



Academic Word Lists: A Comprehensive Review

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Abstract

The significance of vocabulary in academic success is well-established, particularly for second language learners navigating English Medium Instruction or academic contexts. This paper examines the development and evaluation of major academic word lists designed to support second language learners. To contextualize the academic vocabulary, the paper first provides a brief overview of the general high-frequency and discipline-specific vocabulary, followed by a historical background of word lists developed in the 1970s, which influenced the creation of the vocabulary lists in use today. It then reviews the major academic vocabulary lists currently in use. Starting with the influential University Word List (Xue & Nation, 1984) developed in the 80s, the paper evaluates the comparative significance and relevance of the Academic Word List (Coxhead, 2000), the New Academic Word List (Browne, et al., 2013), and the Academic Vocabulary List (Gardner & Davies, 2014). These lists are evaluated based on their (a) representation – frequency, range, and dispersion of words included in the list, (b) currency – how up-to-date the corpus is from which a word list is extracted, (c) corpus size, and (d) strengths and weaknesses of each word list from a pedagogical perspective. The analysis identifies the Academic Vocabulary

List as particularly useful for second language learners engaged in academic reading and writing because of its broad disciplinary coverage, lemma-based design, and empirical validation using the Corpus of Contemporary American English (COCA).

Keywords: Academic vocabulary, word lists, corpus, lemma, types, word families.

Introduction

As English continues to function as a lingua franca and a medium of instruction worldwide, the importance of mastering its lexis is widely recognized. Experts suggest that mastering a second language (L2) is largely dependent on mastering its vocabulary (e.g., Schmitt, 2010); hence, a need to improve the acquisition of English language vocabulary is equally recognized by second language learners and teachers (Biemiller & Slonim, 2001; Townsend et al., 2012). To help learners enhance their command of L2 vocabulary, several word lists have been developed. Early attempts in the 1970s, followed by the University Word List (UWL; Xue & Nation, 1984), laid important groundwork, though their small corpora and dated coverage limit their current relevance. Building on this foundation, more recent and influential lists include the Academic Word List (AWL; Coxhead, 2000), the New Academic Word List (NAWL; Browne et al., 2013), and the Academic Vocabulary List (AVL; Gardner & Davies, 2014). These lists are believed to facilitate and expedite L2 vocabulary development, particularly for adult learners who often have fewer opportunities for naturalistic exposure to the target language and less time to acquire vocabulary incidentally compared to children (Webb & Nation, 2017; Nation, 2021). By identifying high-utility academic words, these lists help adult learners meet the vocabulary demands of academic English. The present paper critically reviews the AWL, NAWL, and AVL, highlighting their strengths, limitations, and implications for L2 teaching and learning.

Literature Review

Word lists designed to support L2 learners have been classified in various ways. A widely accepted framework, proposed by Nation (2012a), identifies three main types of vocabulary: general high-frequency words, academic vocabulary, and discipline-specific high-frequency words. While the current paper presents a synthesis of academic vocabulary lists, a brief reference to the general and discipline-specific lists is provided below to situate their role.

General High Frequency Vocabulary

To date, several high frequency lists have been compiled. These include the General Service List (GSL) by West (1953), British National Corpus (BNC2000) and the British National Corpus and the Corpus of Contemporary American English (BNC/COCA2000) list by Nation (2006, 2012b), the New General Service List1 (NGSL1)

by Browne (2014), and the New General Service Lists² (NGSL2) by Brezina and Gablasova (2015). These vocabulary lists provide greater coverage of everyday language use – about 84% by the GSL and approximately 90% and 81% by the NGSL1 and the NGSL2 of their respective corpora (Brezina & Gablasova, 2015; Browne, 2014). Moreover, the two new general service lists also improve upon the old GSL by curtailing the number of lemmas¹ from 4,114 in the GSL by West (1953) to 818 in the NGSL1 by Browne (2014), and 2,494 in the NGSL2 by Brezina and Gablasova (2015). While useful for L2 learners' general language development, these lists include conversational items (e.g., salutations, pronouns) that are less relevant to academic discourse (Dang et al., 2022). Hence, they may not serve well in contexts that prioritize academic style and diction.

