Vocabulary in Curriculum Planning

Needs, Strategies and Tools

Edited by
Marina Dodigovic
María Pilar Agustín-Llach

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Introduction to Vocabulary-Based Needs Analysis

Marina Dodigovic and María Pilar Agustín-Llach

Understanding the needs of second or foreign language (L2) learners is essential in the process of both planning and delivering L2 lessons. This volume is dedicated to a particular variable which can be successfully used to gauge learner needs, namely vocabulary. This variable might turn out to be the single most important variable in language learning, as Wilkins points out that "without vocabulary, nothing can be conveyed" (cited in Thornbury, 2002).

Vocabulary is one of the often underestimated factors in L2 classrooms. It seems to be particularly underrepresented in needs analysis. According to Basturkmen (2005), needs analysis is the kind of investigation "curriculum developers use to identify the gap between what learners already know and what they need to know in order to study or work in their

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specific target environments" (p. 15). Failing to determine which vocabulary the students already know and what might be the realistic vocabulary targets for their classes is likely to result in failure to make progress in the target language, an outcome unfortunately too often observed in foreign language settings. Similarly, failing to examine the extent to which textbook vocabulary addresses the needs of students, more often than not, results in the absence of learning. Finally, vocabulary learning strategies are frequently taken for granted, leaving the students ill-equipped for the task. Hence it is the intention of this volume to support language teachers, administrators and a broad range of stakeholders in the language teaching process with ideas and examples of vocabulary-related needs analysis.

Needs analysis is often done particularly in language centres specialised in teaching L2. This is usually done by means of administering the kind of test that is called placement test in language assessment literature (Hughes, 2003). This type of test is a kind of "sorting hat", designed to facilitate adequate placement of students across classes and levels. Another type of test which is used to determine the individual strengths and weaknesses of a learner's L2 is called diagnostic test (Hughes, 2003). This is usually far more detailed than a placement test. Other means of conducting aspects of needs analysis are surveys and interviews with a variety of stakeholders, including learners themselves, their employers, families and the community at large. This is especially the case in the arena of English for Specific Purposes (ESP) (Basturkmen, 2010), where the leaners are meant to use L2 within the confines of a particular academic discipline or profession. This kind of needs analysis often entails identifying the vocabulary, discourse and genres (Basturkmen, 2010) the leaners would be expected to use. It then ideally attempts to gauge to what extent the students are or are not familiar with the identified items, in order to facilitate setting achievable goals.

Apart from specialised vocabulary, the choice of vocabulary has generally received quite moderate attention in terms of needs analysis. Research (e.g. Dodigovic, 2005; Wei, this volume) has identified a perplexing nonchalance toward the choice of general vocabulary, be it for the development of teaching materials or language classes. This is surprising, since it is clear from the available and convincing body of research that learning

approximately two thousand of the most frequent words is a prerequisite for learning other, less frequent words (Nation, 2006; Schmitt, 2000). Yet, in a sweeping attempt to catch up with the agenda of communicative language teaching, students are often pushed to read or listen to texts in which they do not understand enough vocabulary in order to make sense of the text itself (Dodigovic, 2005). Other times, they are made to memorise a large number of rare and complex words before they can confidently remember the small number of frequent and most useful words (Dodigovic, 2009). Rather than stretching the student's minds or boosting their critical thinking skills, this approach is tantamount to an exercise in futility, since, as Nation (2006) points out, such infrequent words will not be followed up by contextualised encounters, and will hence inevitably fall prey to attrition. Sadly, the time invested in trying to achieve the unattainable will be lost where it would have been needed most, i.e. in learning such words that would enable reading and listening comprehension.

Any lexically driven needs analysis should therefore seek to establish how many words the students know, especially of the most frequent variety, and how well they already know these words (Schmitt, 2000). The next step would be to analyse the texts intended for teaching for the evidence of containing the words the students need and finally matching texts with students. Also, clear goals for vocabulary acquisition must be set, enabling the students to benefit most from learning within the time at their disposal.

Understanding how leaners approach learning vocabulary is another step that can and should be taken to improve the outcome of L2 learning (Schmitt, 2000). A number of vocabulary learning strategies have been identified in research. In fact, part two of this volume is devoted to choosing or devising an appropriate taxonomy of such strategies and identifying the ones that the students are using. It is also believed that teachers can and should coach students in the use of vocabulary learning strategies that could prove more fruitful than the ones used by them (Thornbury, 2002).

Finally, familiarity with learner lexical errors paired with an understanding of the reasons for these errors is another prerequisite for designing the lexical component of the language curriculum. Thus, there is

much room for vocabulary-based needs analysis in any language class or learning situation. This volume has attempted to provide a blueprint for this and to model some of the steps that can be taken to improve not just vocabulary learning but overall L2 performance. The following briefly describes the contents of the volume, in which we have selected four salient foci of interest.

First, the theoretical underpinnings of vocabulary needs analysis are presented. Thus, Milton and Alexiou (Chap. 2) draw attention to the importance of vocabulary size assessment and how it can be related to the goals set by the CEFR levels. Identifying what and how many words correspond to the different proficiency levels is crucial for the EFL classroom, and in this line, Chap. 2 introduces a variety of assessment methods conducive to the said identification. The notions of productive and receptive vocabulary are the main concern of Chap. 3 by Amin. Examining both vocabulary sets and their sizes, as well as establishing the difference between both, becomes central to determine the lexical items that learners need to know. Furthermore, Amin relates the size of Afghan tertiary students' productive and receptive vocabulary sets with the context of language acquisition and the impact of it on vocabulary development. Wei's chapter (Chap. 4) closes this first section by addressing the relationship between lexical knowledge and reading comprehension. The reading comprehension performance of Chinese learners is evaluated against the framework of their vocabulary size and breadth. The pedagogical implications of the relationship are also explored.

The second main focus of interest of the present volume spins around the importance of learners' strategic behaviour when learning vocabulary in the foreign language. Accordingly, in Chap. 5, Dodigovic et al. raise the question of the connection between vocabulary learning strategies and effective vocabulary acquisition. By determining which strategies are used by and useful for advanced language learners in the Armenian context, but also for learners at lower stages of acquisition, teachers can develop pedagogical plans that adapt the effective vocabulary strategies to the specific learning needs of the students at the different stages. In the very same line, Manoukyan, Chap. 6, expands the discussion of which vocabulary learning strategies are most frequently used by Armenian students, with special emphasis on the students' perceptions of the

usefulness and effectiveness of the strategies they use. Cognitive and metacognitive self-regulated strategies in an English for Specific Purposes (ESP) course are the main issue of Bošnjak Terzić and Pavičić Takač in Chap. 7. The use of diary records to explore the effectiveness of these strategies in vocabulary acquisition presents an interesting and far-reaching methodological novelty in the analysis of learners' strategic behaviour.

The examination of learners' lexical errors and inconsistencies and what they tell research about the processes of vocabulary acquisition are the topic of the third section of the present volume. In Chap. 8, Harutyunyan and Dodigovic devote special attention to the lexical errors of advanced English learners in Armenia and provide insightful didactic implications derived from their findings. Following the same argumentative line, Agustín-Llach, Chap. 9 addresses how the native language and culture of the learners affects their semantic and conceptual renderings in the FL. By using a lexical availability task, she identifies examples of L1 conceptual influence in learners' lexical production and traces that transfer back to the conceptual representations in learners' minds, and the impact of their native culture. Learners seem to successfully suppress L1 formal influence, but mostly carry conceptual information in L1-shape.

Finally, the urge to develop needs analysis based procedures and tools to support vocabulary learning makes up the last focus of interest in section four. Canga Alonso, in Chap. 10, reviews research related to vocabulary and cultural knowledge and their scarce presence in English as a Foreign Language (EFL) curricula despite their crucial importance in foreign language, especially vocabulary, development. Additionally, he presents a framework for the teaching of cultural vocabulary at the A1-A2 CEFR levels with the intention of providing teachers with the necessary tools to enhance cultural vocabulary instruction. Corpus tools as effective methods in vocabulary needs analysis is the main focus of the last chapter, Chap. 11 by Jeaco. He presents several of these methods and provides suggestions on how they can be used to detect vocabulary needs. He, finally, introduces *The Prime Machine*, a free and user-friendly English corpus tool for learners to explore their own vocabulary needs.

This collection intends to offer a snapshot of needs analysis within vocabulary studies. Our intention is to contribute to the academic

advancement of this discipline and to the improvement of vocabulary teaching in EFL. This edited volume intends to be a timely review of the current trends within vocabulary needs analysis by bringing together different perspectives concerning the most important and relevant aspects that play a role in identifying what and how lexical items need to be addressed when learning and teaching English as a foreign language.

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Part I

Some Lexical Principles for Needs Analysis

2

Vocabulary Size Assessment: Assessing the Vocabulary Needs of Learners in Relation to Their CEFR Goals

James Milton and Thomaï Alexiou

Introduction

Assessment is at the heart of needs analysis. For a needs analysis in vocabulary, there must first be an assessment of the words that the learner needs to know in order to achieve whatever the goals of learning are. How many words and which words are needed? Once this is known then the learners themselves will be assessed to establish what knowledge of these words the learners have. Only then can teaching materials be constructed to make up the difference between what they know and what they need to know. For a long time this was a daunting undertaking for most teachers since little was really understood about the words learners needed in

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order to function well in a language, and the tools to easily and understandably assess learners' vocabulary knowledge were not available. Perhaps it is not surprising, then, that so many language teaching methodologies over the last seventy years or so, have shied away from any kind of useful specification of the vocabulary burden in learning a language, and the methods needed to tackle this. As Allwright (1979) commented on Communicative Language Teaching, there was a general view that explicit instruction of language was largely unnecessary and that through meaningful use 'language learning will take care of itself' (p. 170). In this view of learning, the use of textbooks and a structured approach to the teaching, even of some as important as vocabulary, is just not necessary. This approach to language teaching is probably not acceptable any longer. Only when teachers and learners understand their learning goals, and know where they stand in relation to these goals, can teaching be devised to ensure that the goals are met (Seedhouse, 1995).

Vocabulary now has a much more prominent focus in linguistic research and an outcome of this is the way vocabulary targets are more explicitly and precisely specified for teachers. Modern curricula (especially for English) have become more helpful and more directive concerning the vocabulary needed to reach the CEFR levels (e.g. Ministry of Education in Saudi Arabia, 2016). We have vocabulary size norms linked to CEFR levels and consequently modern curricula can include the volumes of vocabulary that might reasonably be expected at key stages in the language learning process (Milton, 2010; Milton & Alexiou, 2009). Target exams now include words lists (e.g. Cambridge English, 2019). These are often not intended to be utterly prescriptive or complete, but they can help provide a focus and direction for teaching and learning. This begins to meet the first part of vocabulary needs analysis. There are vocabulary size figures and word lists available to teachers, to describe what learners need to know to reach, say, CEFR B2 level or the Cambridge FCE exam associated with this level. For most general learners this is enough, but even where learners have a particular specialism for study or work, there are now useful word lists available to help the learning process.

We also have a variety of testing methods which allow teachers and learners to monitor their progress towards their language goals. These are now widely available, see, for example, the range of vocabulary testing tools available at http://www.lognostics.co.uk/tools/ and at https://www.

wgtn.ac.nz/lals/about/staff/paul-nation#vocab-tests. Therefore, it should be possible for teachers and the learners themselves to assess their vocabulary knowledge, and understand where they are in relation to their vocabulary goals. This can be done formally but modern programmes and applications can do this informally too.

The purpose of this chapter, then, is to identify the kind of vocabulary size targets, which are associated with CEFR levels and with widely used exams such as in the Cambridge suite of EFL tests. It will provide examples of current curricula to show the way vocabulary goals are set. But principally the intention is to introduce to teachers a variety of straightforward assessment methods that will allow learners' vocabulary knowledge to be placed in relation to these vocabulary sizes.

Vocabulary Size and Vocabulary Learning

Vocabulary knowledge is considered to be multi-faceted and for words to be fully and usefully known, a lot of different knowledge is involved (see, e.g., Milton & Fitzpatrick, 2014; Nation, 2001; and Daller, Milton, & Treffers-Daller, 2007). For most learners the form of the words, both aurally and in writing, will need to be recognised. These forms will have to be attached to a meaning and to usage, and this is where things get more complicated. Words can be subtle in the meanings they carry. Subtleties of association and connotation may need to be learned where a word in one language does not match the meaning and use of a broadly equivalent word in another. Words can have several different meanings matched to one form. Word equivalents may collocate differently, and differ in usage, from one language to another. Words which are a normal part of everyday use in one language may be impolite or even taboo in another. Lastly, there is a distinction that most teachers will recognise between words known passively and which can be recognised in use, and a smaller set of words known actively and which can be readily called to mind and used in production. This is often referred to as a distinction between receptive and productive vocabulary knowledge (Milton, 2009). Learners will need to learn both to recognise words when they encounter them and to use and recall them when needed.

All these different dimensions of word knowledge would appear to make vocabulary testing a daunting task although, of course, even native speakers will not know every detail of every word in their language. How can all this variety be usefully characterised in a single test? As Fitzpatrick and Milton (2014) point out, knowledge of these different dimensions of knowledge usually associate quite closely. Learners who are learning a language in reasonably well-structured classes, and who know a lot of words in their foreign language, can generally also use them quite well, and have more of them available for active production. For most practical purposes a measure of the learners' vocabulary size will give a good indication of their overall progress towards vocabulary goals. Modern syllabuses, therefore, tend to characterise vocabulary targets in terms of size, the number of words expected to be taught or learned during the course of tuition and the number of words learners know. This vocabulary size metric is extremely powerful and links strongly to learners' performance in the 4 skills (e.g. Milton, Wade, & Hopkins, 2010; Stæhr, 2008), and so it is an ideal metric to work with in vocabulary needs analysis.

However, thinking of vocabulary learning in terms of numbers of words is a simplification that requires qualification. The words learners acquire cannot be just any words. Overwhelmingly, they will have to acquire the most frequent words. These are the words that occur so often in normal language that a language user cannot function without them. They include function and structure words but also highly frequent lexical words, and Meara (1992) hypothesised in his vocabulary profile that there would be a tendency for these words to be learned first. The nature of language is such that even in the artificial language environment of the beginner textbook, these words persist in occurring frequently and learners do, indeed, tend to learn these words disproportionately producing the frequency profile Meara anticipated (Milton, 2006) as is shown in Fig. 2.1.

There are several very useful outcomes from this frequency effect and one of them is that it provides a very good guideline for the selection of items in testing and assessment. A test based on a principled selection of the most frequent words in language is likely to be able to give a good characterisation of learners' vocabulary knowledge. The tests described in this chapter are all based on this idea of selection of test items across the frequency bands.

