

On the Vocabulary Size for Chinese English Learners

Huang Jianbin
Sheng Yuedong
Xu Ying

Abstract

Vocabulary learning is vital to any language learner, especially to L2 learners. The vocabulary size, one of the important requirements for English course, is precisely defined in the lexicon that offers the vocabulary to Chinese English learners. And thus the vocabulary size acts as the main reference for textbook compiling, classroom teaching and testing for this course. It has been a hot issue how many English words Chinese English learners should master. So the vocabulary size should be limited in a scientific way. This paper makes research into the history of English lexicons in China and based on the data we have got, we put forward some constructive suggestions.

Key terms: vocabulary size; lexicon; requirements for the English course

1. What Is a Word

The term 'word' is used to define an intermediate structure smaller than a whole phrase yet generally larger than a single sound segment. First, a word is an uninterrupted unit. That is, if we add some element to a word to modify its meaning, these elements should not be included within that word. For example, the prefix in- and the suffix -ly may be added to single words. Secondly, a word may consist of one or more morphemes; they may be either complex or compound. When it consists of one morpheme, it cannot be broken down into smaller meaningful units, e.g. sun, sea. These are typical minimum free forms. Complex words can be divided into one free form and one (or more) bound form, such as quick-ly. Meanwhile compound words consist of more than one free form, such as "weekend". Thirdly, a word may occur typically in the structure of phrases. Finally, it is also an important characteristic of each word that it should belong to a specific word class or part of speech. (Jackson 2000)

Even though it is difficult to define a word, English learners seem to understand it. For example, they realize that words are listed in different items in dictionaries, and words are separated in writing by space or they may be separated in speech by pauses. However, it is a quite different thing to identify words and to suggest a definition that could apply to all types of word. Then, the following definition, which will serve in this study, might be adopted. The word can be considered as an uninterruptible unit of structure consisting of one or more morphemes and it also occurs in the structure of phrases. Morphemes are the ultimate grammatical constituents, the minimal meaning unit of language (Lipka 1990).

Nevertheless, no matter how carefully the definition of word comes up, there is still a certain amount of vagueness and ambiguity in word, and the most important sources of which are the generic character of the word, the multiplicity of aspect in every word, the lack of clear-cut boundaries in the non-linguistic world, and the lack of familiarity with the referent of the words (Ullmann 1962). Generally, a word may be regarded

as ‘generic’ when it has abstract connotation, such as those words that lack specific features compared with concrete and particular words. Generic words cover a wide range of items but give learners little information about the word itself. For example, the word “animal” is more generic and more abstract than the word “dog”. Most words describe classes of things or events in few scientific or technical terms. Therefore, there is always a certain amount of generalization, which unavoidably involves certain vagueness or ambiguity. For instance, the word “machine” can be used to refer to a certain class of objects, regardless of other non-distinctive features such as shape, size and function. In a word, we could claim that most English words are generic to some extent. The nature of the non-linguistic word itself may be a source of ambiguity. For example, the color spectrum is a continuum, while each language introduces into it a certain number of arbitrary distinctions. This lack of boundaries will be more obvious when we consider abstract phenomena.