Discipline-specific (technical) Vocabulary

Discipline-specific vocabulary is generally low in frequency. It is neither common to everyday language use nor shared across various academic disciplines in general. Instead, it contains vocabulary that is specific to a discipline and its related fields, for example, words like *alfalfa*, *germination*, and *fungicide* (Muñoz, 2015) appear with a relatively high frequency in articles on agriculture but may not be very common in applied linguistics. Several discipline-specific vocabulary lists have been developed to cater to the unique needs of various fields. Examples of these lists include those for Agriculture, (Muñoz, 2015); Applied Linguistics (Khani & Tazik, 2013); Business (Browne & Culligan, 2016), Chemistry (Valipouri & Nassaji, 2013), Engineering (Todd, 2017), Environmental Studies (Liu & Han, 2015), Finance (Tongpoon-Patanasorn, 2018); Medicine (Lei & Liu, 2016), and Nursing (Toriida, 2016). While valuable for specialists, these lists are less relevant across disciplines, which highlights the need for an intermediate lexical category—academic vocabulary—that spans multiple fields (Hart & Risley, 2003; Townsend et al., 2012).

Academic Vocabulary

Academic vocabulary is different from both the general high frequency words as well as the discipline specific vocabulary in the sense that it includes “formal, context-independent words with a high frequency and/or wide range of occurrence across scientific disciplines, not usually found in basic general English courses: words with high frequency across scientific disciplines” (Farrell, 1990, p. 11). A focus on academic vocabulary is crucial for L2 learners for several reasons. First, it plays a crucial role in academic success as it covers a considerable part of an academic text – 8% to 10% of running words in any text (Nation, 2012a); hence, its role for academic purposes has been emphasized by researchers (e.g., Nagy & Anderson, 1984; Nation, 2012a). It is considered as an essential component of writing ability (Lillis, 2001); and a good command of it represents higher and advanced academic proficiency (Jordan, 1997). Second, previous research confirms a high correlation between vocabulary knowledge and reading abilities (Malmström et al., 2018; Schmitt, Jiang, & Grabe, 2011), and a lack of

¹ A headword and its inflections with the same part of speech: run, runs, ran, running as verbs = 1 lemma Run and running as nouns = another lemma.

proficiency in academic vocabulary affects academic achievement (Goldenberg, 2008; Schuth et al., 2017). In addition, vocabulary knowledge plays a crucial role in success or failure on the major aptitude tests (e.g., GRE, GMAT, SAT) used for college entrance (Gardner & Davies, 2014). These challenges are further discussed in the conclusion.

Considering the importance of academic vocabulary for educational success, and second language learners' need for it, efforts to develop such lists have been undertaken over time. Among those with historic significance are the Academic Vocabulary List (Campion & Elley, 1971), the American University List (Praninskas, 1972), the Academic Word Families (Lynn, 1973), and the Academic Word List (Ghadessy, 1979). These lists preceded the emergence of the modern computer-based lists and were mainly produced manually. Table 1 below presents a brief description of four major lists created in the 1970s.

Table 1 *A Summary of Four Major Vocabulary Lists Developed in the 70s*

	Representation	Corpus Size	Unit of Analysis ²	Wordlist Size
AVL, 1971	Textbooks across 19 disciplines, published lectures, and examination papers	301,800	Lemma	500 common + 3,200 academic words
AUL, 1972	Ten textbooks representing 10 academic disciplines	272,466	Word Family ³	507
AWFs, 1973	Fifty-two books in commerce, law, mathematics, and statistics; 10,000 annotations by students	10,000 annotations by students	Word family	197
AWL, 1979	Twenty textbooks in chemistry, biology, and physics	478,700	Lemma	322

²The basic unit of counting an entry in the word list, which can be a token, lemma, type, word family, etc.

³A headword, its inflections, and derivations irrespective of the part of speech: *Run, runs, ran, running* as verbs and *run* and *running* as nouns = 1 word family.

The creation of these lists reflected a growing recognition of the importance of addressing L2 learners' academic vocabulary needs. However, as these lists are now about 50 years old and lack contemporary academic relevance, further discussion on these might be unnecessary. Nonetheless, despite being outdated, these lists and their creators should be credited for their pioneering position in the history of academic wordlist development. A notable move to improve on these lists was the creation of the University Word List (UWL) by Xue and Nation (1984).