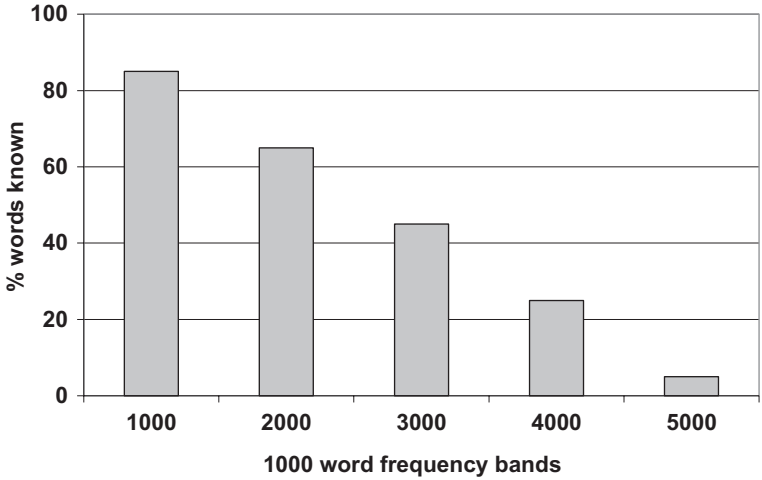

Fig. 2.1 Vocabulary profile of a typical learner (adapted Meara, 1992, p. 4)

Vocabulary Goals

Alexiou, Roghani, and Milton (2019) summarise the recent research which has provided very useful guidance to teachers about the volumes of vocabulary their learners will need to achieve educational milestones. They indicate that the volumes of word learning a language requires can sometimes appear considerable so, for example, they report that about 1500 lemmatised words are needed in English just to progress from CEFR A1 to CEFR A2, and probably 1000 more words to pass an external exam pitched at A2 level (Milton & Alexiou, 2009). This represents a lot of word knowledge before learners can even begin to communicate, still inexpertly, with any kind of independence. To achieve fluency, the numbers are, of course, larger. Laufer and Ravenhorst-Kalovski (2010) suggest knowledge of the most frequent 4000 to 5000 words in English, providing about 95% coverage in normal text, is needed for what they call 'adequate comprehension' (p. 25). While this seems a lot of words, they go on to suggest it is a level of knowledge that would not satisfy most educators and it cannot provide genuine fluency in many circumstances, including academic study in English. An optimal figure, knowledge of the most frequent 8000 words providing about 98% coverage, is needed for significantly better comprehension associated with 'functional independence in reading' (p. 25). These numbers are replicated

in Nation (2006) who also reports that a figure of 8000 to 9000 words is required for the comprehension of written text, a figure calculated from the words needed for 98% coverage of text. Nation also points out that a slightly smaller figure, 6000 to 7000 words, would be adequate for 98% coverage and good comprehension of spoken text.

These are figures for the basis of the vocabulary guidance that can now be found in good teaching curricula. Such curricula are often quite precise over the volumes of vocabulary that learners are expected to acquire even at the lowest levels. Table 2.1 contains vocabulary load information taken from the curriculum of the Ministry of Education in Saudi Arabia (2016). It envisages regular input of words at a rate calculated to take students to the cusp of CEFR A2/B1 level, a figure that fits with Milton and Alexiou's (2009) estimates for the vocabulary needed for this level. The figures also indicate the speed of uptake, fairly stable at around 4 words per hour, and this fits with Milton and Meara's (1998) observations of lexical uptake in good teaching environments.

Learning goals of this kind can become a millstone around the necks of teachers where the teaching environment is not ideal, so they have to be treated with common sense. These kinds of figures should be used as a framework within which teachers can monitor the progress of vocabulary growth among their learners. Teaching goals, year by year, can be adjusted in the light of this and the content of teaching and techniques used can be varied to keep the learners on track.

Not every curriculum is as precise as that in Table 2.1, but where learners are in classes at known CEFR levels or are training for an external exam linked to those levels, then there are further vocabulary numbers available to guide the teacher. Table 2.2 provides a summary of these figures.

Table 2.1 Lexical knowledge and CEFR levels from the curriculum of the Ministry of Education in Saudi Arabia (2016, p. 78)

Grade	CEFR level	Cumulative hours	Expected vocab uptake	Cumulative vocab uptake	Uptake per hour
4	Leading to A1	65	250	250	4
5	Leading to A1	130	250	500	4
6	A1.1	195	250	750	4
7	A1.2	325	350	1100	3
8	A2.1	455	550	1650	4
9	A2.2/B1.1	585	550	2200	4

Table 2.2 Lexical size associated with formal exams and other standards (adapted from Meara & Milton, 2003) based on a test of the most frequent 5000 lemmatised words in English

		Comparability with other scores		
Comment	X-Lex score	TOEFL	IELTS scores	UCLES exams
Native speaker-like performance	4750+	TOEFL 650	9	Diploma
Advanced level of performance	4500–4740	TOEFL 630	8	CPE
Learners at this level would typically be able to perform well in most everyday situations, though they will not understand everything they meet, and will typically have occasional vocabulary problems.	4250–4490	TOEFL 620	7	CPE
Intermediate level of performance	3750–4240	TOEFL 550–600	6	CAE
They would typically have good listening skills, and good reading skills.	3250–3740	TOEFL 500–550	5	FCE
Elementary level of performance	2750–3240	TOEFL 450–500	4	PET
Students at this level have a good basic vocabulary, but are very far from native speaker levels. They can typically perform well in situations which are predictable, but would not be able to operate without help in more demanding circumstances.				
This level is typical of people who have followed a beginners' course. Their vocabulary is very limited, and their ability to perform effectively is undeveloped.	2000–2740	TOEFL 400–450	3	KET
Beginner level of performance	2000–		2	Starters, Mover and Flyers
Vocabulary is limited to a small number of thematic areas.				

Table 2.3 Mean EFL vocabulary size scores and the CEFR (adapted from Milton, 2009)

CEF level	X-Lex
A1	<1500
A2	1500–2500
B1	2500–3250
B2	3250–3750
C1	3750–4500
C2	4500–5000

Not all learners, especially at beginner levels and young learners, are in training for formal exams but, rather, are in classes intended to develop their overall language abilities. For such learners, understanding the vocabulary load associated with the levels in the CEFR provide teachers with important information as to the vocabulary knowledge they will need to achieve. Table 2.3 provides vocabulary size scores, from the most frequent 5000 words in English, which are typically achieved by learners at each CEFR level.

These vocabulary size figures will not give an indication of total vocabulary size, especially in the more advanced levels. The frequency profile suggests that learners with normal language input will always acquire some thematic vocabulary beyond the ranges reported in a test of only the most frequent 5000 words. However, as the coverage figures reported by Nation (2006) and Laufer and Ravenhorst-Kalovski (2010) indicate, developing a knowledge of the most frequent 5000 is crucial if any kind of fluency is the goal of learning and these provide some guidance about how vocabulary input should be structured.

The lexical profiles produced by learners taking exams pitched at each successive level of the CEFR are shown in Fig. 2.2. These show the levels of knowledge learners typically have at each 1000-word frequency band and show the relationship between frequency and learner which almost always occurs. While learners tend to learn words in an order related to their frequency, this tendency is moderated by their need also to acquire words from across the frequency bands, including the less frequent bands, so that they have the words needed for the specific topics they cover in class. The lowest level learners have a tendency to learn the most frequent words but as they improve, and their overall vocabulary grows, the majority of lexical development shifts to the less frequent bands.

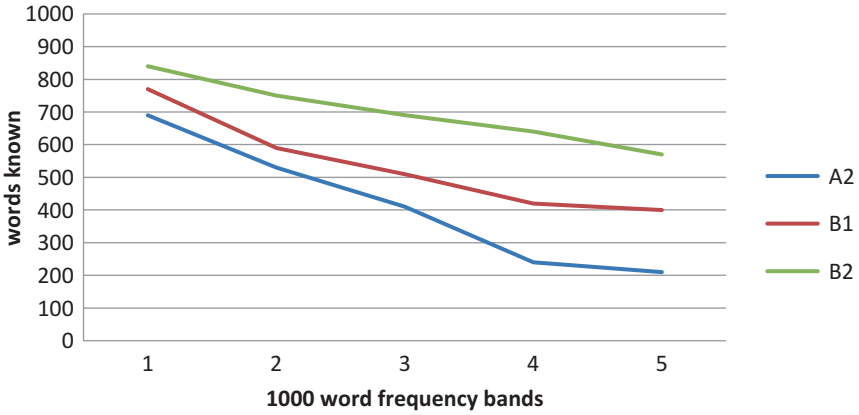

Fig. 2.2 Vocabulary profiles are CEFR A2, B1 and B2 levels (Milton, 2009)

Vocabulary Testing

Traditionally, and in the absence of established and normalised tests, teachers have made up their own vocabulary tests, often based on the materials they have taught. There is a place for this kind of testing, where the teacher wants to check the success of the materials or the topic they have covered. But these tests are rarely able to tell either the teacher or the learner whether they are making the right kind of global progress towards their learning goals. There are now tests that can do this, and which can match into the vocabulary targets in section "Vocabulary Goals" above. These tests have to have some very particular characteristics such as the ability to test across a wide range of language levels and to test a clearly defined facet of vocabulary that can be readily understood. Our feeling, too, is that ideally tests should be quick and easy to administer, or even capable of self-administration, so that the testing process does not become a distraction from the other processes of teaching and learning. We have selected the following tests because they display this characteristic. Other relevant tests are described in Chap. 3 as well as in Chap. 5.

X-Lex: The Swansea Levels Test

Designed by Meara and Milton (2003), X-Lex is a receptive vocabulary size test which tests knowledge of the most frequent 5000 words in English and several other languages. This is designed for use by any learner who can read in English, and provides an estimate of vocabulary size. This estimate can provide information about the learner's overall knowledge in relation both to other learners and to curricular goals such as an exam where normative scores for the vocabulary needed are known. It could form part of formal assessment, and we have used it that way, but in computer format is designed to be easy to use and capable of providing informal, but useful, individual guidance. Appendix 1 in Milton (2009) contains versions of this test in French and Greek as well as English. It is a test of the written form of words so it is suitable for learners with reasonable reading skills and would not be appropriate for very young learners who cannot read. The format is simple and presents users with a series of words, one at a time, and the user's task is to indicate if they know these words or not. It is a format known as a Yes/No test. It presents 100 real words but also 20 pseudowords; words that look like real words but which do not exist in any normal dictionary. These pseudowords act as a check on the accuracy of responses to the real words and allow the final score to be adjusted. Guesswork can be a problem in any objective style test and can distort the results and mislead anybody trying to interpret the results (Gyllstad, Vilkaite, & Schmitt, 2015). Guesswork by learners is not always intended to deceive the test administrator. The Yes/No format of the test has the advantage of forcing learners to make a decision about the test words, but the disadvantage too of making no allowance for uncertainty or partial knowledge of the form of words. Figure 2.3 shows the style of the test and kind of decision making that users undertake. *Inform* is the target word and if the learner recognises this word they click the button with the smiling face. If the learner does not recognise the word, the button with the frowning face is clicked.

The adjusted scores which X-Lex produces are an estimate of knowledge of the most frequent 5000 and so map onto the targets and CEFR norms given in Tables 2.1 and 2.2. It is quick and easy to administer, and

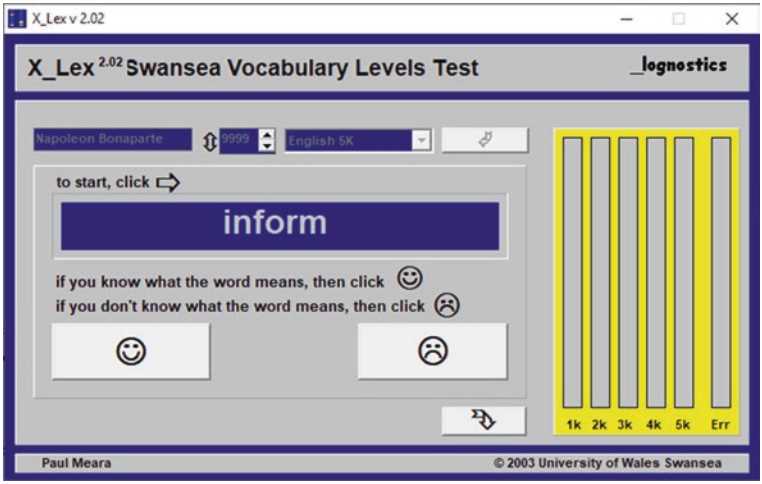

Fig. 2.3 Computer-delivered X-Lex test

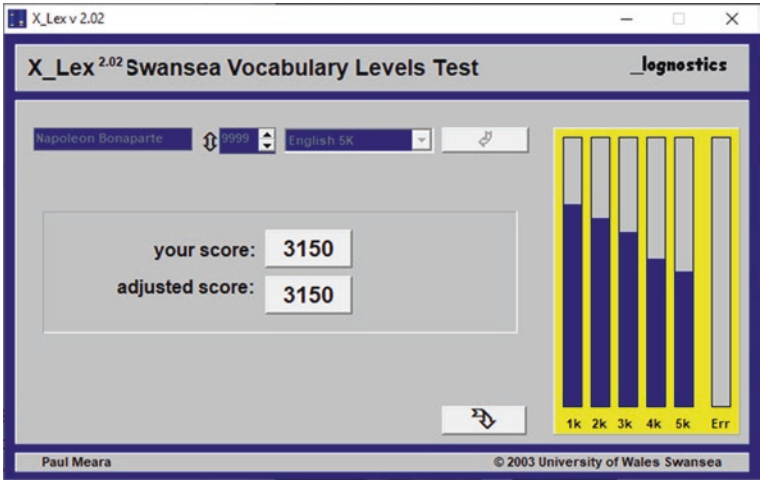

Fig. 2.4 Vocabulary size estimates

to take. It has a computer-delivered format that is likely to last only 5 minutes and marks itself. Figure 2.4 gives examples of the format of the computer version and the format of the scores. This format presents two scores, a Raw Score which gives an estimate of vocabulary based on the real words

only, and an Adjusted Score which factors in any guesswork that appears to have been occurring. It is the Adjusted Score, generally, that is considered the best and most reliable indicator of vocabulary knowledge. If there is a big difference between the scores, this suggests that users have been routinely responding Yes to words they don't really know and that the Raw Score is likely to be an over-estimate. For individuals but especially for groups of learners, the results are thought to be both accurate and reliable (David, 2008; Richards, Malvern, & Graham, 2008).

The scores from this test map onto the normative scores for CEFR levels given in Table 2.3. Thus, if a teacher has a class intended to take the CEFR B2 exam Cambridge First Certificate in English, and members of the class routinely score 3500 words and better on this test, both teachers and learners could be pretty confident they have the vocabulary to succeed in this exam. The teacher would know too that the vocabulary focus of teaching needed for learners to progress to higher levels of exams should be concentrated in growing the mid-frequency vocabulary ranges.

Category Generation Tasks

X-Lex is a test of passive vocabulary knowledge and there are occasions where teachers and learners will want an assessment of more than receptive knowledge, and will want an idea of how good learners' knowledge is for production. It is very hard to assess productive vocabulary knowledge from a normal productive task like writing an essay or having an oral interview. Assessment methods tend to become more complex and less reliable as a consequence. However, Roghani's (2017) work using category generation tasks (see also Roghani & Milton, 2017) provides a method for making an assessment even for very low level learners and learners who are too young to write (available in Alexiou et al., 2019).