2. Vocabulary Size

NatioEwed vocabulary knowledge and language use as an interactive process in which language use enables the increase of vocabulary knowledge and vice versa. To be specific, vocabulary knowledge is initially based on vocabulary size, which refers to the amount of vocabulary in a target language for L2 learners, the amount of words native speakers know and the words which are needed to do the things language users need to do. With these three aspects taken into consideration, vocabulary size should be significant for L2 learners in their vocabulary study. To delineate this, we must first get an overview of these aspects of vocabulary. To decide the number of words in a target language is always a problem for linguists, especially lexicographers since vocabulary of the language is often seen as a continually changing entity with new words and new uses of old words being added and old words falling into disuse. On the other hand, it is possible for a word to be a noun as well as a verb that might result in the difficulty of counting the number of words. However, two separate studies (Dupuy, 1974, Goulden, Nation and Read 1990) have countered the vocabulary of Webster’s Third International (1961) dictionary and the result is that it has a vocabulary of around 54,000 word families, when compound words, archaic words abbreviations, proper names, alternative spellings and dialect forms are excluded. Here word families refer to word unit that consists of a base word, inflected forms and transparent derivations. A third study by David Crystal claimed that the Webster’s Third International (1961) has over 450,000 entries while the Oxford English dictionary (1989) has over 600,000 entries. Crystal’s comparison also revealed a remarkable lack of identity between the headword lists; the Webster’s and Oxford dictionaries had only 21 headwords in common out of a possible 57, less than 215. If this disparity were to be repeated across all entries, then the combined lexicon of both dictionaries would exceed 750,000. Furthermore, neither work would claim a comprehensive coverage of the ‘New Englishes’ used in areas such as India, West Africa and Singapore. With the above 3 studies, it is obvious that the learning goal of English vocabulary is far beyond the reaches of L2 learners as well as the majority of native speakers. There have also been systematic attempts to measure the vocabulary size of native speakers of English over the years as vocabulary size is a reflection of how educated, intelligent or well-read a person is. However, since it is hard to come to terms with the definition of a word, there appeared several studies of vocabulary size which lead to very diverse and misleading results.

As native speaker’s vocabulary size can provide some indication of the size of the learning task facing L2 learners, at present the best conservative estimate of it is up to a vocabulary size of around 20, 000 word families and native speakers will add roughly 1,000 word families a year to their vocabulary size. (Nation & Waring 1997). Roughly, a university graduate will have a vocabulary of around 20, 000 word families (Nation and Read 1990). But in reality, native English speakers don’t need such a large vocabulary in their daily life. It

is estimated that they only use 3,000 to 10,000 words in their daily communication. So the most realistic goal for L2 learners is to master the number of words which are needed to do the things a language user needs to do. To determine this, one needs to find out how useful a word is, i.e. the frequency of a word becomes a marker to evaluate the usefulness of a word. A conservative estimate of vocabulary frequency measure from Francis and Kucera (1982) indicated that a vocabulary size of 1000 words may cover 72% of the words in texts in the Brown corpus while a vocabulary size of 15,051 covers almost 97% of all the words. Similarly, the Collins COBUILD English Language Dictionary (1987) claims that 15,000 words cover 95% of the running words of their corpus. Francis and Kucera also suggested that high frequency words are known before lower frequency words and that knowing about 2,000 word families gives nearly 80% coverage of written texts. Finally, research by Laufer (1988) suggested that 95% coverage is sufficient to allow reasonable comprehension of a text.

How many words should a learner of English as a second language or a foreign language learn? Many scholars abroad have done research into this respect. Some scholars think that 2,000 key words are the least requirement (Nation 1995). But if one wants to learn English better, 5,000 words are needed (Schmitt 2000). Others think 3,000 words are the least requirement, and if one wants to learn English well, 8,000 words should be needed. R. Hindmarsh's Cambridge English Lexicon for L2 learners contains 4,000 words. To cope well in English, a second language learner would need around 5,000 words and preferably 10,000 words. It is most efficient to learn these words from the most useful to the least useful (Nation 2004). The English Syllabus of Taiwan Province in 1997 required high school students to learn 5,500 words, but the new English Syllabus of Taiwan requires high school student to learn 6,600 words. It is reported that the vocabulary size for Japanese high school students is 5,900 words, while for Japanese university students it is 10,000 words. It is also reported that the vocabulary size for Russian high school students is 9,000 words, while for Russian university students it is 15,000 words. Hazenbarg thinks that the vocabulary size for Dutch students is 10,000 words (Allen 1983).