Xue and Nation (1984) cross-checked the four previous lists (i.e., Campion & Elley, 1971; Ghadessy, 1979; Lynn, 1973; Praninskas, 1972) and combined all the words that did not overlap in these lists. This resulted in a list of 737 word families, classified into ten frequency bands, with the first band containing the most useful words. The UWL was extensively used in education and research for the next fifteen years as it was connected with the freely available *Vocabprofile and Range Programs* (Cobb, n.d.).

The UWL had several pedagogical implications for L2 learners in academic contexts. Students enrolled in different disciplines could benefit from this list because it covered a greater range of subject-areas that included 19 disciplines from Campion and Elley (1971) and 10 from Praninskas (1972). The three disciplines represented in Lynn (1973) and Ghadessy (1979) were also part of the 29 disciplines covered by the earlier lists. Moreover, it included words that were obtained in a period of 9 years (between 1971 and 1979); hence, it also included new entries that might have been introduced during the time period. Moreover, it was more representative of L2 learners' needs as it included words that foreign language learners reported as problematic (e.g., Lynn, 1973; Ghadessy, 1979).

However, in the current digital age, the sizes of the corpora that the UWL was based on (i.e., 1,062,966 words for all the four previous corpora) would be considered very small. This number is much smaller than newer corpora that are used for creating word lists. For example, Coxhead (2000) used a corpus of 3,513,330 words for the creation of the Academic Word List and Gardner and Davies (2014) used a corpus of 120 million words in the creation of Academic Vocabulary List. Moreover, an obvious limitation of the UWL is that it is old. The UWL was created almost four decades ago, and as such, it may not cater to the current lexical needs of L2 learners. It can be safely assumed that in the past forty years many new subjects have been included in university disciplines and the UWL might not cover words contained in the new disciplines. Moreover, new words might have also been introduced in the disciplines contained in the corpora the UWL was based on, but these may not be represented in the lists. Additionally, some of the lists the UWL is built on were created to serve a particular group of second language learners, for example, the AWF by Lynn (1973) for the South Asian Students and the AWL by Ghadessy (1979) for Iranian learners, and as such, these may not equally serve L2 learners from other backgrounds. To sum up, the UWL is based on much smaller corpora for today's standards; it is outdated – it may not accurately represent the current academic lexicon; hence, it may not serve the current teaching and learning needs of L2 learners.

Considering the limitations of the aforementioned word lists, three major academic word lists were developed in the 2000s and 2010s, which include the Academic Word List (AWL; Coxhead, 2000), the New Academic Word List (NAWL; Browne, et al., 2013), and the Academic Vocabulary List (AVL; Gardner & Davies, 2014). The current paper aims to systematically review these lists to help teachers and L2 learners to make informed decisions when selecting the most appropriate vocabulary list for L2 development.

Criteria

This evaluation focuses on the pedagogical and applied relevance of academic word lists for post-secondary second language instruction, where these lists are used

to support explicit vocabulary learning, academic reading, and writing development rather than solely as testing or research instruments. The criteria for reviewing these lists include the following: (a) representation – the frequency of words, their range (the number of disciplines or genres in which a word appears), and their dispersion (the distribution of a word across disciplines), (b) currency – how up-to-date the corpora are, (c) corpus size – the size of the corpora used to extract the lists, and (d) strengths and weaknesses of each word list from a pedagogical perspective, referring to its applicability and usefulness for teaching and learning academic vocabulary in post-secondary second language contexts. Collectively, these criteria help determine whether a word list is representative, current, and evenly distributed across disciplines. A larger and more balanced corpus may enhance lexical representativeness and help minimize bias, while pedagogical evaluation can indicate how well a list supports classroom learning and instruction. The following section evaluates the AWL, NAWL, and AVL based on these criteria.

Major Academic Word Lists

The AWL, NAWL, and AVL are based on corpora of different sizes, cover varying ranges of disciplines, use different units of analysis for counting an entry in their respective word lists, and provide word lists of different sizes. Table 2 presents a summary of these lists.