A category generation task is a listing task with a thematic prompt such as *animals*. Learners are asked to list as many animals as they can name. There does not have to be a time limit imposed on this but usually a few minutes is all that is usually necessary. The tasks can be done either orally or in writing. Roghani uses knowledge of the availability of these words across the most frequent 5000 words in established word frequency lists such as Kilgarriff's (2016) BNC lists to assess the output of learners

and form an estimate of productive vocabulary size. So if, for example, there are 56 animals which occur in the top 5000 words and if the learner can name 28, or half of them, it is hypothesised that the learner knows half of these 5000 words and has a productive vocabulary knowledge, within the tested range, of 2500 words (Roghani, 2017).

This form of test can be used in a classroom, too, even as a game. For example, when the task *Name all the animals you can* is given to learners, the list the learners produce can be compared with the list in Table 2.4. Then, the number of words from the list which is produced is multiplied by 89.3 to give an estimate of the number of words, from the most frequent 5000 words in English, that are known productively, thus gaining an estimate of the learner's productive vocabulary knowledge.

The words a learner knows productively are thought to be a smaller sub-set of the words known receptively, so scores from this test cannot be compared directly with the CEFR normalised vocabulary sizes in Table 2.5. Alexiou et al. (2019), however, suggest approximate scores from this kind of task mapped onto written receptive task equivalents and CEFR levels and this is shown in Table 2.5.

A learner who scores, for example, 1200 on such a task is likely to be at approximately CEFR B1 level, therefore. The authors caution, however, that such an approach to the assessment of learner levels are probably not suitable for high-stakes testing, and the test format is really a classroom tool to help and guide teachers and their learners. If learners' knowledge appears small in relation to these targets then teachers can look to supplement their vocabulary input. Resources such as that provided by Oxford 3000 (Oxford Learner Dictionaries, 2020) can provide suggestions as to which vocabulary might be used to do this, and how managing vocabulary input in the classroom can be practically managed. This, we suggest, is very much in keeping with good practice of needs analysis in the classroom.

Picture Vocabulary Size Tests (Pic-lex)

Pic-lex (Alexiou, 2019) is a test tool intended for very young learners up to primary school age which assesses receptive vocabulary size from picture cues. It is principally intended, therefore, for pre-literate learners of

Table 2.4 Test of productive vocabulary size in a foreign language (Roghani, 2017)

Animal words (multiplier 89.3)
Bear Bird Bat Bee Badger Cat Chicken/Chicks Bull/Bullock Butterfly Boar Dog Cow Camel Crab Deer Fish Duck/Duckling Cock Crocodile Donkey Fly Pig/Piggy Dinosaur Eagle Frog Horse Sheep Hen Elephant Goat Lamb Fox Hog Mouse/Mice Lion/Lioness Insect Pigeon Monkey Mole Rabbit Pony Owl Rat Robin Parrot Seal Salmon Snake Swan Spider Swine Turkey Whale Tiger/Tigress Wolf/Wolves Worm
Clothing words (multiplier 94.3)
Watch Glasses Bag Belt Heel Armor Blouses Coat Bloomers Shrug Bridal Costume Robe Dress Boots Suspenders/ Braces Gloves Gown Hat Cap Uniform Helmet Jogger Jumper Jacket Jewellery Pants Leggings Jeans Outfit Purses Ring Knit wear Trousers Scarf Shirt/T-shirt Skirt Shorts Shoes Socks Sneaker Suit Towel Stockings Swim/Beach wear Sweater Tie Thermal Tights Vest Tops Wallet Trainers
Furniture words (multiplier 59.5)
Bed Air Conditioner/AC Bench Candle Cushion Bookcase Alarm clock Blender Console Mattress Box/Storage Box Basket Cabinet Fork Mug Chair Bin Curtain Hood Sofa Clock Blanket Laundry Basket Stereo Coffee machine/maker Blinds Mat Stool Cup Bowl Peeler Torch Dryer Brush Pillow Vacuum cleaner Freezer Bucket Rug Vase Gas Carpet Spoon Wardrobe Glass Coach Hanger Container/Measuring Light Desk Pot/tea pot Dish/Dishwasher Radio Drawer Seat Duster/Dust pan Table Fan Telephone Fridge Television/Television set Fryer Throws Hook Iron/Iron Boards Knife Lamp Microwave Mirror Mixer Oven Pan Piano Plate Printer Scale Sheets Shelves/Book shelves Sink Tap Toaster Towel Tray
Body words (multiplier 68.5)
Arm Brain Cell Ankle Anatomy Back Breast Heel Arch Abdomen Blood Cheek Hip Belly Appendix Body Chest Joint Chin Artery Bone Jaw Organs Digestive system Calf Bottom Knee Palm Elbow Intestine Ear Muscle Sole Eyebrow Gums Eye Nail Tissue Forehead Kidney Face Nerves Tubes Liver Skeleton Foot Stomach Vessels Lungs Urinary system Finger Toe/toe nail Ribs Hair Tongue Skull Hand Spine/Spinal Head Thumb Heart Vein Leg Waist Lip Wrist Mouth Neck Nose Shoulder Skin Throat Tooth

Table 2.5 Productive vocabulary knowledge and CEFR levels

CEFR level	Approximate written vocab size	Approximate generative task equivalent
A1.1	750	250–350
A1.2	1100	350–500
A2.1	1650	500–750
A2.2	2200	750–1000
B1	2800	1000–1300
B2	3300	1300–1500
C1	4000	1500–1800

English who cannot be expected to take the more usual, written-form, tests of vocabulary size.

Like Meara and Milton's X-Lex (2003), the test makes an estimate of the knowledge of the most frequent 5000 words in English. The wordlists it uses are lemmatised and are drawn from Kilgarriff's (2016) lists. The test makes a principled selection from the 5000 most frequent words where one word is selected in every 50 words from a list organised in order of frequency. It has 100 items in total.

The delivery format involves the testee being presented with a test word, in both oral and written form, and 4 pictures. This can be seen in Fig. 2.5. One of these pictures represents the word being tested and the testee is asked to choose from the pictures the one they have heard. The test is computer delivered and self-marking. A score giving a vocabulary size estimate is presented at the end of testing. It takes about 10 minutes to administer on a one-to-one basis with each child. The task should fit well with the pre-school learners' experience of this type of activity and with their cognitive level. The words should be appropriate for the age of the testees.

This test is very new and is not designed for learners who are advanced and at B2 level or above where, written delivery is both possible and, probably, more suitable. It is possible to suggest what the scores on this test mean at the lower levels of proficiency, and tests on students where we have data from both Pic-lex and X-Lex suggest the associations with CEFR levels shown in Table 2.6. This table uses the distinction used by Cambridge English (as in Cambridge English, 2019) which divided the A1 level into two: a pre-A1 level and an A1 level.

Fig. 2.5 Pic-lex screen (from Alexiou & Milton, forthcoming)

Table 2.6 Pic-lex scores and the CEFR

CEFR level	Approximate Pic-lex score range
Pre-A1	Less than 70
A1	70–85
A2	85–95
B1	95+

Table 2.5 suggests, therefore, that a learner who scored, for example, 88 on Pic-lex would probably be at about CEFR A2 level. If teachers and learners are seeking confirmation that they are at, or above, this level then this is good. If learners appear below this level of knowledge then steps can be taken to enhance learners' vocabulary and sites such as that available at Oxford Learner Dictionaries (2020) can provide detailed information about which words might usefully be targeted for teaching as well as how the materials used in class can be chosen or adapted.

Conclusions

At the start of this chapter we pointed out that the process of needs analysis in vocabulary involves creating an understanding of the words learners need to achieve their learning goals, and then also a means of monitoring the vocabulary knowledge of learners so the teacher can understand where the learners stand in relation to these goals. It is a process that allows the teacher to design interventions that meet the learners' needs best. What we have provided here are some clear guidelines for the vocabulary sizes, which are needed to achieve English L2 learning goals framed in the context of the CEFR. We have also pointed to the way the vocabulary the learners learn must include the most frequent words in the language if communication is to be achieved. The resources identifying the most frequent words are described in more detail in Chap. 11. It should be possible for teachers to understand the vocabulary needs of their learners with this information. But we have also provided information on the vocabulary tests which can help teachers assess and monitor progress towards these goals. Armed with this information, both teachers and learners should be able to manage the process of vocabulary learning, which is a considerable task, better and more efficiently. In vocabulary learning, the process of needs analysis can become an everyday practice in good language teaching.

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3

The Comparison of Receptive and Productive Vocabulary Size of Afghan Tertiary Students

Mohammad Asif Amin

Introduction

Affected by a decade of war, the Afghan educational system started its journey from ashes in 2001. Most of the decisions taken by the authorities at that time were not very effective and brought very little or no gain in the education sector. The tertiary education is no exception. The global community supported the Afghan Ministry of Higher Education in several ways, from curriculum development to educational infrastructure rehabilitation. As a part of the same process, American Universities helped to develop English departments' curricula in 2009, where they trained some Afghan English instructors and selected textbooks to be used by Afghan students based on the developed curriculum. The selected books were mostly used at American Universities in the USA. In contrast, the rural areas of Afghanistan, from where the bulk of high school graduates join universities, have been mostly affected by the devastating war on

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terror, which has negatively affected their education, removing it even further from a typical US experience.

In 2015 the Afghan higher education's curriculum committee suggested assessing the current tertiary students' curriculum in order to find out whether the students were able to cope with the textbooks' standards, despite coming from war-affected high schools. Since the students' vocabulary size allows us to measure the effectiveness of a language curriculum to some extent, this study investigates the receptive and productive vocabulary size in the context of Afghan tertiary education.

Vocabulary knowledge is considered a key element of language learning. Nation and Waring (1997) stated that "vocabulary knowledge enables language use, language use enables the increase of vocabulary knowledge and knowledge of the world enables the increase of vocabulary knowledge and language use" (p. 2). Furthermore, Schmitt (2008) claimed that "one thing that students, teachers, materials writers, and researchers can all agree upon is that learning vocabulary is an essential part of mastering a second language" (p. 2). Additionally applied linguistics research, (e.g. Hirsch & Nation, 1992; Laufer, 1989, 1992) suggests that a high level of vocabulary knowledge is needed by a reader in order to comprehend a text (Dodigovic, 2005). Zimmerman (1997; cited in Tran, 2009) specifies that vocabulary is the central element of language and equally important to its learners. In fact, Wilkins (1972, p. 111) emphasizes the role of vocabulary as follows: "Without grammar very little can be conveyed, without vocabulary nothing can be conveyed".

Research (Dodigovic, 2005; Nation, 1990; Thornbury, 2002) divides vocabulary knowledge into receptive and productive. Therefore, it is important to know the overall vocabulary knowledge of learners through exploring these two components. Nation (2001) states that receptive vocabulary knowledge is the conscious awareness of the form of a word and bringing its meaning back when listening or reading it, while productive knowledge is the appropriate use of the word in spoken or written form in the proper linguistic and social context.

Statement of the Problem

While the receptive vocabulary of native speakers is found to be considerably larger than their productive vocabulary, the size of this difference in non-native speakers has been found to be smaller, especially in communicative learning environments (Nation, 2013; Schmitt, 2000; Thornbury, 2002).

The similarity in the sizes of receptive and productive vocabulary of L2 learners is sometimes associated with the use of contemporary communicative approaches to language teaching (Nation, 2013; Thornbury, 2002). However, it cannot be assumed that such approaches are widespread in Afghanistan. Given the scarcity of opportunities to receive comprehensible input and gain sufficient exposure to warrant receptive vocabulary learning, it might also be the case that the receptive and productive vocabulary sizes of Afghan L2 English learners could be similarly small. Gaining insight into their receptive and productive vocabulary sizes would therefore yield some objective clues as to what is working in ELT in Afghanistan and what is not.

Literature Review

Throughout the history, different language teaching approaches have been utilized with diverse focus on vocabulary teaching and learning. At the time when rhetoric was important and the need for well-developed vocabulary was high, vocabulary received precedence, but when the focus was on grammar teaching, vocabulary was neglected (Schmitt, 2000).

Acquiring vocabulary is not a linear process. Research (Dodigovic, 2005; Nation, 1990; Schmitt, 2000; Thornbury, 2002) has listed seven aspects of single word knowledge: the meaning(s), the spoken form, the collocations, the written form, the register and the associations, the grammatical behavior and frequency. All of these have to be learnt in order for a learner to know the word. The same elements of word knowledge are echoed by Dodigovic (2005), Folse (2004) and Thornbury (2002) while adding connotations and derivations when assessing vocabulary knowledge. Thornbury (2002) suggested that these elements of word

knowledge can be tested through recognizing or recalling. This recognizing and recalling represent the receptive and productive knowledge of the word, respectively.

Specifically, EFL learners need to learn a certain number of words in order to do well at University level. The number of words a learner knows is called the size or breadth of vocabulary (Nation, 2001). According to Laufer (1989, 1992) and Hirsch and Nation (1992), in order to understand a text, the reader is required to know 95% of the text's vocabulary or even 98% of it (Nation, 2009). This target can be achieved by acquiring 2570 most common words, which consist of the first 2000 most common words and 570 Academic word list (Coxhead, 2000). Nation stated that this sum of common words covers 90% of most academic texts (2006). Moreover, Nation (1990) expects EFL high school graduates to have learnt about 3500–4000 word families, which refers to different lexical words related to various parts of speech with the same root, for example *guide, guides, guidance* (Milton, 2009). Laufer (1992) advocated a threshold of 3000 word families (5000 lexical items) for comprehension of written authentic prose, "most word families have several members (e.g. stimulate, stimulated, stimulating, stimulates, stimulation, stimulative)" (Van Zeeland & Schmitt, 2012, p. 2).

Furthermore, Nation (2006) suggests a vocabulary size of 8000–9000 word families for reading comprehension and 6000 to 7000 for speaking, as these words will cover 98% of any text. Likewise, Van Zeeland and Schmitt (2012) suggest a vocabulary size of 2000–3000 word families for listening comprehension. These proposed numbers of words for receptive and productive language skills suggest that there is already a perceived difference in vocabulary needs for receptive and productive purposes. Additionally, Nation (1990) suggests that an 18-year-old native speaker is estimated to have a vocabulary size of 18,000–20,000 word families, when graduating from high school. Thus, there are considerable differences in vocabulary size between a native speaker and an EFL learner.