3. Word List

Frequency information provides a rational basis for ensuring learners to get the best return for their vocabulary learning effort by making sure that those words that they have studied will be often met. In this way, vocabulary frequency lists will play an important role in curriculum design and in learning goals' setting. The proposal for Basic English was first put forward in the early 1930s. Essentially, it was a project designed to provide a basic minimum vocabulary for the learning of English. The originators of the proposal were C.K. Ogden and I.A. Richards. Ogden and Richards worked on what were termed Basic English, which consisted of 850 words that, although not purported to be full English, attempted not to be un-English. Carter and McCarthy (1988) noted several problems with Basic English. Despite the fact that there were only 850 words, there were potentially over 12,000 meanings attached to them not covered by Ogden – thus polysemy was not taken into account. Many normally used verbs were missing, e.g. smoke and walk and more damagingly, and many everyday phrases such as goodbye and thank you were not included in the list. A controlled vocabulary was also advocated by Harold Palmer in 1920s and 1930s. He proposed a list of 3,000 words which would consist of a 'dartboard' approach with a minimum vocabulary of 1,000 words and an outer ring of another 2000 words. Palmer then worked with A.S Hornby on what later became Thousand Word English (Palmer and Hornby 1937) and his cooperation with Michael West finally led to the General Service List (GSL).

In 1953, the General Service List came up which consists of 2000 words with semantic and frequency information drawn from a corpus of 2 to 5 million words. It is claimed that knowing these words gives access to about 80% of the words in any written text and thus stimulates motivation since the words acquired can be seen

by learners to have demonstrably quick return. The GSL listed that the main criterion for selection of items for learning should be that of the frequency of each word in written English and also that 'information should be provided about the relative prominence of the various meanings and uses of a word form' (Carter and McCarthy 1988). Likewise, Jeffrey (1953), in the foreword to the 1953 GSL version stated that the main aim was to "find the minimum number of words that could operate together in constructions capable of entering into the greatest variety of contexts". The GSL was created by a mix of intuition, experience and hard data-the fact that Thorndike took part in the meetings gave access to corpora of empirical value. However, like Basic English, the GSL also had some problems unsolved. There was no collocational information at all, the concept of coverage was not fully developed and the frequency of a word does not necessarily make it useful for learners to know it. Despite these criticisms, the influence of GSL has continued up to the present day and Howatt (1984) mentioned the Council of Europe's threshold level of English 1975 as being influenced by it. Carter and McCarthy (1988) described the GSL as 'one of the most innovative examples of foreign language pedagogy and lexicometric research this century'. The publication of both graded readers for students and also many dictionaries has been brought about largely by this pioneering work.

As Paul Nation and Robert Waring suggested today the availability of powerful computers and very large corpora make the development of word lists much easier than it was when Thorndike and Lorge (1944) manually counted 18,000,000 running words. However, as mentioned above, the making of a frequency list is not simply a mechanical task, judgment should be made on well-established criteria. These criteria include the following factors proposed by Paul Nation and Robert Waring.

- 1) Representativeness: the corpora that the word list is based on should adequately represent the wide range of uses of language.
- 2) Frequency and range: a word should not become part of a general service list merely because it occurs frequently, it should occur frequently across a wide range of texts.
- 3) Word families: the development of a general service list needs to make use of a sensible set of criteria regarding what forms and uses are counted as being members of the same family.
- 4) Idioms and set expressions: some items larger than a word behave like high frequency words, such as multiword units (good morning, at once), their meaning is not clear from the meaning of the parts. If the frequency of such items is high enough to get them into a general service list in direct competition with single words, then they should be included.
- 5) Range of information: to be of full use in course design, a list of high frequency words would need to include the following information for each word, namely, the forms and parts of speech included in a word family, frequency, the underlying meaning of the word, variations of meaning, collocations, the relative frequency of these meanings and uses and restrictions on the use of the word with regard to politeness, geographical distribution, etc.
- 6) Other criteria: West (1953) found that frequency and range alone were not sufficient criteria for deciding what goes into a word list designed for teaching purposes. West made use of ease or difficulty of learning, necessity, cover, stylistic level and emotional words. Careful consideration would need to be given to these and other criteria in the final stages of making a general service list.

Through this review of the finding of research on vocabulary size and frequency, we may come to the conclusion that the benefits of paying attention to principles of selection and gradation in teaching remains important no matter what approach to teaching is being used.

4. Requirements of Vocabulary in Chinese English Syllabus

English was listed as a course in high schools in China at the beginning of the 20th century. There have been many English Syllabuses since then. The requirements of vocabulary size changed with the passage of time and for different reasons. Several vocabulary sizes of different English Syllabuses are shown in Tables 1 and 2.