Table 2 *A Summary of the Three Major Word Lists*

	Representation	Corpus Size	Unit of Analysis	Word List Size
AWL, 2000	Texts from arts, commerce, law, & science (28 sub-fields)	3,513,330	Word Family	570
NAWL, 2013	Cambridge English Corpus, Michigan & British corpora of Academic Spoken English (academic lectures), & top-selling textbooks	288 million	Headword ⁴	963 (2,800 NGSL1)
AVL, 2014	Academic section of the Corpus of Contemporary American English (9 sub-fields)	120 million	Lemma	3,000

⁴The base form and the most common representation of a word, typically displayed as the primary entry in a dictionary.

Table 2 demonstrates significant differences among the AWL, NAWL, and AVL regarding their representation, corpus size, unit of analysis, and word list size, reflecting variability in their design, scope, and purpose. The following section provides a detailed critical appraisal of each list based on the criteria stated above.

The Academic Word List (Coxhead, 2000)

Corpus Compilation

The AWL was conceived as a universal academic vocabulary list. It was developed from a corpus of 3,513,330 words, representing texts in arts, commerce, law, and science (including 28 sub-fields). The AWL provides about 10% coverage of the four disciplines included in the corpus. Specifically, it covers 9.3% of the running words in Arts, 12% in Commerce, 9.4% in Law, and 9.1% in Science (Coxhead, 2000).

Unit of Analysis, Inclusion, and Exclusion Criteria

The word family – a concept coined by Palmer (1938) and used by West (1953) – was considered the unit of analysis in the creation of this list. A word family includes all words (e.g., root, inflections, & derivations) that share a perceived common meaning (Qureshi, 2018). The criteria for including words in the list were based on their frequency, dispersion⁵, and range. A word was included in the list if it occurred 100 times in the entire corpus, 10 times in each of the four disciplines, and at least once in 15 out of the 28 subject areas. Words contained in West's (1953) General Service List (GSL) were excluded from the AWL. As a result, a list of 570-word families was created. Since a word family includes inflections and derivations along with the headwords, the total number of words, including all the related forms, amounted to 3,112 individual words.

Strengths

Second language learners and teachers might benefit from the AWL because compared to the lists created in the 1970s and 1980s, the AWL employs improved frequency and range criteria. Moreover, the unit of analysis used in the creation of the AWL is a word family, which is considered a better predictor of a native speakers' reading fluency (Nagy, et al. 1989). Word families are considered useful for representing receptive vocabulary knowledge because learners who know a base form can often recognize its related derivatives when these follow regular morphological patterns (Bauer and Nation, 1993). Webb (2021) highlights their pedagogical value, noting that word families make learning and teaching more efficient by grouping related forms, allowing teachers to present vocabulary as larger lexical units and learners to develop morphological awareness, even though their suitability may vary depending on research purpose and learner characteristics.

Additionally, most L2 learners are usually familiar with headwords in dictionaries; hence, using a word list based on word families might facilitate the learning process. The AWL is also derived from a larger corpus and represents a broader range of subject areas compared to earlier word lists. While it does not include a specific dispersion score, the AWL effectively meets the intent of the dispersion requirement because its

⁵ Distribution of words across the corpora.

words occur across all four major domains and in at least 15 of 28 subject areas, ensuring broad distribution rather than disciplinary concentration.

Moreover, it is relatively more recent as compared to the lists created in the 1970s and 1980s. Previous studies report that AWL provides approximately 10% coverage of their specialized corpora by the AWL. Table 3 shows the AWL coverage across four different subject areas.

Moreover, several websites offer valuable materials for practicing the AWL words. For example, students can check the meaning of the AWL words and their pronunciation on the *EAP Foundation* by Smith (n.d.-a), or they can complete gap-fill exercise using the *Vocabulary Exercises for the Academic Word List* (n.d.). Teachers can also utilize user-friendly resources like *Web WP Classic* by Cobb (n.d.) to check the frequency of the AWL words in a text they plan to use in a class, or to create their own gap-fill exercise using the *AWL highlighter* by (Smith, n.d.-b). Thus, from a pedagogical perspective, the AWL remains highly teachable at the level of classroom implementation because its word-family organization aligns with common academic English curricula and is supported by abundant ready-to-use classroom resources and profiling tools.