Nation (2013), Thornbury (2002) and Schmitt (2000) report that the receptive vocabulary of native speakers is considerably larger than their productive vocabulary. Similarly, Chamberlain (1965) (cited in Melka Teichroew, 1997) reported a 5 times larger receptive vocabulary for native speakers, compared to receptive. On the contrary, with L2 learners, the

difference seems to be less pronounced. Referring to one of the oldest recorded vocabulary learning studies (Stoddard, 1929, cited in Nation, 2013), Nation (2013) highlights a productive learning environment as one of the reasons for a smaller difference between the sizes of receptive and productive L2 vocabulary. Another reason for this could be deliberate vocabulary learning, as observed in EFL learners as opposed to ESL learners (Laufer & Paribakht, 1998; Nation, 2013). Studies by Melka Teichroew (1997) and Takala (1984) recorded no significant differences between the productive and receptive L2 vocabulary knowledge, while Waring (1997) found that productive knowledge could even exceed receptive knowledge. Along with investigating other aspects of vocabulary knowledge, studies (Fan, 2000; Hajiyeva, 2015; Harji, Balakrishnan, Bhar, & Letchumanan, 2015; Pignot-Shahov, 2012; Waring, 1997; Webb, 2008; Wise, Sevcik, Morris, Lovett, & Wolf, 2007; Yamamoto, 2011; Zhou, 2010) found no significant difference between receptive and productive vocabulary through time and enhancement interventions.

The central focus of these studies was to illuminate the gaps, relationships, difference and comparisons between receptive and productive knowledge of vocabulary. However, they did not stop there. They also investigated the nature and the increase of productive and receptive vocabulary knowledge in L2 learners, while suggesting that extensive reading and knowledge of academic vocabulary could narrow down the gap between receptive and productive vocabulary. These studies (Fan, 2000; Hajiyeva, 2015; Harji et al., 2015; Pignot-Shahov, 2012; Waring, 1997; Webb, 2008; Wise et al., 2007; Yamamoto, 2011; Zhou, 2010) found a larger receptive than productive vocabulary and observed that the gap decreased as more time is spent on learning vocabulary.

Furthermore, various vocabulary assessment tools were used to measure the size of receptive and productive vocabulary across various studies. For example, Zhou (2010) employed the academic section of the Vocabulary Levels Test developed by Schmitt, Schmitt, and Clapham (2001), in which learners' vocabulary knowledge is measured using different frequency levels, to gauge receptive vocabulary. Besides, Zhou (2010) designed a new 30 item productive test for productive measurement because the productive section of Nation (2009) has only 18 items.

Two assessment tools are commonly used alongside other measurement tools to measure receptive and productive vocabulary in the studies reviewed above: Vocabulary size test (VST) for measuring receptive vocabulary and Vocabulary Level Controlled Productive Test (VLCPT) for productive vocabulary measurements. VST created by Nation (2012) is a test that "measure[s] both first language and second language learners' written receptive vocabulary size in English" (p. 86). Coxhead, Nation and Sim (2015) used the VST in their cross-sectional study to measure the vocabulary knowledge of English native speakers in New Zealand secondary schools. The importance of VST lies in the fact that it provides information about the students' vocabulary knowledge, which "can then be related to the vocabulary demands of the material that the learner needs to work with" (Nguyen & Nation, 2011, p. 87). As research shows, comprehension in reading occurs when the students are familiar with 95–98% of the vocabulary covered in the text (Hirsch & Nation, 1992; Laufer, 1989; Nation, 2006, 2009; Schmitt, Jiang, & Grabe, 2011).

The discussed vocabulary tests can be found on Lextutor website (Lextutor.ca). Lextutor is a website developed by Thomas Michael Cobb based on Laufer and Nation's (1995) off-line program version (Nation, 2006; Nur, 2015). On this website, we can find VST and VLCPT tests along with other vocabulary measurement tools. A more detailed description of the two instruments is found in the methodology section.

Based on the discussed review of literature, it became clear that receptive and productive vocabulary knowledge are rarely compared in non-communicative learning environments. Moreover, no such studies are known to have been conducted in Afghanistan, which is regrettable, as they could be highly revealing with regard to curriculum evaluation and learning needs assessment. For this reason, the present study used VST and VLCPT Control productive tests to investigate the difference between the receptive and productive vocabulary of Afghan students. Apart from its general purpose to investigate the student needs and indirectly assess the curriculum effectiveness, it more specifically aims to look into whether the participants have the prerequisite vocabulary threshold for English language comprehension and production at the academic level. The research questions are found below.

Research Questions

Based on the statement of problem, this study tried to answer the following questions.

1. What is the size of participants' receptive and productive vocabulary?
2. What is the difference between participants' receptive and productive vocabularies?
3. What is the relationship between the students' vocabulary learning context and vocabulary sizes?

Methodology

This research applied quantitative and qualitative methods to investigate the receptive and productive vocabulary size in English language and the difference between receptive and productive vocabulary of Afghan EFL Learners, in order to assess the effectiveness of the English curriculum and the learning needs of the students.

Participants

The participants in this research are 54 (5 female and 49 male) senior students of English major (EFL) department of Nangarhar University, which is a state University in Afghanistan with 13 different schools. Nangarhar University is located in Jalalabad, which is the capital city of the eastern province of Nangarhar. The participants' age ranges from 24 to 28 years, their mother tongue is Pashto, with, in the experience of their instructors mostly, intermediate level of English proficiency. Three instructors participated in the study and their insights were taken after the tests were administrated. These three instructors were selected among the 21 instructors in the mentioned department because they teach vocabulary classes.

This BA (Bachelor of Arts) fourth year class consists of 85 students and the current study tried to gather data from as many students as possible. The participants were selected based on purposive sampling because the study was designed to gauge the vocabulary size of this population.

Instruments

In order to measure receptive and productive vocabulary, two tests were selected, i.e. Vocabulary Size Test (VST) and Vocabulary Level Controlled Productive Test (VLCPT) A Version. The former is for measuring the receptive vocabulary and the latter is for measuring the productive one. VST assesses the written form of the word, the form and meaning relationships and students' partial conceptual knowledge. This test contains 140 multiple-choice items, ten for every 14 thousand levels (Nation & Beglar, 2007). VLCPT Control Productive Version A test has items from five frequency levels (2000 words level, 3000 words level, 5000 words level, University word list and 10,000 words level) (Laufer & Nation, 1999).

Vocabulary Size Test

VST was used for measuring written receptive vocabulary size of L1 and L2 students. It assesses the written form of the word, the form and meaning relationships and students' partial conceptual knowledge. The current study measured the first 10K levels and excluded the last four levels because it was not deemed compatible with the participants' intermediate proficiency level.

VST L can be found at https://www.lextutor.ca/tests/levels/recognition/1_14k/.

Vocabulary Level Controlled Productive Test

Created by Laufer and Nation (1999), the test is focused on controlled production measures of vocabulary knowledge. It has words from five frequency levels (2000 words level, 3000 words level, 5000 words level, University word list and 10,000 words level). In this test, every level has 18 items. Test takers need to fill in a blank in each sentence where several initial letters of the missing words are provided. This test is not designed to find the overall productive vocabulary size (Schmitt, 2010). Therefore,

the current study adopted it with some adjustments to the formula by calculating (2 × K2) + K3 + (2 × K5) + (4 × K10) = overall productive vocabulary. This formula is based on the profiling of 18 words used at each of the levels and adapted to compensate for the gaps between levels. The result is however only an estimate of the productive vocabulary size.

VLCPT can be found at https://www.lextutor.ca/tests/levels/productive/.

Structured Interview

Of the total of five instructors who are teaching in this program, three instructors were interviewed in order to explore the context for vocabulary teaching and learning. The questions were related to implicit and explicit vocabulary learning opportunities provided to learners, the designing of lesson plan with embedded vocabulary focus and opportunities for production. The interview protocol is found in Appendix 1.

Data Collection

A written permission has been received from the University administration for conducting the research. Then a general announcement was issued to the senior students' class in order to receive their verbal agreement.

Although they exist in on-line form, both VST and VLCPT tests were printed out prior to administering them. Hence, on two separate days both mentioned tests were administered to 54 students, the VST was administered first and the VLCPT came subsequently.

Data Analysis

Once the data was collected, the results of VST and VLCPT were analyzed through descriptive statistics to find the mean, frequency and standard deviation using the Statistical Package for the Social Sciences (SPSS). The overall receptive and productive vocabulary sizes of participants were

also analyzed to indicate the difference between them. *T*-Test was performed on the results of VST and VLCPT to find out how significant the difference between them was. The qualitative interview data was analyzed to examine the context of vocabulary learning of Afghan students.

Results

This section will attempt to answer the research questions, starting with the first one. The question was: What is the size of participants' receptive and productive vocabulary? The receptive vocabulary size of the participants was tested through VST. The total receptive vocabulary size of the participants fluctuated from 2300 to 7400 with the overall mean of (M = 4278). Among the 54 participants, just 4 were able to achieve a total receptive vocabulary scores above 6000. The percentile was calculated to understand the ratio of participants' success. The calculation shows that 90% of the participants scored below 5600, 75% scored below 4700, 50% of participants scored below 4200 and 25% participants scored below 3700. The complete table of receptive vocabulary test results is available in Appendix 2.

The VST scores results (Receptive Vocabulary) were calculated by measuring the mean score based on every word frequency levels and they are reported in Table 3.1.

The productive vocabulary size of the participants was tested through VLCPT, A version. The total productive vocabulary size scores of participants fluctuated from 1700 to 4360 with an overall mean of (M = 3075). The percentiles were calculated to know the percentages of participants achieving higher and lower productive scores; among 54 participants

Table 3.1 Results of the receptive vocabulary means

Frequency levels	Mean score	Frequency levels	Mean score
1K	80	6K	31
2K	57	7K	34
3K	48	8K	37
4K	54	9K	28
5K	36	10K	24

Table 3.2 Results of the productive vocabulary

Frequency levels	Mean score
2K	70
3K	37
5K	25
UWL	39
10K	20

how many scored above and below the exact number. In details 90% of the participants scored below 3820, 75% participants scored below 3610, 50% participants scored below 3110 and 25% participants scored below 2820. The complete list of productive vocabulary test score is available in Appendix 3.

The VLCPT scores results (Productive vocabulary) were calculated by measuring the mean score at five word frequency levels and they are reported in Table 3.2.

The percentages of every word level show that the participants scored higher on 2K and UWL list and lower on 5K and 10K word frequency levels. At the earlier level a mean of 70 was achieved and at later level a mean of 20 was accomplished. Besides, the participants achieved a high score on the UWL list comparatively; it might be because they were exposed to academic words more than other words where they have scored less.

The second research question was: What is the difference between participants' receptive and productive vocabularies?

Descriptive statistical analysis was done on the scores of receptive and productive vocabulary. The mean of receptive vocabulary size is ($M = 4278$), while the mean size of productive vocabulary was ($M = 3075$). The mean difference between these two vocabulary sizes is ($M = 1203$). The SD for receptive vocabulary test score is (SD = 1036) and that for productive is (SD = 626). The difference between the SD of receptive and productive vocabulary is (SD = 410). These results are reported in Fig. 3.1.

In order to find the precise difference between participants' receptive and productive vocabulary sizes based on the word frequency levels, the means of those word frequency levels were measured and compared. Figure 3.2 illustrates these comparisons.

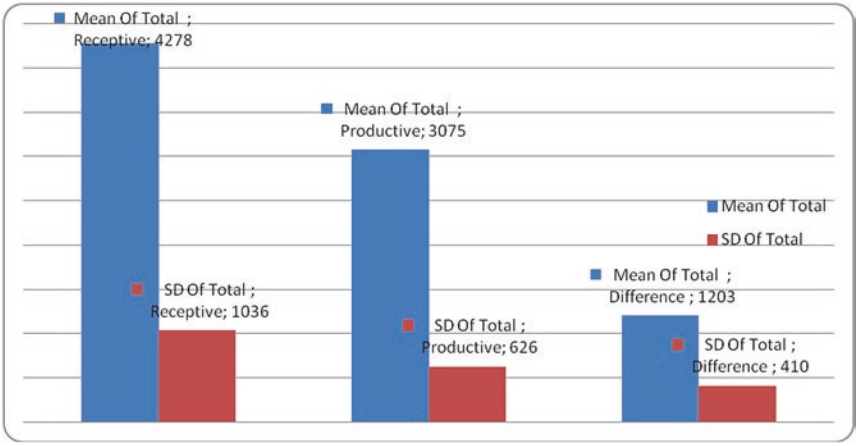

Fig. 3.1 Mean values

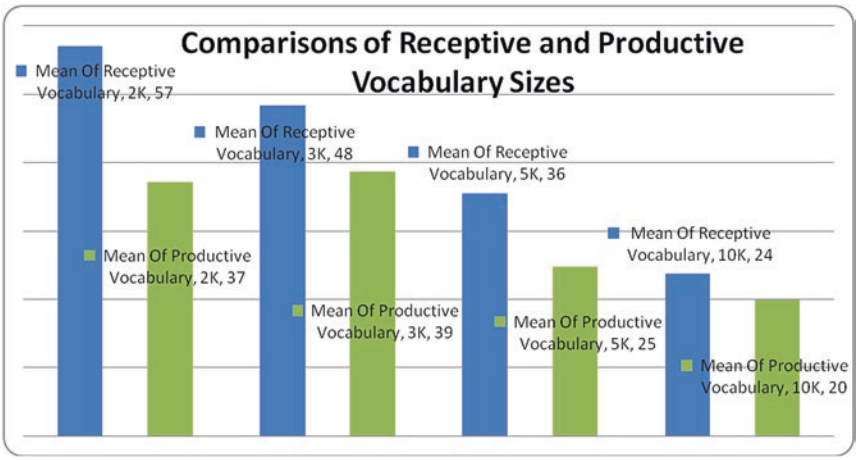

Fig. 3.2 Comparison of productive and receptive vocabulary sizes

Figure 3.2 shows that the participants did reasonably well at the level of 2K compared to other levels, even though no one reached the 80% score, which is considered a standard percentage by Nation (2009) in order to comprehend the text at the tertiary level. On this level the means for receptive is (M = 57) and for productive is (M = 37) with the

difference of 20 points. Additionally, at the level of 3K the mean difference decreases to 9 points with the means of (M = 48) for receptive and (M = 39) for productive. The same pattern of differences is evident in the comparison at the 5K level by 9 points with (M = 36) for receptive and (M = 25) for productive. The next level at 10K shows the minimum difference of just 4 points with (M = 24) for receptive and (M = 20) for productive.

Furthermore, a two-tailed paired samples t-test was conducted to find out the difference between the test scores of participants' receptive and productive vocabulary. Table 3.3 shows the findings.

The two-tailed paired samples t-test results revealed that the participants' receptive vocabulary is significantly larger (M = 4278, SD = 1036) compared to their productive vocabulary (M = 3075, SD = 626), t (53) = 12.983, p < 0.000. Moreover, in order to investigate the relationship between the receptive and productive scores of participants, a two tailed Pearson Product-Moment Correlation test was conducted using the scores. The results show a significant correlation, r = 0.772, p < 0.000 between the two types of vocabulary. The correlation result is shown in Table 3.4.

The third research question which is: what is the relationship between the students' vocabulary learning context and vocabulary sizes?

Three instructors provided the data related to the context of the participants' vocabulary learning. The interviews were taken using a semi-structured format, the protocol for which can be found in Appendix 1. The instructors mostly mentioned some strategies, e.g. word cards, word lists, creating sentences using isolated words and guessing strategies and activities for vocabulary teaching, but in reality the question still remains whether they proactively encourage vocabulary leaning strategies and activities or not.