Table 1 Requirements of Vocabulary Size for Students at Middle and High School Levels

Time	Middle School	High school
1929	1,500	4,000
1932	3,000 (productive level: 2,000)	8,000 (productive level:5,300)
1941	2,000 (productive level:1,300)	7,000 (productive level:4,700)
1948	2,000 (productive level:1,300)	6,000 (productive level:4,000)
1951	1,000~1,500	5,000
1956	No English course	1,500
1963	1,500~2,000	3,500~4,000
1978 (five-year system)	1,250	2,200
1986	1,250	2,750 (productive level:1,800~2,000)
1992 (middle schools)-1993(high schools)	1,000 (productive level:600)	3,000 (productive level:1,700)
2000	1,200~1300 (productive level:800)	1,950 (productive level:1,200)
2001 (compulsory education)	1,500-1600 (should learn to use)	3,000 (should learn to use)
2003 (high schools)		Level 7: 2,400-2,500 (should learn to use) Level 8: 3,300 (should learn to use) Level 9: 4,500 (should learn to use)

Table 2 Requirements of Vocabulary Size for Non-English Majors at College Level

Time	College		
1962	1,400		
1980	1,500~1,800		
	College English Band 4	College English Band 6	Advanced English level
1985 (for Science & Technology)	3,800~4,000 (productive level: 2,500)	5,000~5,300 (productive level: 3,000)	
1985 (For Arts & sciences)	4,000 (productive level: 2,300)	5,300 (productive level:2800)	
1993 (combined)	4,000	5,300	
1999	4,200 (productive level:2500)	5,500 (productive level:3000)	6,500 (productive level:330)

From the tables above we see that most of the syllabuses require that in all the words required to learn, some words should be learned at productive level. The others words are only required at receptive level. But in the 2001's and 2003's for Middle Schools and High schools, productive and receptive levels are not given. Instead, all the words are required to be at the level of "should learn to use".

5. Vocabulary Size of Word Lists and Dictionaries

Compared with English word lists abroad, the English word lists for English syllabuses in our country are much more compressed, that is, in our English word lists there are not as many derivatives, compounds, abbreviations and proper names, etc. as in those abroad. And actually our English word lists contain more root words, which can be seen from the following two tables.

Table 3 Percentage of Derivatives, Compounds, etc. in Some Word Lists and Dictionaries

	High school	College English Band 4	All words in College English	Taiwan's High school	Longman*
Total No.	3,369	4,200	6,500	6,640	5,237
Derivatives	460	655	894	1,468	193
Compounds	244	118	168	221	91
Abbreviations	27			88	18
Proper names	77	5	9	136	12
Repeated items	75			124	832
Particles	46	50	54	281	80
Plural words				16	5
Total No above	928	828	1,125	2,334	1,231
percentage	27.55%	19.71%	17.31%	35.15%	23.51%

*Lin Xiangzhou (translator). 1994. *Longman New Junior English-Chinese Dictionary*, Anhui Publishing House of Science and Technology, Longman Group Ltd.

Table 4 Percentage of Derivatives, Compounds, etc. in the Words with Star in a Collins Dictionary*

	No.	Five-star words	Four-star words	Three-star words	Two-star words	One-star words
Total No.	14,585	735	1,053	1,586	3,186	8,025
Accumulative total No. of words			1,788	3,374	6,560	14,585
derivatives	3,271	36	171	307	765	1,991
Compounds	2,072	11	52	109	331	1,570
abbreviations	191	6	11	15	67	92
Proper names	329	1	21	100	66	141
Repeated items	140	56	19	17	28	20
Particles	718	8	21	85	191	413
Plural words	35		3	14	6	12
Total No. above	6,756	118	298	647	1,454	4,239
Accumulative total			416	1,063	2,517	6,756
Percentage	46.32%	16.05%	23.27%	31.51%	38.37%	46.32%

*Sinclair J., 2001, *Collins COBUILD English Dictionary for Advanced Learners*, HarperCollins Publishers.

From table 4 we can see, derivatives, compounds, abbreviations, etc. are in percentage much more than those of the word lists in Chinese English syllabuses. And the more the words there are at a level, the greater the percentage of derivatives, compounds, abbreviations, etc. will be.