Table 3 Coverage of AWL for Different Disciplines

Author/s & Year	Disciplines	AWL Coverage
Chen & Ge, 2007	Medical research articles	10.07%
Martinez, Beck, & Panza, 2009	Agriculture research articles	9.06%
Vongpumivitch, 2009	Applied Linguistics research papers	10.07%
Li & Qian, 2010	Financial services corpus	10.46%

Limitations of the AWL

Although the AWL is relatively more comprehensive than the previous lists, it has certain shortcomings. It uses a word family as the unit of analysis, which, while offering clear pedagogical advantages, also presents some limitations. Closer scrutiny of words in a word family may reveal differences in the underlying meaning of various words grouped as a single family. For instance, as Gardner and Davies (2014) note, the differences in the meaning of the words '*reactor* – a device' and '*reactionary* – resistant to social or political change' may not be inferred simply from learning the root form '*react*', suggesting that the word family unit, while pedagogically convenient, may not fully capture semantic nuance.

Another issue with the word family is that it includes words from different word classes which might pose extra problems for second language learners. For instance, the word '*proceeds*' can have different meanings depending on whether it is a noun (profits) or a verb (continues; Gardner & Davies, 2014). These differences demonstrate

that knowing a headword does not guarantee that L2 learners will infer the meaning of all the members of a word family (Schmitt & Zimmerman, 2002). Similarly, for productive use, a word list based on word families might not be the most effective option (Kremmel, 2016; McLean, 2018). Moreover, the AWL's inclusion criteria –100 occurrences overall and 10 in each field – are a low threshold for a corpus of approximately 3.5 million words (Hyland & Tse, 2007). The limited range of disciplines and the unequal number of texts in each field in the corpus results in an unequal word coverage (Hyland & Tse, 2007). Perhaps this is the reason several studies have found insufficient coverage of their specialized corpus by the AWL. For example, Hyland and Tse (2007) found that 25 out of 60 top word families in their academic word list were missing from the AWL. Marti'nez et al. (2009) analyzed a corpus of agriculture and discovered that 35% of the word types in the AWL did not occur in their corpus.

Furthermore, the AWL was created approximately 25 years ago to supplement the General Service List (GSL), which is about 70 years old and based on a corpus compiled in the 1930s—nearly a century ago. As academic fields expand and new disciplines emerge, so does new vocabulary that these older lists fail to capture, limiting the AWL's relevance for today's learners and for teaching contemporary academic English.

The New Academic Word List (Browne et al., 2013)

Corpus Compilation

The NAWL is a replication of AWL by Coxhead (2000) but includes words that are more current and extracted from a significantly larger corpus. The three sources used in creating the NAWL include: (a) the academic section of the Cambridge English Corpus (CEC: 248 million words), (b) the Michigan and British corpora of Academic Spoken English (academic lectures; 3 million words), and (c) a collection of top-selling textbooks (36 million words). The total size of the corpus used for creating the NAWL is 288 million words. The academic genres used in the corpus include “academic journals, non-fiction texts, student essays, and academic discourse” (Browne et al., 2013, para. 2).

Unit of Analysis, Inclusion, and Exclusion Criteria

The New Academic Word List uses a flemma – a headword and any number of its possible inflections – as the unit of analysis. Flemmas, unlike a lemma, do not account for differences in the part of speech of a word. For example, smile (v) and smile (n) would be counted as a single flemma, whereas these might be counted as two separate lemmas (Dang et al, 2020). Additionally, flemmas differ from a word family as these do not include any derivational forms of a word. Furthermore, while the extracted list includes details about the standard frequency index for each word, their expected frequency per million words, and dispersion, no details are provided about the cut-off criteria for inclusion and exclusion of words in the list. Similarly, details about range in various genre or text type are not specified.

Based on a close examination of the list, it appears that if a word appeared 1 time per million words, it was included in the list. As a result, the NAWL contains 963 headwords, and with the inclusion of all accompanying inflections, the total number of words approaches 2,604.