All three instructors pointed out that they mostly have a list of difficult or new words for students to learn prior to the lessons. They said that they introduce the list at the beginning of the lessons and check which words are already known to students and which require time to acquire. Moreover, the instructors claimed to make word cards to teach new words; new words are provided on one side of the card and its English meaning on the other side. Through group work these word cards are

Table 3.3 Paired samples statistics

Paired samples statistics					
		Mean	*N*	Std. deviation	Std. error mean
Pair 1	Receptive_Vocabulary	4277.78	54	1035.897	140.968
	Productive_Vocabulary	3075.37	54	625.824	85.164

Paired samples test									
		Paired differences							
					95% confidence interval of the difference				
		Mean	Std. deviation	Std. error mean	Lower	Upper	*t*	df	Sig. (2-tailed)
Pair 1	Receptive_Vocabulary–Productive_Vocabulary	1.202E3	680.596	92.617	1016.640	1388.174	12.983	53	0.000

Table 3.4 Correlations

Correlations			
		ReceptiveVocab	ProductiveVocab
ReceptiveVocab	Pearson correlation	1	0.772[a]
	Sig. (2-tailed)		0.000
	N	54	54
ProductiveVocab	Pearson correlation	0.772[a]	1
	Sig. (2-tailed)	0.000	
	N	54	54

[a]Correlation is significant at the 0.01 level (2-tailed)

utilized to learn new vocabulary. Finally, the instructors reported asking the students to make sentences using these new words and share them with their partners for correction.

Besides, they talked about using the guessing strategy while reading the text. They said that when students are taking turns to read some portion of the text from the textbook out loud, they try to guess the meaning of the new words from context. If the student who is reading is not able to guess the correct meaning, other students are asked to help him/her. The instructor comes as the last resort, if the whole class is not able to guess the meaning of new words in the text. The students are asked at the end of this procedure to transfer this new vocabulary to their word cards.

The discussed vocabulary learning context is mostly useful for enhancing receptive vocabulary knowledge. For productive vocabulary the instructors mentioned discrete sentence writing, using the new vocabulary, sometimes paragraph writing, and just one of them stated that he uses essay writing as well. In order to develop the students' speaking skills, one interviewee mentioned the activity of oral performance (group discussions) using the new vocabulary. Looking at the participants' lower scores on the productive test, these mentioned productive vocabulary learning strategies can be assumed to be very rarely applied in classes, especially paragraph writing, essay writing and speech giving.

Discussion and Conclusions

Discussion

The results of the participants' receptive vocabulary size testing revealed a mean of (M = 4278), with 50% of participants scoring below 4200. This result means that the overall receptive vocabulary of the participants is lower than the standard threshold of 5000 words suggested by scholars in the literature. As Laufer (1992) suggests, a 5000-word and Van Zeeland and Schmitt (2012) suggested vocabulary (5000 lexical items). Moreover, Nation (2006) suggests 8000–9000 word-families to comprehend authentic prose and produce written and spoken language. Similarly, Nation (1990) also anticipates EFL high school graduates to have (7000 Lexical items). These figures help explain that the participants in the current study have far lower receptive vocabulary than would be expected of having graduated from BA (Bachelor of Arts). So, the receptive vocabulary mean (4200 words) is a little over one half of the 7000 words suggested for high school graduates by Nation (1990). Additionally, analyzing the SD of participants' receptive score at each word level shows that the higher the level, the greater the difference, except with really-low-frequency words. It might mean that the instructors and learners did not focus on high-frequency words and randomly selected words for teaching and learning. A solution is suggested by Laufer and Nation (1995) to solve this setback. He suggested a cost-benefit perspective to selecting words for teaching. From this perspective, more focus should be given to the first 2000 words, which are necessary for language use (Laufer and Nation, 1995). Once these are learned, it is easier to acquire less frequent words.

The participants' mean of productive vocabulary score is (M = 3075) with 50% of them scoring below 3110. This result indicates that the participants can actively participate in everyday conversation, but it would be difficult for them to write, especially academic texts, as their overall productive vocabulary size is below the threshold suggested by scholars. Since, research (Laufer, 1992; Nation, 2006; Schmitt, 2000; Webb, 2008) suggests 2000 words for conversational speaking, 3000 words for reading authentic text and 5000 word families for writing, the

participants' productive vocabulary is also lower than the suggested standards. A large portion of their productive vocabulary is covering the 2K word list as shown in Table 3.1. If we compare the productive results of this study with the suggested threshold of 6000–7000 words suggested by Nation (2006), it will reveal that the participants have two times smaller productive vocabulary with regard to their receptive vocabulary. The results from Table 3.1 show that the participants mostly scored higher on two word frequency lists, the 2K and the UWL.

The comparison of the participants' receptive and productive vocabulary sizes indicates that they have a larger receptive than productive vocabulary. This result is similar to the results found in the studies of a number of researchers (Fan, 2000; Hajiyeva, 2015; Harji et al., 2015; Pignot-Shahov, 2012; Waring, 1997; Webb, 2008; Wise et al., 2007; Yamamoto, 2011; Zhou, 2010). The difference between the receptive and productive vocabulary in the current study is larger compared to the difference in the mentioned studies. The current study found a larger receptive vocabulary compared to the productive one with a mean score of (M = 4278) for receptive and (M = 3075) for productive vocabulary. The results of the t-test indicate that this difference is statistically significant, with larger receptive vocabulary (M = 4278, SD = 1036) compared to the productive vocabulary (M = 3075, SD = 626), t (53) = 12,983, $p < 0.000$.

One of the most significant reasons for having a smaller receptive and productive vocabulary in this particular sample might be not having an enriched vocabulary learning context. Context can provide this exposure as Sternberg (1987) claims that most vocabulary is learnt from context. Although the results of the qualitative data analysis showed that the instructors mentioned several ways of enhancing the vocabulary learning context, those classroom activities do not seem to have been as fruitful as desired.

Furthermore, based on the results of the receptive and productive vocabulary scores, it can be concluded that the participants might not be fully exposed to a rich vocabulary learning context as emphasized by Sternberg (1987), Nation (2013) and Thornbury (2002), who claimed that most of the vocabulary is learnt from context. Although the classroom vocabulary leaning context poses its own questions of whether the

learners receive enough input or not, the context outside the classroom also does not seem to be rich with proper input, there are no facilities to watch English TV programs or movies. Additionally, as Gu (2003) stated, the instructors, the classmates, the classroom climate, the tradition of leaning, the syllabus/curriculum and the available opportunities for input and output inside and outside the classroom are elements of learning context. Based on the vocabulary tests results, it can be assumed that these elements of learning context were not quite modeled for the learners as suggested by Gu (2003). As a result, the participants were probably not exposed to adequate vocabulary input inside and outside the classroom and were not able to develop their vocabulary size.

Implications for the Teaching Practice

As the literature review suggested, lexical competence is at the heart of communicative competence, which is found to be wanting in Afghan tertiary students. For this reason, the Afghan policy makers, curriculum designers, administrators and instructors will need to focus considerably more on the development of student vocabulary.

First, they will need to incorporate useful vocabulary learning strategies into their class time and train the students to use various vocabulary learning strategies. Second, the authorities should include explicit vocabulary teaching for at least two semesters. Third, the students should invest more time in watching English TV and listening to English language radio channels while participating in social media communication. All of these could help them achieve greater exposure to the target language and ultimately improve their vocabulary. Finally, to understand how to adjust the above approaches to the target students, specific needs analysis should be conducted with each learner group. This chapter exemplifies how such needs analysis could be carried out, namely by assessing the leaners' vocabulary size. More information on lexical assessment is found in the chapter by Milton and Alexiou (this volume). It is hoped that these and possibly other measures could help the students increase their vocabulary and thus achieve the desired communicative competence. This would be true not just in Afghani context, but in any educational environment in which vocabulary might be an issue.

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Appendices

Appendix 1: Questions of Structured Interview

1. Is there at least one lesson goal focused directly on embedding vocabulary instruction into the lesson? If yes, can you elaborate on it?
2. Is there at least one explicit vocabulary strategy identified in the lesson plan? If yes, can you explain it?
3. Is a list of new words and other relevant words to be highlighted during the lesson provided? If yes, can you explain it?
4. Is adequate time allotted to introduce and teach new vocabulary words? If yes, can you explain it?
5. Do you select new words from the text for the lesson? If yes, can you explain it?
6. Do you include relevant words from previous lessons into the new lesson? If yes, can you explain it?
7. Do you provide explicit vocabulary strategies embedded into the content lesson? If yes, can you explain it?
8. Do you provide a list of new words students will encounter in the text? If yes, can you explain it?
9. Do you ask students to share what they already know about the meanings of new words? If yes, can you explain it?
10. Does the teacher use active and generative activities to embed and support vocabulary development during the content lesson (e.g. word sorts, games, word riddles, art/drawing, sentence challenges, etc.). If yes, can you explain it?
11. Does the teacher use informal opportunities as words arise during the lesson to explicitly teach word meaning. If yes, can you explain it?
12. Is repeated exposure to new words provided during the lesson? If yes, can you explain it?
13. Does the teacher scaffold students in developing strategies to make them independent vocabulary learners? If yes, can you explain it?

14. Does the teacher encourage students to demonstrate understanding of word meaning through a variety of oral and written activities embedded into the content lesson? If yes, can you explain it?
15. Does the teacher use formal written assessments to document student understanding? If yes, can you explain it?

Taken and adapted from: https://crmsliteracy.wikispaces.com.

Appendix 2: Receptive Vocabulary Results

No	1K	2K	3K	4K	5K	6K	7K	8K	9K	10K	Diagnostic vocab. size
1	**90**	90	90	90	60	90	60	90	30	40	7300
2	100	90	60	90	50	50	40	70	30	20	6000
3	80	70	60	70	20	30	40	60	30	30	4900
4	**90**	70	50	80	30	60	90	60	50	80	6600
5	80	40	20	30	30	10	0	20	40	20	2900
6	70	20	50	40	10	40	60	0	20	40	3500
7	**80**	50	30	30	20	40	30	40	30	20	3700
8	90	70	80	30	30	10	40	50	30	30	4600
9	90	80	40	70	50	40	50	20	20	10	4700
10	**90**	80	80	80	80	60	20	40	20	30	5800
11	80	50	60	60	20	30	40	40	20	30	4300
12	80	60	80	30	0	20	40	10	30	30	3800
13	**80**	60	50	60	30	30	40	10	20	20	4000
14	80	40	60	60	20	20	30	30	40	10	3900
15	90	80	70	90	50	30	50	40	30	10	5400
16	**80**	80	50	90	50	30	40	40	30	10	5000
17	90	80	50	70	60	50	60	50	30	20	5600
18	80	50	30	60	40	30	40	0	20	30	3800
19	**70**	60	60	80	20	20	50	30	40	30	4600
20	70	50	40	20	30	10	20	30	40	20	3300
21	70	40	30	30	30	20	20	20	40	40	3400
22	**80**	70	40	50	30	40	10	60	30	10	4200
23	80	60	60	40	30	20	40	40	20	0	3900
24	90	50	60	50	60	40	50	40	20	30	4900
25	**90**	70	40	70	40	40	20	50	40	10	4700
26	80	40	70	40	10	30	50	30	50	10	4100
27	60	50	50	60	50	70	10	60	20	30	4600
28	**80**	40	40	40	50	0	20	50	20	50	3900
29	90	70	50	60	50	60	50	40	40	20	5300
30	80	60	40	50	30	30	40	50	10	20	4100

(*continued*)

(continued)

No	1K	2K	3K	4K	5K	6K	7K	8K	9K	10K	Diagnostic vocab. size
31	90	80	60	50	30	10	40	30	30	10	4300
32	80	70	60	30	30	30	20	50	30	20	4200
33	80	60	40	70	40	20	40	30	50	20	4500
34	80	50	50	50	60	30	50	40	20	10	4400
35	60	50	20	20	40	20	20	20	20	20	2900
36	90	40	30	70	30	20	10	30	40	20	3800
37	60	50	40	20	30	20	10	40	10	20	3000
38	80	60	40	60	30	0	30	30	30	50	4100
39	100	20	30	60	40	30	20	30	20	10	3600
40	80	40	50	70	20	40	40	50	40	20	4500
41	90	70	30	20	20	20	50	10	40	10	3600
42	70	60	30	30	10	20	40	20	20	40	3400
43	100	##	80	90	90	80	40	80	40	40	7400
44	80	70	40	60	20	20	10	50	20	40	4100
45	50	60	40	80	20	40	50	60	40	30	4700
46	70	20	10	60	30	10	20	10	10	20	2600
47	90	60	40	50	50	40	30	40	10	40	4500
48	60	60	50	60	20	20	30	30	20	10	3600
49	80	70	70	40	50	50	0	20	10	10	4000
50	90	50	50	50	80	30	20	30	30	10	4400
51	70	40	60	30	30	40	20	30	40	10	3700
52	50	20	20	30	30	20	40	30	20	30	2900
53	100	50	60	50	10	10	20	10	30	30	3700
54	**50**	10	20	20	30	20	30	40	0	10	2300

Note: The significant values are bold.