6. A Survey of the Vocabulary Size of New Middle School and High School Students

6.1 A Survey of the Vocabulary Size of New Middle School Students

We made a survey of the vocabulary size of new middle school students. The lexicon we used is *Teach Out*, published by Higher Education Press/Higher Education Electronics and AV Press in 2002. The total number of words in it is 1,100 words. We chose 100 words randomly and give four choices to each of them in Chinese,

with only one being the right answer. Our formula is: $V=1,100 \times (R-W/3)$, in which V stands for vocabulary, for right answer, and W for wrong answer. The 217 subjects were chosen from two non-key middle schools in Hangzhou, capital of Zhejiang Province. We didn't choose subjects from key middle schools as they are not typical. The average vocabulary size of them is 306 words. From this figure we can see, even in Hangzhou, a developed area in China, the vocabulary size is still small. And so in the developing middle and western areas in China, the vocabulary size of middle school students will be comparatively smaller.

6.2 A Survey of the Vocabulary Size of First Year College Students

At the same time, we made a survey of the vocabulary size of 914 first-year students of three universities. The results are shown in Table 5.

Table 5 A Survey of the Vocabulary Size of First-Year Students

University	No. of participants	Vocabulary size
Total No.	914	5,617
Students of two Non-key universities*	406	4,844
Band One students of Zhejiang University	232	5,100
All participants of Zhejiang University	508	6,246

University	No. of subjects	Vocabulary size
two non-key universities*	406	4,844
Band One students of Zhejiang University	232	5,100
All subjects of Zhejiang University	508	6,246
all the universities involved	914	5,617

*The two universities are: Hangzhou Commercial Institute and China Institute of Metrological Engineering.

The words for this test are chosen from the 14,585 stars words of high frequency in *Collins COBUILD English Dictionary* by J. Sinclair. We chose 100 words randomly and give four choices to each of them in Chinese, with only one being the right answer. Our formula is: $V=1,100 \times (R-W/3)$, in which V stands for vocabulary, for right answer, and W for wrong answer. The number of words the high school students are required to learn is only 2,000 words by the 2000 English Syllabus for High School Students. But the results in our survey show that the first- year university students who just finished high school know much more words than what they learned in high school. There are several reasons for this.

- 1) The high school English textbooks provide a glossary of about 3,500 words, which all the high school students should learn during their six-year study. The 3,500 words are not so difficult for high school students to learn by heart as they learned them in a period of six years. Though maybe they could not use all of them productively, they know the meanings of most of them when see them as they are so familiar with these words after six-year study.
- 2) Furthermore, with their knowledge of derivation and compounding, they can guess the meanings of some other words that they haven't learned. In fact, there is difference between good students and poor students in the receptive abilities of learning English words. But frankly speaking, university students, whether they are enrolled in key universities or non-key universities, can recognize more English words than the words given

in their textbooks. And excellent students know more, which is proved in our survey.

It must be pointed out that the approach we adopted in the survey can only be used to measure vocabulary size of receptive level, not productive level. As there are more derivatives, compounds, abbreviations, proper names, etc., our result is understandable. From our statistics, we can conclude that the vocabulary size of students today is quite different from that of the students of 1980s and 1990s, and that the teaching quality now is quite different from that 20 years ago.

7 . The Vocabulary Size for English Teaching in China

7.1 A Hypothesis of the Vocabulary Size for Chinese English Learners

To keep step with the English learning and teaching, we should consider the issue of vocabulary size at all levels. By comparing vocabulary size and the word lists of the English syllabuses for middle and high school students, college and university students, graduate students, we can see that English teaching at different levels are quite different from each other. Teaching objects and teaching purposes, etc. are different, and so the English syllabuses for students at different levels should show the difference of each level. But their core parts should not be so different from each other. They can be associated with each other. Thus, the syllabus makers of different levels should work together to find a way out and compose a word list which may show the different features of each level and can be used for different purposes. In this way we can have a word list for English teaching at different levels. In the 2001 and 2003 High School Requirements for English Course, the term “productive level” is not given. Instead, “should learn to use” is required for all the words in the list, thus leading to ambiguity. It is difficult for the users of the Requirement to decide whether the words should be productive or receptive. If all of words are receptive, the total number is smaller for students, and could not live up to the expectation of their future professional employers. And if all the words are productive as required by the last Requirements, the total number is greater for students at present and in a period of ten years and would be difficult for students. As the Chinese version of “productive” is not so scientific in Chinese, “active” or “applied” in Chinese may be a better choice. The following is our suggested vocabulary size for English Teaching in China.