Strengths

The NAWL offers several advantages over its predecessor, the AWL. First, unlike the AWL, which was developed to complement the much older general service list by West (1953) – a list created about 7 decades ago, the NAWL functions with a much more recent general high frequency list, described above as the NGSL1. When used in combination with the NGSL1, the NAWL appears to provide about 92% coverage of a text, which is approximately 5% higher than the approximate coverage of 87% provided by the AWL and the GSL working together. Moreover, while the AWL was extracted from a corpus of 3.5 million words; the NAWL is based on a significantly larger corpus of 288 million words, which enhances the reliability of the words included in the list.

From an instructional standpoint, the NAWL's alignment with the NGSL1 allows teachers to build upon learners' existing high-frequency vocabulary, offering a logical progression for academic English instruction. Moreover, the NAWL also comes with several tools for learning and teaching hosted on a *webpage* by Browne et al. (2013). Some of the tools available include flashcards for word meanings in English through the *Quizlet* or in Japanese through *Memrise*. For text analysis, the NAWL has been connected to the *VocabProfile* by Cobb (n.d) and *AntWordProfiler* by Laurence (2014). These tools provide valuable resources for both teachers and second language learners.

Limitations

Although the NAWL is a more recent list based on a larger corpus, it has several shortcomings. First, Browne et al. (2013) report that, compared to the AWL, the NAWL provides a 5% increase in text coverage (cf. *New Academic Word List 1.0*). While this 5 percent increase in coverage may seem meaningful, achieving it would require learning a considerable number of additional words than what learners might need to learn in the GSL/AWL pairing. The GSL contains 2,284 words, and the AWL consists of 570 word families. Combined, these lists amount to 2,854 items, which is nearly 1,000 fewer than the 3,781 items in the NGSL1 and NAWL combined.

A limited number of published studies have explored the coverage that the NAWL provides for academic texts. A study by Hendry and Sheepy (2018) explored the coverage of abstracts submitted to the American Educational Research Conference by the NAWL and NGSL1 combined. They created a corpus of 5 million words, comprising 18,000 abstracts submitted to the conference. Their analysis revealed that the NAWL and NGSL1 combined provided 90.02% coverage of the abstracts of the conference. When this coverage is broken down by list, the NGSL1 accounted for 86.9%, while the NAWL provided only the remaining 3.3% coverage. This is consistent with another

study by Vuković-Stamatović et al. (2020), who explored the coverage of the NGSL1 and NAWL in the theses written by L2 Montenegrin and L1 American students. They found that the NAWL provided an additional 3.43% coverage of the academic vocabulary used in L1 theses.

To cross-check these findings, I randomly selected five journal articles published on translanguaging and analyzed them using *VocabProfile*, first with the GSL/AWL lists and then with the NGSL1/NAWL lists. These articles, published in 2022, contained a total of 33,553 words, with references provided in the footnote.⁶ The results showed that the GSL/AWL lists provided better coverage of 91.7% cumulative tokens (GSL: 85.9; AWL: 5.8) compared to the NGSL1/NAWL lists, which covered 88.8% cumulative tokens (NGSL1: 85.3; NAWL: 3.5). The 2.9% difference in coverage between the two lists may have pedagogical implications, as even small increases in lexical coverage can enhance comprehension. For instance, Laufer and Ravenhorst-Kalovski (2010) found that a 3% increase in known words corresponded to an 8% improvement in reading comprehension.

The NAWL lacks a precise cut-off for frequency and dispersion, and does not specify any range criterion for word inclusion in the list. A cursory examination of the list discloses a great variation in the estimated frequency of the words included in the list. For example, the words “*descendent, mall, sneeze, sniff, stadium*” appear to have a frequency of one per million words only, while the word “*repertoire*” appears with a much higher frequency of 1,759 per million words. Dispersion scores (*D*), following Juillard’s *D* where values closer to 1 indicate more even distribution, also vary widely—from “interrupt” (*D* = .98) indicating broad distribution to “descendent” and “sponsorship” (*D* = .20) showing limited spread, with no stated minimum value required for inclusion. Furthermore, although the list was developed from diverse academic sources, it does not define a consistent range across genres or disciplines. These gaps reduce its control over word representativeness and balance in academic coverage, which may hinder its pedagogical consistency. Teachers may struggle to determine which items to prioritize, and the small coverage gain over the AWL may not justify curriculum redesign or increased lexical load.