Appendix 3: Productive Vocabulary Results

No	2000	3000	5000	UWL	10,000	Total productive vocabulary
1	84	46	32	48	26	3820
2	78	42	28	42	24	3500
3	82	43	29	43	22	3530
4	86	46	34	42	28	3980
5	69	36	18	37	18	2820
6	41	28	18	32	6	1700
7	42	30	17	30	11	1920
8	88	46	26	42	28	3860
9	89	48	24	48	29	3900
10	92	58	32	46	26	4100
11	78	42	28	48	26	3580

(*continued*)

(continued)

No	2000	3000	5000	UWL	10,000	Total productive vocabulary
12	52	26	16	42	16	2260
13	77	38	22	33	16	3000
14	61	28	19	36	12	2360
15	82	41	28	48	25	3610
16	78	44	22	36	21	3280
17	84	42	26	38	26	3660
18	38	32	21	28	18	2220
19	84	46	34	48	24	3780
20	68	36	22	26	20	2960
21	40	26	20	33	10	1860
22	81	45	20	41	20	3270
23	72	34	21	32	18	2920
24	79	42	35	46	25	3700
25	84	48	26	45	26	3720
26	70	42	24	38	18	3020
27	78	41	26	45	23	3410
28	62	35	28	35	18	2870
29	87	42	23	47	25	3620
30	76	45	23	42	21	3270
31	74	41	29	47	16	3110
32	71	35	26	45	25	3290
33	75	43	25	41	18	3150
34	88	31	36	33	16	3430
35	68	39	26	36	16	2910
36	74	31	22	34	18	2950
37	61	37	25	36	14	2650
38	84	27	19	39	15	2930
39	59	38	28	32	18	2840
40	82	33	28	47	28	3650
41	64	32	20	36	13	2520
42	55	28	24	32	17	2540
43	93	68	35	46	28	4360
44	72	54	32	41	25	3620
45	56	34	26	38	23	2900
46	55	27	23	26	18	2550
47	78	28	26	42	19	3120
48	58	24	21	35	18	2540
49	72	35	26	38	24	3270
50	64	23	26	38	23	2950
51	58	31	25	32	26	3010
52	40	26	16	23	15	1980
53	72	23	18	36	12	2510
54	47	21	16	37	8	1790

Appendix 4: Receptive and Production Vocabulary Ratio

No	Receptive	Productive	Ratio
1	7300	3820	2/1
2	6000	3500	12/7
3	4900	3530	7/5
4	6600	3980	5/3
5	2900	2820	1/1
6	3500	1700	2/1
7	3700	1920	2/1
8	4600	3860	6/5
9	4700	3900	6/5
10	5800	4100	7/5
11	4300	3580	6/5
12	3800	2260	5/3
13	4000	3000	4/3
14	3900	2360	5/3
15	5400	3610	3/2
16	5000	3280	3/2
17	5600	3660	3/2
18	3800	2220	12/7
19	4600	3780	11/9
20	3300	2960	10/9
21	3400	1860	11/6
22	4200	3270	9/7
23	3900	2920	4/3
24	4900	3700	4/3
25	4700	3720	5/4
26	4100	3020	4/3
27	4600	3410	4/3
28	3900	2870	4/3
29	5300	3620	3/2
30	4100	3270	5/4
31	4300	3110	11/8
32	4200	3290	9/7
33	4500	3150	10/7
34	4400	3430	9/7
35	2900	2910	1/1
36	3800	2950	9/7
37	3000	2650	9/8
38	4100	2930	7/5
39	3600	2840	5/4
40	4500	3650	5/4
41	3600	2520	10/7

(*continued*)

(continued)

No	Receptive	Productive	Ratio
42	3400	2540	4/3
43	7400	4360	5/3
44	4100	3620	9/8
45	4700	2900	13/8
46	2600	2550	1/1
47	4500	3120	13/9
48	3600	2540	10/7
49	4000	3270	11/9
50	4400	2950	3/2
51	3700	3010	11/9
52	2900	1980	3/2
53	3700	2510	3/2
54	2300	1790	9/7

4

How Does Vocabulary Knowledge Relate to Reading Comprehension?

Xuerong Wei

Introduction

Vocabulary has long been considered to be the most fundamental component of any language. Many researchers hold the view that vocabulary knowledge is a predicator of success in language learning and the relationship between vocabulary knowledge and reading comprehension has been recognized (Hirsh & Nation, 1992; Hu & Nation, 2000; Laufer, 1992; Laufer & Goldstein, 2004; Rouhi & Negari, 2013; Zhang & Anual, 2008). Laufer (1992) stated that vocabulary knowledge was indispensable for reading. In addition, Hu and Nation (2000) concluded that comprehending reading materials required readers to know at least 95% of the vocabulary in the text. Moreover, Qian (2002) held that vocabulary knowledge strongly correlated to the success in reading performance. Nassaji (2004) also believed that vocabulary knowledge was one of the resources intricately related to a learner's reading capacity.

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Although a few studies have also been conducted to investigate the relationship in China (Bai & Chen, 2005; Li, 2003; Wang, 2010; Zhang & Qiu, 2006), the findings vary and the participants of most of these studies majored in English. However, in Chinese universities, non-English college students are the majority and their performance in College English Test (CET) has been the prerequisite of being awarded the bachelor's degree in most of the universities in China (Liu, 2015) and even the requirement of being employed by some companies (Xiang, 2015; Xie, 2016; Zhang, 2014). In light of the importance of CET in China and the big proportion of reading requirement in CET, this study attempts to examine how vocabulary knowledge relates to Chinese non-English college students' reading comprehension in CET to provide pedagogical implications for college English teaching and learning in China.

Vocabulary Knowledge: Breadth and Depth

In both L1 and L2 research, a variety of researchers have discussed the definition and classification of vocabulary knowledge (Chapelle, 1998; Nation, 1990, 2001; Qian, 1999; Richards, 1976; Schmitt, 2013). The majority of the researchers in the field of vocabulary believed that knowing a word comprised various aspects and levels of knowledge. Richards (1976) assumed that knowing a word involved frequency, register, syntax, derivation, association, semantics, and polysemy. However, pronunciation, spelling, and collocation were not included in Richards' framework. Nation (1990) proposed eight types of vocabulary knowledge which language learners were required to master in their second-language acquisition, including meaning, written and spoken form, collocations, register, association, frequency, and grammatical functions of the word, which were further categorized by Nation (2001) into receptive knowledge and productive knowledge. According to Nation (2001), receptive knowledge was what learners can receive from reading and listening and productive knowledge was the language that learners produce when speaking and writing. Some aspects of vocabulary knowledge were mastered faster and earlier than others by language learners (Nation, 2001). Likewise, Schmitt and McCarthy (1997) believed that the meaning and form of a word

were acquired before collocations and register. Chapelle (1998, cited in Shen, 2008) categorized vocabulary knowledge into four aspects, which were vocabulary size, word characteristics, lexical organization, and word processing. Based on previous frameworks, Qian (2002) also developed a model of vocabulary knowledge which consisted of four dimensions: vocabulary size, depth, lexical organization, and receptive and productive knowledge.

Knowing a word involves various aspects of knowledge and vocabulary knowledge comprises two primary dimensions: breadth and depth (Read, 1988; Qian, 1999; Schmitt, 2013). According to Schmitt (2013), the breadth of vocabulary knowledge, which was also known as vocabulary size, referred to the quantity of the target words known to a language learner, including the word's pronunciation, stylistic features, and sematic relations. It seemed that 2000 words was the initial amount for a second or foreign language learner (Schmitt, 2013). In addition, according to Nation and Waring (1997), 3000 to 5000 word families, which included base words and their inflected and derived forms (Schmitt, 2013), were a prerequisite if a leaner wanted to access authentic written materials. In addition, Hazenberg and Hulstijn (1996) claimed that in addition to specialized vocabulary in particular subjects, university textbooks contained nearly 10,000 word families. Moreover, Nation and Waring (1997) indicated that an adult native speaker might develop a vocabulary size of around 15,000 to 20,000 word families.

Depth of vocabulary knowledge was simply defined by Schmitt (2013) as how well a learner knew the target words, which was related to "the quality of vocabulary knowledge" (Read, 1993). Likewise, Milton (2009) suggested that the deep knowledge of a word enabled learners to use a word in an appropriate way. It is a consensus that knowing a word does not only mean knowing its meaning in a particular context, but also knowing its pronunciation, spelling, collocations, synonyms, register and other aspects (Milton, 2009; Read, 1993; Schmitt, 2013).

Milton (2009) claimed that it made no sense to separate the depth and breadth of vocabulary knowledge. In recent decades, a considerable number of studies has been conducted on the relationship between the two dimensions of vocabulary knowledge. The findings of Qian's (2002) study on the relationship between vocabulary size and depth showed that

the correlation between these two dimensions was positively significant, with a correlation coefficient of 0.78 and 0.82 for Korean and Chinese respondents, respectively. Qian (2002) was supported by Read (2004) who also believed that the distinction of vocabulary knowledge was more obvious for learners at the beginning level, but the two dimensions tend to converge as learners' proficiency levels increase (Read, 2004). Similar results were reported by Rashidi and Khosravi (2010), who administered two vocabulary tests to measure language learners' vocabulary size (Vocabulary Levels Test) and their mastery of the deep knowledge of vocabulary (Word Associate Test). The Pearson correlational analyses of their study showed a high correlation of 0.81 between the scores on the two tests ($p < 0.01$), indicating that there was a significant correlation between the two dimensions of vocabulary knowledge (Rashidi & Khosravi, 2010).

Vocabulary Knowledge and Reading Comprehension

Although it is claimed that grammatical knowledge accounted for the greatest among predicting variables of reading comprehension (Kaivanpanah & Zandi, 2009), some researchers believed that vocabulary knowledge contributed more to language learner's understanding of written materials. Zhang (2012) conducted a study on the effects of vocabulary and grammar on reading comprehension and found that vocabulary knowledge was more predictive in reading comprehension than grammatical knowledge. In line with theorizing on the important role of vocabulary in language learning, numerous studies have found that vocabulary knowledge is one of the essential components of reading comprehension. According to Schmitt (2013), reading was the primary input in vocabulary acquisition, in that reading provided learners with adequate exposure. Conversely, knowing a certain number of words might facilitate the comprehension of reading materials. Zhang and Anual (2008) found that a large number of unknown words might restrict language learner's understanding of written materials. Likewise, Moghadam (2012) suggested that a vocabulary size of 2000 might help second language learners understand nearly 80% of the running text.

Similarly, Nation and Waring (1997) indicated that knowing at least 3000 high-frequency words facilitated the comprehension of a minimum of 95% of a written material.

To support the view that vocabulary knowledge plays a significant role in the predication of reading comprehension, Qian (2002) conducted a study with 44 Korean students and 33 Chinese students to validate the predicative value of scores of TOEFL vocabulary items on their reading comprehension. Findings suggested that both depth and breadth of vocabulary knowledge can predict students' academic reading performance (Qian, 2002). Similarly, the results of Zhang and Anual's (2008) study also showed that vocabulary knowledge at the 2000-word and 3000-word levels was correlated to students' reading ability. In the study conducted on undergraduate students of Bangkok University, it was also found that there was significantly positive correlation between their English vocabulary size and reading comprehension (Pringprom, 2011).

It is understood that vocabulary knowledge is closely related to a language learner's reading comprehension. However, the scholars have not reached a consensus on which dimension of vocabulary knowledge contributes more to a language learner's reading comprehension. Rashidi and Khosravi (2010) conducted a study on Iranian EFL learners to explore which aspect of vocabulary knowledge was a better predictor of language learners' understanding of L2 written materials. The findings of their study indicated that while vocabulary size was strongly related to learners' reading comprehension, learners who were more proficient in terms of the vocabulary depth performed better on reading comprehension (Rashidi & Khosravi, 2010). Likewise, Kaivanpanah and Zandi (2009) concluded that depth of vocabulary knowledge was more significantly related to reading comprehension. Similar results were found in the studies of Bai and Chen (2005) and Zhang and Qiu (2006) who concluded that vocabulary knowledge correlated more to English-major college students' performance at Test for English Majors.

However, Li (2003) argued that the highest correlation was found between vocabulary breadth and reading comprehension. Similarly, Rouhi and Negari (2013) argued that although both size and depth of vocabulary knowledge were important in reading comprehension performance, breadth correlated more significantly to the learners' success at reading

tasks than depth. Likewise, the study by Farvardin and Koosha (2011) showed that there were positive correlations between vocabulary knowledge and reading comprehension as well as between vocabulary breadth and reading comprehension, with the former being more pronounced.

Although the role of vocabulary knowledge in reading comprehension has drawn the attention of many language researchers, few studies have been conducted on how vocabulary knowledge relates to Chinese language learner's reading comprehension at College English Test (CET) and which aspects of vocabulary knowledge contribute more to reading comprehension. Therefore, this study purports to explore the relationship between Chinses non-English-major college students' vocabulary knowledge and their reading comprehension at CET by addressing the following research questions:

1. To what extent is there a relationship between the breadth and depth of vocabulary knowledge?
2. How does the breadth of vocabulary knowledge of Chinese non-English-major freshmen relate to their reading comprehension in CET-4?
3. How does the depth of vocabulary knowledge of Chinese non-English-major freshmen relate to their reading comprehension in CET-4?
4. Which aspect of vocabulary knowledge contributes more to Chinese non-English-major freshmen's reading comprehension in CET-4?

Methodology

Participants

The participants in this study were 57 freshmen, 26 males and 29 females, who had an English-as-second-language learning experience of at least 12 years, from Huaihai Institute of Technology. The participants were chosen from two classes who were majoring in Management and Civil Engineering, respectively. Both groups of participants were taught by the same teacher who was teaching college English to non-English major freshmen. All of the participants participated in the College English Test (Band 4) in June, 2015.

Instruments

The instruments used in this project were Vocabulary Size Test (VST), Word Associate Test (WAT), and Reading Comprehension Test.

Vocabulary Size Test

The breadth of vocabulary knowledge of participants was measured by Vocabulary Size Test (VST), which was developed by Nation and Beglar in 2007 (available at https://www.lextutor.ca/tests/vst/). According to Nation and Beglar (2007), VST, which has a high level of validity, is intended to measure test takers' receptive vocabulary knowledge in reading rather than listening, speaking, and writing vocabulary size. As Nation and Beglar (2007) stated, VST is presented in a multiple-choice format. Test takers are required to select the best answer from the four choices but only one correct answer can explain its meaning in the given context. The score for each item is one point, meaning a vocabulary size of 100 words. The maximum score is 14,000 points, representing a size of 14,000 word families.

Word Associate Test

Word Associate Test (WAT), which was developed by Read (1993), was used to measure the depth of vocabulary knowledge, mainly meaning and collocation (available at https://www.lextutor.ca/tests/wat/). According to Read (1995, cited in Qian, 2002), Word Associate Test is intended to measure the depth of test takers' receptive vocabulary knowledge by measuring word associations: synonymy, polysemy, and collocation. Word Associate Test has high reliability with the correlation coefficient of 0.93 (Read, 1993, cited in Qian, 2002). The Word Associate Test is composed of 40 items, each of which contains one stimulus word and two boxes below the stimulus word. All of the stimulus words are adjectives. Each of the boxes consist of four words with four correct answers in total. However, the answers are not evenly distributed in the two boxes. According to Qian (1999), the left box

contains one to three synonyms of the stimulus word. In other words, one to three words in the left box can explain the meaning of the stimulus word. In the right box, there are one to three nouns which can collocate with the stimulus word (Qian, 2002). As Qian (2002) stated, although all stimulus words were adjectives, the nouns were measured indirectly simultaneously. The answers which are arranged in this form can effectively decrease the chances of guessing (Qian, 2002). The total score of WAT is 160 points.

Reading Comprehension Test

The Reading Comprehension Test was taken from the College English Test (written test) band four (CET-4), which is a national English-as-a-foreign-language test in Chinese universities. CET is intended to measure non-English major undergraduates' English proficiency, which is comprised of three sections: listening, reading, and writing and translation. According to Jin (2014), passing CET-4 is one of the requirements for graduation among most universities in China. The correlation coefficient of the validity and reliability of the CET-4 reading are 0.7 and 0.9, respectively (Gui, 2012). The reading section of CET-4 is designed to measure college students' reading comprehension ability, containing three tasks: cloze, fast reading (skimming and scanning), and intensive reading. All of the three tasks are in the form of multiple-choice with 10 items for each task. The score for each item is 8.3 points. Test takers' final score ranges from 0 to 249 points in the reading section (Liu, 2015). The length of reading comprehension section in the CET-4 is 40 minutes.

Scores obtained from VST and WAT were used as independent variables and the scores on CET-4 Reading Test was used as the dependent variable to examine the correlations and the predictive power of vocabulary knowledge in Chinese college students' reading comprehension performance.