Table 6 Suggested Vocabulary Size for English Teaching in China

Level	Active/applied vocabulary	Receptive vocabulary
Elementary school	100~200	400~800
Middle school	1,000	2,500
Elementary level of high school	1,500	4,000 (accumulative total)
Intermediate level of high school	2,000	5,000 (accumulative total)
Advanced level of high school	2,500	6,000 (accumulative total)
Elementary level of university	3,000	6,500 (accumulative total)
Intermediate level of university	3,500	8,000 (accumulative total)
Advanced level of university	4,000	9,000 (accumulative total)
English for specific purposes	400	1,000~1,500
English for graduate students	4,500	10,000 (accumulative total)

7.2 Explanations Concerning Our Hypothesis

For the suggested vocabulary size for English teaching in China, we have to take the following aspects into consideration.

- 1) One vocabulary size should be given to all the students of elementary schools, middle schools, high schools, and colleges or universities.
- 2) As we are sure under the present condition, English course should be given in not only elementary schools, middle schools, high schools, but also in universities, the requirement of 3,000 active/applied words should be given at the end of the elementary level of university. That means university students should have 6,500 words including 3,000 active/applied words.
- 3) We have to take the different beginning time of learning English at different elementary schools. Some schools begin to give English course in the third year, and some in the fifth year of elementary schooling. The requirements for these schools should be different: 800 words are required for students who begin to learn English in the third year of elementary schooling, and 400 words for students who begin to learn English in the fifth year of elementary schooling. We hold that most elementary schools should give English course in the fifth year and only the best elementary schools could give English course in the third year. And we are strongly against the practice and proposal that English course should be given in the first year of elementary schooling, for it is not good for the children's language acquisition to study a foreign language (not a second language) too early.
- 4) Students beginning to learn English in their fifth year can make up for the loss for the 400 words which they haven't learned during the middle school years. This is feasible if they are put into three years' learning averagely, for they will learn only 350 words including 150 active/applied words each term. Altogether they will learn 2,100 words including 900 active/applied words, which is not a great burden for students of 12 to 15 years old.
- 5) The requirements for the three different levels for high schools should be consistent with the three levels for universities respectively.
- 6) This table does not include the number of words for English for specific purposes. If this number is included, undergraduates who have reached the elementary level will have learned 7,500~8,000 words when they graduate, undergraduates who have reached the intermediate level will have learned 9,000~9,500 words when they graduate, and undergraduates who have reached the advanced level will have learned 10,000~10,500 words when they graduate. And graduate students will have 11,000~11,500 words.
- 7) If the above goal has been achieved, then English course is of no use for students at doctorate level. However, some elective courses of English such as introduction to English literature, introduction to the United States of America and Great Britain and comparative culture should be given at this level for the students to know more about English culture.
If undergraduates could have the vocabulary size for graduates and other requirements of language skills when they finish their four-year undergraduate courses, then English course is of no use for students at doctorate level. However, some elective English courses such as business English, writing for specific purposes, advanced spoken English, advanced translation skills should be given at this level for the students to improve English to a greater level.
- 8) Here we don't give the receptive vocabulary for all the levels by the calculation that every word family has three derivatives. In our opinion, students should attach importance to active/applied words, which are more important for their English learning in listening, speaking, reading, and writing, especially speaking and writing. In fact, excellent students in English can have much more receptive words in the process of their English learning.

We hope more scholars and teachers will join in the discussion and research into vocabulary size and with shared efforts a better vocabulary size which is appropriate for the English learning and teaching will be obtained, which will contribute to the reform of English language learning and teaching in China.

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