Besides coverage and inclusion criteria, the NAWL lacks a consistent pattern for word selection. For instance, the list includes the uncommon preposition: *circa*; morphemes: *neo, multi, non, pre, semi*; and the lemma *par*, which can function either as a noun (“the face amount of an instrument of value, such as a check or note”; Merriam Webster Dictionary, n.d.) or as a verb (“the number of shots a good player should need to complete a course or to hit the ball into a particular hole”; Oxford Advanced Learner’s Dictionary, n.d.). While some of these might have some merit – for example, morphemes can be very useful in enhancing learners’ knowledge of word morphology – the lack of clarity for including some while excluding others, such as *anti* (which has 3,209 hits in the *Corpus of Contemporary English*; Davies, 2008), remains unexplained.

Nevertheless, the NAWL appears to be a valuable resource for second language learners, as it provides easily accessible flashcards featuring words and their meanings. However, as the list has been relatively less examined in the research, further studies are needed to evaluate its coverage across various disciplines.

Academic Vocabulary List (Gardner & Davies, 2014)

Corpus Compilation

The AVL was extracted from the academic section of the Corpus of Contemporary American English (COCA), which consisted of 120 million words out of the corpus’s total 425-million words at the time the AVL was created. Currently, COCA has expanded to 1 billion words. The academic section of the COCA corpus comprises nine sub-corpora. Details for the sub-corpora and the number of words included from each are presented in Table 4.

Table 4 *Sub-corpora and their Sizes in Millions*

Medicine & health (9.7)	Education (8.5)	Law & political science (12.5)
Social Science (16.7)	Humanities (11.1)	Philosophy, religion, psychology (12.5)
Science & technology (22.8)	History (14.3)	Business & finance (12.8)

(Gardner & Davies, 2014).

Unit of Analysis, Inclusion, and Exclusion Criteria

The unit of analysis used in the development of the AVL was the lemma. A lemma consists of a headword and its inflections with the same part of speech (Gardner, 2014). For example, the verbs *play*, *plays*, *playing*, and *played* are inflections of the base form of the word ‘*play*’, and are all counted as a single lemma for counting purposes. However, a related word such as “*player*”, which is a noun, is considered a separate lemma. The AVL specifies parts of speech for each entry included in the list.

The inclusion criteria for the AVL involved checking frequency, range, and dispersion of words before inclusion in the list. A word was included in the list if it occurred at least 50% more frequently in the academic section of the corpus compared to the non-academic sections, appeared in seven out of the nine disciplines included in the corpus, and had a dispersion score (Juilland’s ‘*D*’ value) of .80. Technical words – words that occurred three times more frequently in one sub-genre as compared to the entire corpus – were excluded from the list. As a result of these inclusion and exclusion criteria, the final AVL comprised a list of 3000 words.

Strengths

The AVL uses lemma as the unit of analysis which constitute a considerable portion of any written text. For instance, Nagy and Anderson (1984) report that in a corpus compiled by Carroll et al. (1971), approximately 22% of the 86,741 word types were regular inflections. It is generally believed that once learners understand the base form of a word in English, they find it easier to use various regular inflections (e.g., talk, talks, talked).

Moreover, a lemma, compared to a flemma or a word family, is a more accessible option for L2 learners and teachers. Research indicates that L2 learners often struggle with accurately translating across different parts of speech (Stoeckel et al, 2020). The knowledge of derivational forms develops slowly and remains under-developed even among advanced L2 learners (Mochizuki & Aizawa, 2000). Additionally, L2 learners from various linguistic backgrounds often find it difficult to relate the meaning of derived forms with their base forms (Kremmel & Schmitt, 2016; Ward & Chuenjundaeng, 2009). While it is true that word family levels can be adjusted to learners' proficiency levels and to the specific instructional goals (Nation, 2021), a lemma appears more easily accessible to L2 learners who can relate to the various inflected forms of a single word (e.g., *run, runs, ran, running*; Brown et al. 2022).