Procedure

The purpose of this research and the requirements of the two vocabulary tests were relayed to both, the teacher, who was also the invigilator, and the participants. VST and WAT were administered to participants in the computer room because both the tests used were online versions. Before

taking the tests, all the 57 participants were told that these two vocabulary tests were not related to the final evaluation of their academic performance. The time limit for the two tests was 1 hour. Participants were required to send their scores of the two vocabulary tests as well as their CET-4 scores achieved in June 2015 to the invigilator, after which the invigilator sent the collected data to the researcher within one week.

The data obtained was input into EXCEL manually and imported to SPSS 22.0 for statistical analysis. Two-tailed Pearson product moment coefficient equation was used to explore the correlation among the three variables and Multiple Regression was employed for investigating the predictive power of the two aspects of vocabulary knowledge on participants' reading performance.

Results and Discussion

Descriptive Statistics

The results of the descriptive statistics are presented in Table 4.1, which indicates that the mean score along with minimum and maximum indicates normal distributions in students' scores in the three tests.

Table 4.1 shows that the average mark of the CET-4 Reading test was 169.45 points and the minimum and maximum scores were 137 and 218 points, respectively, indicating that the participants achieved 68.05% on the reading comprehension test on average with 32.53% between the minimum and the maximum. The mean score of the Word Associate Test was 61.88, with a discrepancy of 54 (minimum = 35, maximum = 89) between the minimum and maximum. It is shown in Table 4.1 that students of the two classes had a vocabulary size of around 5300 word families (mean = 5381.63), which reaches the recommended vocabulary size of

Table 4.1 Descriptive statistics of students' performance on VST, WAT, and CET-4 reading

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Reading	49	81.0	137.0	218.0	169.449	19.1704
WAT	57	54	35	89	61.88	12.902
VST	49	5000	3600	8600	5381.63	1064.909

Chinese College English. According to *College English Curriculum Requirements* (2007), students should acquire a total of 4795 words and 700 phrases, including those that are covered in high school English courses. However, there was a considerable discrepancy between the maximum and minimum (maximum = 8600, minimum = 3600, Range = 5000).

Correlations

A two-paired Pearson product moment coefficient equation was employed to investigate relationships between vocabulary knowledge and students' performance on CET-4 reading test which were addressed in research questions 1, 2, and 3. The correlations were shown in Table 4.2.

Table 4.2 Correlations between vocabulary depth, vocabulary size, and reading performance

		Reading	WAT	VST
Reading	Pearson Correlation			
	Sig. (2-tailed)			
	N			
WAT	Pearson Correlation	0.692**		
	Sig. (2-tailed)	0.000		
	N	49		
VST	Pearson Correlation	0.737**	0.770**	
	Sig. (2-tailed)	0.000	0.000	
	N	49	49	

**Correlation is significant at the 0.01 level (2-tailed)

The results of the two-tailed Pearson correlations in Table 4.2 indicates that there are significantly positive correlations between participants' vocabulary knowledge and their performance on CET-4 reading comprehension, with the correlation coefficients of above 0.65 ($p < 0.01$). The strongest correlation is found between VS and DVK, with a correlation coefficient of 0.77 ($p < 0.01$), which indicates that the two aspects of vocabulary knowledge are closely related. This finding is in line with some studies conducted by Milton (2009, cited in Alavi & Akbarian, 2012), Nurweni and Read (1999), Qian (2002), Read (2004), and Rashidi and Khosravi (2010). This result implies that a language learner with a certain vocabulary size might possess certain depth knowledge and the two aspects of vocabulary knowledge should not be separated in language teaching and learning. The high correlation might be due to the overlap between the two vocabulary tests. Although WAT mainly measures word associations like synonymy, polysemy, and collocation, it meanwhile measures the primary meaning of the word that VS mainly intends to test. According to Qian (1999), primary meaning is, in some cases, a part of synonymy and polysemy, which sometimes might affect the knowledge of collocation.

The results presented in Table 4.2 also illustrate that the correlation between VST and reading comprehension ($r = 0.74$) is slightly higher than that between WAT and reading comprehension ($r = 0.70$), indicating that participants with larger vocabulary size might perform better in reading comprehension. This finding is consistent with studies of Tannenbaum (2006), Farvardin and Koosha (2011), and Rouhi and Negari (2013). Although Qian (2002) found that the correlation was slightly higher between reading comprehension and the depth of vocabulary knowledge than vocabulary size, the result of *t*-tests indicated that both of the two dimensions of vocabulary knowledge were related to reading comprehension, to a similar degree of strength.

Prediction

In order to explore the predictive power of participants' vocabulary size (VS) and the depth of vocabulary knowledge (DVK) on their reading comprehension and to investigate which dimension of vocabulary

knowledge contributes more to predicting reading comprehension, a Multiple Regression was used in this study. Scores of WAT and VST were employed as two independent variables and that of reading comprehension test was used as the dependent variable.

Table 4.3 reveals that the predictive power of DVK on reading comprehension was slightly weaker than that of VS, with the beta of DVK and VS being 0.31 and 0.50, respectively. This result showed that vocabulary size is a better predictor of participants' reading performance (beta = 0.50), indicating that there is an increase in the scores in the reading test by 0.50 for each increased point in vocabulary size test.

As illustrated in Table 4.4, the R^2 of VS and DVK are 0.54 and 0.48, indicating that VS and DVK alone can explain 54% and 48% of the variance in the reading performance, respectively. According to Table 4.4, it can be found that the combination of the two predictive variables has stronger predictive power than only using one variable (R^2 = 0.58). In addition, Table 4.4 shows that the R^2 changes are different when the two independent variables are entered at different order. When the VS is entered first followed by DVK, the R^2 is 0.04, which means that DVK contributes an additional 4% to the prediction on reading performance. When the order is changed, the R^2 change is increased to 0.10, suggesting that VS provides an extra 10% of the variance of reading performance.

Table 4.3 Coefficients of the predictive power of VS and DVK on reading comprehension performance

Predicators	Beta	*t*-value	Sig.
VS	0.501	3.36	0.002
DVK	0.306	2.05	0.046

$P < 0.01$

Table 4.4 Multiple Regression of the predictors and the reading performance

Predictors	*R*	R^2	Adjusted R^2	R^2 Change
1-VS	0.737	0.543	0.534	
2-VS, DVK	0.763	0.582	0.564	0.039
1-DVK	0.692	0.479	0.468	
2-DVK, VS	0.763	0.582	0.564	0.103

Dependent variable: reading comprehension performance

The results of the regression analysis suggest that both VS and DVK have the predictive power in participants' reading performance. Vocabulary size is a more powerful predictor of reading comprehension, indicating that participants who have a larger vocabulary size might outperform those with deeper vocabulary knowledge but smaller vocabulary size. This result is consistent with that of Farvardin and Koosha (2011), who also investigated freshmen's vocabulary knowledge and reported that vocabulary breadth contributed more to the predication of reading comprehension than depth.

Furthermore, the combination of the two dimensions of vocabulary knowledge contributed more than either one alone to participants' reading comprehension performance. This finding supports Qian (2002) who suggested that the two dimensions of vocabulary knowledge were equally important in reading and language learners should not separate vocabulary size and depth.

The findings of this study are in accordance with previous research results in that high intercorrelations are found between reading comprehension, vocabulary size, and the depth of vocabulary knowledge (Nurweni & Read, 1999; Qian, 2002; Rashidi & Khosravi, 2010; Read, 2004). However, the inconsistency between the results of this study and that of previous research indicates some limitations in the methodology of this study. First, only 57 participants were employed and all of the participants were freshmen from only two majors in the selected university. Therefore, the results of this study cannot be used for generalization. In addition, due to the limit in the administration of the two vocabulary tests, there was no specific requirement for time allocation to each test, which could lead to a circumstance where some participants who were weaker at English could not finish the tests within one hour. Therefore, in future studies, a pilot test is necessary. What is more, the two vocabulary tests used might not measure participants' real vocabulary knowledge although the validity and reliability of these two measures are proven to be high. Participants might have opportunities to guess the answers in that they were told that the scores of the two vocabulary tests would not affect the evaluation of their academic performance. Additionally, this study only investigates the role of vocabulary knowledge in reading. Whether there are correlations between vocabulary knowledge and other language skills such as listening, speaking, writing, needs to be examined.

Conclusion

This paper investigated the interrelationship among vocabulary breadth, depth, and reading test performance of Chinese college students. Participants' vocabulary size and their depth knowledge were measured by Nation and Beglar's (2007) Vocabulary Size Test (VST) and Read's (1988) Word Associate Test (WAT), respectively. The Reading Comprehension Test was taken from College English Test (Band Four). The findings show that the three variables are significantly and positively interrelated, with the highest correlation between breadth and depth of the vocabulary knowledge. It also demonstrates that vocabulary knowledge can predict the scores of reading performance in CET-4. With regard to the predictive power of vocabulary knowledge, it is found that the vocabulary size is a more powerful predictor of reading performance than the depth of vocabulary knowledge. In addition, it is concluded that the combination of the two aspects of vocabulary knowledge contributes the most to participants' reading comprehension performance. These findings might be applied to the teaching of vocabulary for Chinese EFL college students. However, it is conceivable that the results might equally apply to other instructional contexts worldwide.

Pedagogical Suggestions

The score of College English Test, especially band four, is set to be one of the requirements of graduation or to be awarded a bachelor's degree in some universities in China (Liu, 2015). In addition, passing the CET has been the requirement for employment and settlement in some cities (Liu, 2007; Xiang, 2015; Xie, 2016; Zhang, 2014). However, the average pass rate for CET-4 is around 60%, despite some college students having tried several times to pass the test (Liu, 2007). Since vocabulary knowledge plays an important role in students' CET-4 reading comprehension, both vocabulary size and depth should be emphasized in the teaching and learning of English as a second language. It is suggested that material designers and English teachers explore and employ various vocabulary

teaching activities and strategies to help students enlarge their vocabulary size and enhance their understanding of the deeper knowledge of each word such as designing appropriate materials to familiarize students with word associations like synonymy, polysemy, and collocation rather than single word meanings. Meanwhile, students are also advised to develop effective learning strategies to comprehend and memorize different aspects of vocabulary knowledge.

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Part II

Understanding Vocabulary Learning Strategies in Another Language

5

Vocabulary Size and Strategies of English Learners in Armenia: What the Research Says

Marina Dodigovic, Rubina Gasparyan, Syuzanna Torosyan, and Mary Alik Karamanoukian

Introduction

Vocabulary knowledge is not only an indicator of language ability (Nation, 2006), but it is also a good predictor of academic success (Masrai & Milton, 2017). Research shows that all language skills benefit from vocabulary knowledge (Nation, 2013), which is evidenced through vocabulary size (Schmitt, 2000), amongst other measures. It is deemed that the knowledge of the so-called core English vocabulary, which amounts to approximately 3000 most frequent words, would equip a learner with a basic ability to communicate in speech or writing

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(Thornbury, 2002). However, sources (Laufer & Ravenhorst-Kalovski, 2010; Nation, 2006), claim a much larger vocabulary size is needed for tertiary studies in the English medium (5000–8000 words). Hence, understanding a learner's vocabulary size at the needs analysis level is very important. One of the most common ways of doing this is through the Vocabulary Size Test (VST) (Nation & Beglar, 2007).

There is evidence that approaches to language teaching can greatly affect the vocabulary knowledge of a learner. One of the ways this can happen is through the choice of vocabulary to teach. Initially, learners should be exposed to two to three thousand most frequent words, which are reinforced through repeated encounters (Nation, 2006). Trying to teach less frequent words before the more frequent words are mastered is counterproductive, as "the effort given to the learning of new words will be wasted if this is not followed up by later meetings with the words" (Nation, 1990, p. 7). Another way the approach to teaching can impact vocabulary growth in language learners is through teaching methods. For example, the Grammar-Translation Method may limit vocabulary growth (Dodigovic, Ma, & Jing, 2017) and so could other methods which focus primarily on grammar at the expense of vocabulary (Dodigovic, 2005).

On the other hand, what facilitates vocabulary growth are factors such as repeated exposure to the most useful vocabulary in context, the use of teaching materials containing the vocabulary that is right for the learner, decontaxtualised vocabulary learning and the application of adequate vocabulary learning strategies (Nation, 2013). In this chapter, the term vocabulary leaning strategies refers to the procedures used by language learners to commit vocabulary to memory and learn how to use it more accurately or appropriately. It is often believed that poor strategies are partly responsible for failure to learn vocabulary (Pavičić Takač, 2008). Moreover, it is also believed that effective strategies can be taught to learners in order to facilitate their vocabulary learning (Pavičić Takač, 2008; Nation, 2013). Studies in this area often fail to quantify vocabulary learning (e.g. Pavičić Takač, 2008), as a result of which the relationship between the use of various strategies and vocabulary learning success remains elusive. This is particularly troubling in developing countries, such as Armenia, where resources are scarce, especially in the public sector, and much could be riding on the adequate strategy use and training.

This would be particularly true in case a positive correlation between strategies and vocabulary learning could be established.

To pursue the above goal, this study uses the learners' vocabulary size as evidence of successful vocabulary learning. Vocabulary size is the number of words a learner knows, which is measured by means of a lexical test, such as Vocabulary Size Test or VST (Nation & Beglar, 2007). Such tests most commonly register the size of the so-called receptive vocabulary (Nation, 2006), that is the vocabulary successfully used in receptive skills of reading and listening. If a learner understands a word receptively in a written or spoken context or even outside a context, it is not certain that he or she would also be able to recall it at will and successfully apply while speaking or writing, which ability is referred to as productive vocabulary knowledge (Schmitt, 2000). Thus, it is often assumed that receptive vocabulary is larger than productive vocabulary (Schmitt, 2000).

Therefore, this chapter examines the receptive vocabulary sizes of English learners in two different learning contexts in Armenia: the system of public schools and universities vs. an American university and its Experimental English Classes available to young learners. Evidence from a recent study (Ohanyan, 2018) suggests that much of the teaching within the public school context follows the patterns of the obsolete Grammar-Translation Method. Other studies (e.g. Dodigovic, 2005) indicate that the teaching materials or the way they are used may also be less conducive to vocabulary growth. Therefore, the English teaching context in Armenia requires urgent attention to teaching methodology and materials, both achievable through increased emphasis on teacher training. Such training could include emphasis on vocabulary learning strategies, if these are proven to positively impact vocabulary learning. This study seeks to investigate such interdependencies.

Vocabulary Learning and Strategies

Literature often distinguishes between incidental and deliberate vocabulary learning (Nation, 2006). While deliberate learning requires conscious effort, vocabulary acquisition which occurs seemingly spontaneously, often during the reading process, is referred to as incidental vocabulary

learning (Wesche & Paribakht, 1999). Not much is known about the processes that facilitate incidental vocabulary learning, although there have been attempts to explain them. The uptake of new vocabulary usually necessitates recurring input processing during repeated encounters with the word (Nation, 2006). Hatch and Brown (1995) liken the word-learning process to a "series of sieves" for each new word as it seeks to become a part of the learner's lexicon (p. 373).

