able to use them appropriately in academic context is challenging especially for ESL learners, regardless of their language proficiency.

As can be seen in Table 4, the word "clause" was reported as an unknown word by more than half of the students majoring in Health Sciences and Economics, but none from English Language Studies (ELS) programme. To provide another example, the word "integral" was mostly known by students majoring in Health Sciences and Economics, whereas a total of 17.5% of ELS students did not know the meaning of the word "integral". This suggests that the word "clause" is more likely to be encountered in English by students majoring in English language compared to students majoring in STEM or economics. On the contrary, the word "integral", that is a mathematical term, is more commonly used in STEM courses. These findings support the argument put forward by Hyland and Tse (2007) that although Coxhead's (2000) AWL is claimed to be a general academic vocabulary, the AWL words in the corpus of 3.3 million words from a range of academic disciplines is not evenly distributed. They further assert that all disciplines shape words for their own uses as demonstrated by their clear preferences for particular meanings and collocations. Therefore, it is important to identify and understand academic vocabulary that is commonly used within the academic discipline.

As mentioned earlier, AWL is made up of word families. Each family consists of a headword and its closely related affixed forms. Words families have many derived forms which may not share the same meaning (e.g., the words 'analogy' and its derived forms 'analogical' and 'analogize'). The lack of knowledge of these derived forms will make the learning of academic words difficult for second/foreign language learners particularly because they might not be able to analyse the different parts of complex words (Scarcella & Zimmerman, 2005). It would be even more difficult for L2 learners to guess the meaning of the derived forms of words (e.g., analogical, analogize) if the learners do not even know the meaning of the base word (analogy). Therefore, specialised vocabulary learning coupled with instructional vocabulary strategies can accelerate the students' academic vocabulary development. Once students have the skill and the ability to use suitable and effective vocabulary learning strategies, they will be able to cope with any reading materials which they are not completely familiar. Providing students with the knowledge of word part analysis and vocabulary learning strategies (i.e. guess from contextual cues) would greatly help the students to learn vocabulary more effectively.

Furthermore, the productive use of academic words in speaking and writing activities such as formal presentation, discussion based on texts, writing summaries and reviewing the literature of a topic can also have a positive effect on the learning of AWL. Direct teaching of AWL in EAP course can enhance students' awareness of the words. In addition, the learning of academic words can also be achieved through extensive reading of academic texts. An adequate exposure to academic words at the early stage of the students' academic years is vital to ensure the acquisition of the words.

The findings of this study challenges teachers teaching EAP courses whose students from mixed language proficiency and different academic programmes to consider alternative ways in providing the students with the right vocabulary. At the tertiary level, students should be geared to be independent learners who are able to think, act and pursue their own learning

goals autonomously. Hence, knowledge in AWL plays a vital role in the students' learning and because of this, teachers teaching EAP courses need to set vocabulary goals for their students so that they are able to study independently through successful comprehension of academic and technical texts.

CONCLUSION

The findings of this study revealed that Academic Word List (AWL) knowledge of Malaysian ESL undergraduates is still low based on the number of unknown AWL words reported by respondents. The percentage of AWL words reported as unknown by the respondents ranges from 35% to 83% in 10 sub lists. The unknown AWL words reported were also different with regards to respondents' English language proficiency and academic programme.

Knowledge of AWL is beneficial for students who are studying or preparing to study at the tertiary level in English. It plays a significant role in boosting students' comprehension of academic reading materials. Findings from this study on AWL would greatly contribute to the development of effective materials and designs for EAP courses that will equip the students with the right vocabulary knowledge for their students' academic endeavour.

This study only investigates the academic word knowledge of Malaysian ESL university students based on the students' own judgement of their knowledge of the word. The knowledge of AWL words was tested in isolation. Further research should consider looking at AWL used in context, the depth of academic word knowledge of Malaysian university students, and how students use AWL in context of academic discourse.

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