Furthermore, as compared to other word lists (e.g., UWL, AWL), the Academic Vocabulary List (AVL) was derived from the 120-million-word academic section of the Corpus of Contemporary American English (COCA), which covers nine disciplines. This broader disciplinary range and methodological precision are likely key factors for AVL's improved coverage of academic texts. As shown in Table 5, the AVL achieves about 14 percent coverage of the academic and semi-academic sections of the British National Corpus (BNC), while the NAWL adds approximately 5 percent coverage beyond general high-frequency words in the Cambridge English Corpus (CEC), as reported by Browne et al. (2013). These figures come from different corpora and should therefore be compared with caution. While the AVL marks an improvement over earlier lists, its classroom value ultimately depends on teacher judgment and contextual adaptation to learners' academic needs.

Table 5 *Comparison of Academic Vocabulary List Coverage*

Word List	Corpus Used for Coverage Test	Coverage (%)	Sources
AWL	British National Corpus (BNC)	~7%	(Gardner & Davies, 2014)
NAWL	Cambridge English Corpus (CEC)	~+5%	Additional coverage beyond high-frequency words (Browne et al., 2013)
AVL	British National Corpus (BNC)	~14%	(Gardner & Davies, 2014)

Additionally, the AVL is integrated with the *WordAndPhrase* (Davies, 2011) interface of COCA, enabling teachers and L2 learners to check the usage of each word in context. This feature helps learners gain a better understanding of the contextual use of words. Furthermore, each lemma in the AVL is accompanied by its part of speech (i.e., noun, verb), and the list also indicates if a word is more common in a specific discipline.

Lastly, the AVL is derived from a monitor corpus (i.e., *COCA*), which is regularly updated with new files. Since the AVL was extracted from the COCA in 2011, it reflects much of the current academic vocabulary in use. Second Language teachers

and learners can use this list without concerns about missing important and contemporary academic vocabulary.

Pedagogically, the AVL's lemma-based organization facilitates explicit instruction by distinguishing parts of speech and providing contextualized examples through the COCA interface. Drawing on a large and current 120-million-word corpus, the list offers comprehensive lexical information and accessible context, making it a superior resource for teaching and learning academic vocabulary.

Limitations of the AVL

Generally, the AVL overcomes most of the weaknesses in the previous lists and does not suffer from any major flaws. However, the AVL could be more beneficial for second language learners if it also included some phrasal verbs and abbreviations which are frequently used in academic contexts. Phrasal verbs are said to be very frequent. Gardner and Davies (2007), in their analysis of phrasal verbs in the British National Corpus, found that one in 20 lexical verbs is a phrasal verb. Moreover, they also found that phrasal verbs “as a grammatical class, have a higher overall frequency than the verb *are*, the determiners *this* or *his*, the negative *not*, the conjunction *but*, or the pronoun *the*” (p. 347). This high frequency of phrasal verbs requires them to be included in academic vocabulary lists.

Moreover, while the AVL provides a better coverage of the academic texts in general, this coverage varies across disciplines. Durrant (2016) shows that AVL provides an overall 34% coverage of texts contained in British Academic Written English (BAWE) corpus. However, this coverage varies between 21% (Classics) to 40% (economics) for different disciplines, indicating a need for developing discipline specific word lists for serving learners' discipline specific needs (Durrant, 2014; Hyland & Tse, 2007).

Some might argue that the relatively large size of the AVL (3,000 lemmas) could pose a challenge for teaching and learning. However, when the individual words contained in the AVL are counted, they result in 2,718, which is not significantly different compared to the 3,000 lemmas in the AVL. Hence, despite its larger size, the AVL offers a considerably better coverage of the academic texts. Considering the several advantages of the AVL, probably it is reasonable to prefer it over other lists.

Conclusion

The importance of vocabulary can be recognized by Wilkins' (1972) claim that “while without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p.111-112). Perhaps, it is the realization of the centrality of vocabulary in academic life that several lists of academic vocabulary have been developed to support second language learners of English while pursuing higher education in English speaking contexts or using English as a medium of instruction. Among the major academic vocabulary lists discussed in the previous section, the AVL appears to be more comprehensive (e.g., it covers 9 major fields of study), is based on a bigger corpus (i.e., 120 million words), is relatively more recent, uses lemma as a unit of analysis, and

provides parts of speech for each word. However, success or failure of any academic resource mainly depends on its appropriate use by trained teachers who adapt such resources to their students' contexts and proficiencies.

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