Incidental vocabulary learning is deemed to have the advantage of being contextualized, and thus giving the learner a rich sense of word use and meaning (Huckin & Coady, 1999). Moreover, it is found to be pedagogically efficient by combining the activities of vocabulary acquisition and practicing language skills, while allowing the learners to choose their own topics and thus become more engaged (Huckin & Coady, 1999).

In contrast, deliberate learning is often associated with the use of strategies. Gu and Johnson (1996), for example, classify vocabulary learning strategies into four main categories: metacognitive, cognitive, memory and activation strategies. Metacognitive strategies are based on selective attention in addition to self-initiation strategies, while cognitive strategies pertain to the use of dictionaries, guessing and note-taking. Memory strategies comprise rehearsal and encoding. Lastly, activation pertains to the use of newly learned words in a variety of contexts. In contrast, Schmitt (1997) divides vocabulary learning strategies into two main groups. The first group, including determination and some social strategies, determines the meaning of the vocabulary items that the learner is exposed to for the first time. The second group is comprised of strategies that consolidate the meaning of words. It includes the remaining social strategies, alongside cognitive, metacognitive and memory strategies.

While there is an abundance of interest in vocabulary learning strategies, not much is known about the relationship between the strategies and vocabulary growth. A possible connection between vocabulary learning and strategy use is the one between lexical proficiency and the variety of strategies used. Lexical proficiency is simply taken as a proof of vocabulary learning success. Thus, it is assumed that learners with a higher rate of vocabulary learning success employ a wider variety of strategies (Griffiths, 2006). In contrast, others claim that no connection can be found between vocabulary learning success and strategy use. An example

of this is a recent study by Alemi and Tayebi (2011), which suggests that there is no relationship between the strategies used and vocabulary acquisition. Therefore, the aim of the present study is to revisit the issue of strategy use and its relationship with the vocabulary acquisition success. A positive correlation between the two variables would indicate not only that successful vocabulary learners employ effective strategies, but also that some strategies might be more effective than others. Identifying the successful strategies is an important objective, potentially leading to advances in vocabulary research and language teaching practice. Similarly, any results suggesting that vocabulary learning strategies do not make a difference would steer the teaching practice toward procedures that prove more effective in terms of vocabulary learning.

Vocabulary Learning Strategies—Taxonomies

Vocabulary learning strategies (VLS) are sometimes seen as a spinoff from general language learning strategies (Oxford, 1990; Schmitt, 2000), and those can be considered to be associated with learning strategies in the most general sense (Nation, 2001). VLS have been of interest to vocabulary learning researchers for some time now, as they are deemed to facilitate the vocabulary learning process (Schmitt, 2000; Thornbury, 2002; Pavičić Takač, 2008).

It is impossible to understand the development of VLS without understanding how they draw on taxonomies of language learning strategies in general. Some of the best known language learning typologies are, for example, O'Malley and Chamot's (1990) and Oxford's (1990). O'Malley and Chamot (1990) developed a taxonomy using cognitive psychology as a point of departure. It includes three broad categories: Metacognitive Strategies, Cognitive Strategies, and Social and/or Affective Strategies. Metacognitive Strategies relate to higher-order executive skills, utilising what is known about cognitive processes while trying to regulate language learning through planning, monitoring and evaluating. Cognitive Strategies are applied to incoming information in ways which facilitate learning (O'Malley & Chamot, 1990). Social and/or Affective Strategies regulate the interaction with others or controlling the affect through the

mind. This is just a broad categorization, which is in the original work further subdivided into types, which are not discussed here.

Another influential classification of LLS is Oxford's (1990) taxonomy, which is divided into Direct Strategies and Indirect Strategies. The former are used for handling the language being learned and are comprised of Memory Strategies, Cognitive Strategies and Compensation Strategies. The latter manage the learning of the target language and are comprised of Metacognitive Strategies, Affective Strategies and Social Strategies.

In the more specific area of VLS, there have been efforts to devise a lexis-specific taxonomy of strategies. Hence, there are several prominent solutions, including Stoffer's (1995), Schmitt's (1997) and Nation's (2001). Of the three, Schmitt's (1997) VLS taxonomy is the one that clearly builds on the achievements of cognitive approaches to classifying LLS. Schmitt (1997) thus asserts that Oxford's classification method overall matches VLS but is still not suitable in two aspects: (a) the lack of individual discovery of meaning strategies, (b) the difficulties of assigning strategies to one category only.

Based on the above, Schmitt (1997) introduces five categories of specific vocabulary learning strategies, including Determination strategies (DET), Social strategies (SOC), Memory strategies (MEM), Cognitive strategies (COG) and Metacognitive strategies (MET). To exemplify, determination strategies can take on the form of guessing from the context in order to learn a new word's meaning. Social strategies basically mean communication with others to facilitate vocabulary understanding and learning. Memory strategies could refer to the usage of imagery or grouping in order to connect new words with already existing ones. Cognitive strategies are generally based on repetition and other more mechanical approaches to vocabulary rehearsal. Metacognitive strategies support other strategies through planning and evaluating. All of the above fall into two main groups—discovery and consolidation strategies—where the former are designed to understand a word's meaning, while the latter seek to permanently integrate the word into the long term memory of a learner (Schmitt, 2000). Similar to Oxford's (1990), one of the peculiarities of this taxonomy is that the social strategies spill across the borderline between discovery and consolidation strategies, which is not necessarily a weakness, but could be confusing at times.

Unlike cognitive-theory-influenced taxonomies, such as Oxford's (1990) or Schmitt's (1997), which use cognitive processes as a point of departure, Nation's (2001) taxonomy of VLS is based on various aspects of word knowledge and contexts of vocabulary learning. It sees the strategies as divided into three overarching classes, including 'planning', 'source' and 'processes', each of which is further subdivided into key strategies. Planning for example refers to making decisions regarding the place, time and frequency of attention focus on the respective vocabulary item. Among those are choosing words, aspects of word knowledge or strategies and making plans for repetition. Sources refer to means of obtaining information about a lexical item. This information can include any of the aspects of knowing a word which can come from the word form, the context, a reference resource such as dictionary or glossary. It could also be derived through analogy and affinity with other languages. Process is the final category in Nation's (2001) VLS taxonomy and stands for facilitating word learning by noticing, retrieving and generating strategies.

Whereas the taxonomies laid out so far mostly arise from deductive theoretical deliberations, Stoffer's (1995) study is empirically inductive. Thus, Stoffer (1995) built an inventory of nine categories bottom-up, using the responses to a questionnaire of her own. The nine categories resulting from a factor analysis are strategies including authentic language use, creative activities, self-motivation, creating mental linkages, memory, visual and auditory processing, physical action, overcoming anxiety and organizing words. A few other models are described in Manoukyan (this volume).

Research Related to Strategies

While all of the above are exceedingly useful ways of thinking about strategies, most research into the use of strategies has been conducted using models based on O'Malley and Chamot (1990) or Schmitt (1997). The research into VLS has mainly gone in two directions: (1) developing valid and reliable instruments to register vocabulary learning strategies in users, and ultimately obtaining VLS inventories of learner populations; and (2) assessing the effectiveness of such strategies when used by learners, i.e.

their productivity in terms of vocabulary learning. A clear example of the former is the 2017 study by Xu and Hsu (2017), who mainly rely on O'Malley and Chamot (1990) and Schmitt's (1997) taxonomies to develop their own instruments. On the other hand, studies by Pavičić Takač (2008) and Manukyan (this volume) exhibit elements of both. However, the effectiveness of the strategies is completed by way of self-assessment, which is a somewhat subjective means of assessment (Hughes, 2003). Finally, studies such as the one by Alemi and Tayebi (2011) use an assessment tool to evaluate the learning success and hence the usefulness of various strategies.

Xu and Hsu (2017) divide VLS into four main categories and 25 subcategories. The four overarching categories are Metacognitive Strategies, Cognitive Strategies, Memory Strategies and Socio-affective Strategies. Metacognitive Strategies are derived from O'Malley and Chamot (1990) and point to higher-order critical thinking skills. This includes applying knowledge about cognitive processes and trying to regulate language learning through planning, monitoring and evaluating. Metacognitive strategies include three subcategories: Paying Attention, Arranging and Planning, and Monitoring and Evaluation. Since vocabulary learning is closely related to memory and its mechanisms, Memory Strategies are separated from Cognitive Strategies. Their definition of Cognitive Strategies is borrowed from Schmitt (1997), framing them as 'not so focused on manipulative mental processing, including guessing, repetition and using mechanical means to study vocabulary.' Cognitive Strategies comprise guessing, using dictionaries, using study aids, taking notes, repetition, word lists and activation. In contrast, Memory Strategies are supposed to link new vocabulary to the existing knowledge of the learner (Schmitt, 1997). These include Grouping, Word Structure, Association/Elaboration, Imagery, Visual Encoding, Auditory Encoding, Semantic Encoding, Contextual Encoding, Structured Reviewing, Using Keywords, Paraphrasing, and Physical Action. The authors conclude that their inventory is a valid and reliable instrument of registering Chinese learners' VLS.

Since Manukyan's study is described in detail in the respective chapter of this volume, the review here will focus on the three studies described by Pavičić Takač (2008). The first of these contains a validation of a questionnaire designed to collect VLS inventories from primary school students in Croatia. The second study is simultaneously the most interesting

of the three, as it investigates the relationship between VLS and vocabulary teaching strategies (VTS) used by language teachers. The results indicate that there does not seem to be a direct causal link between the strategies used by students to learn new vocabulary and the strategies used by their teachers to teach the same vocabulary. This study throws some doubt on the idea that VSL could or should be taught to language students, as this might not even be possible. Dodigovic (2013) expresses similar concerns in a study in which learners are explicitly instructed to create electronic word cards, including being trained in how to create them. The results of Dodigovic's (2013) study suggest that even though familiar with certain strategies such as creating word cards, learners do not necessarily know how to use the strategies appropriately, thus exhibiting more advances in vocabulary learning when dependent on familiar strategies, whatever those might be. The final of the three studies by Pavičić Takač (2008) refers to the relationship between VSL used by the same students in two different foreign languages. The results suggest that there is no significant difference between the two sets of VLS.

In contrast, the study by Alemi and Tayebi (2011) explicitly investigates the effectiveness of vocabulary learning strategies by employing a vocabulary test to determine whether any of the preselected target words, previously unknown to the learners, have been acquired. The final test was conducted with a sample of 30 learners, and three days after the treatment. While studies like this one are particularly important in attempting to understand the merits of vocabulary learning strategies, one of the limitations of Alemi and Tayebi's (2011) research design is the small sample of participants. Another limitation is the fact that the post-test designed to measure the learning effect was administered only three days after the treatment. This meant that neither vocabulary consolidation (Schmitt, 2000) nor the attrition processes (Nation, 1999) could effectively take place before the post-test administration. It is also not clear what kind of learning burden (Nation, 2006) the target words presented to the learners. Nevertheless, they find the correlation between vocabulary learning and strategies to be weak. Because of this, they seem to feel the need to construct a justification for the usefulness of strategies relying on arguments other than their own results. It would therefore seem that Alemi and Tayebi (2011) exclude the possibility of a relationship between vocabulary learning and strategy.

In addition, some early studies, such as Ahmed (1989), Porte (1988) and Graham (1997), have investigated the connection between the learning success and the use of strategies. According to Ahmed (1989), successful learners are aware of the use of strategies, which would imply a metacognitive approach according to Schmitt (1997). Porte (1988) found that weak learners do not know how to utilise strategies, which complements Ahmed's (1989) conclusions. Graham (1997) on the other hand found that successful learners used more complex strategies, which is also what Schmitt (2000) believes. Further information on the topic can be found in Manoukyan (this volume).

To conclude, a number of authors have used a VLS taxonomy to assess the learners' use of vocabulary learning strategies, but their research is not primarily related to the effectiveness of these strategies, although the participants in some studies were invited to offer a subjective perspective on the usefulness of VLS. Only a handful of studies have used a "hard data" (Johns, 1997) approach to investigate the relationship between vocabulary learning success and strategy. However, conclusive evidence of the strength of such relationship is still out of reach. Surprisingly, it is nonetheless assumed that strategies are helpful in the vocabulary learning process, and more complex strategies are deemed to positively impact the learning process.

Consequently, Thompson (1987) highlights the importance of understanding the effectiveness of individual learning strategies, since those could be integrated into teaching plans and thus help students learn more vocabulary faster. Similarly, Oxford and Scarcella (1994) believe that instruction in learning strategies could improve the learning outcomes. All of the above underscores the pressing need to continue research into the effectiveness of VLS.

Research Questions

Arising from the problem of the severe limitations in a number of instructional contexts in Armenia in which any improvement in procedure might compensate for the lack of other resources, and based on the reviewed literature, the research questions in this study are as follows:

1. What metacognitive, cognitive, memory and other strategies of coping with new English vocabulary are being used by Armenian students in the context of instructed language acquisition?
2. How do these strategies correlate with the participants' vocabulary size?
3. Which of these strategies are the most effective and which ones are the least effective?

The following section explains how these are to be addressed.

Methodology

Rationale

The rationale of this study is to identify those vocabulary strategies that are conducive to vocabulary learning. It is believed that such strategies could subsequently be taught to less successful language learners. To achieve its purpose, the study addresses the three research questions which are listed above. The first question is designed to identify the inventory of VLS used by EFL learners in the Armenian context and hence relies on interview and survey conducted with the participants as described below. The second question entails a reliance on the participants' vocabulary size as a measure of vocabulary learning success and therefore depends on the use of the Vocabulary Size Test with all participants. The third and final question, i.e. the one about the relative effectiveness of strategies, as well as a part of the second question regarding the relationship between VLS use and vocabulary size, is answered by way of statistical analysis, using the correlation between the vocabulary size and strategy use as a measure of effectiveness. Each of the aspects is described below.

Participants

Participants were initially 349 high school and tertiary learners of English in educational settings, such as language schools or universities in three different cities in Armenia, 133 in the private sector and 216 in the

public sector. Of those, only 311 complete sets of results were accepted into the study. The ages of the participants ranged from 12 to 30, while the duration of English instruction ranged between 4 and 12 years of study. Both genders were represented. The participants' English proficiency was lower intermediate, intermediate or advanced, in order to match the vocabulary span tested by the instrument described below, namely Vocabulary Size Test (VST). The participants' lexical proficiency was first estimated based on the school grade, which roughly represents the length of learning English. This was then confirmed via the VST.

Instruments

The study took on a mixed-method approach, relying on qualitative, but also quantitative data. For this reason, the instruments utilised were survey and interview, used to collect both qualitative and quantitative data, and the Vocabulary Size Test or VST (Nation & Beglar, 2007), used to collect quantitative data. The first of the three instruments was the VST.

Vocabulary Size Test was required to measure the size of the participants' vocabulary. According to Beglar (2010, p. 103), "the Vocabulary Size Test was developed to provide a reliable, accurate, and comprehensive measure of second language English learners' written receptive vocabulary size from the first 1000 to the fourteenth 1000-word families of English." It was expected that the results of this test would contribute toward the understanding of firstly the participants' knowledge of vocabulary and secondly the effectiveness of various strategies, the latter through statistical analysis, which pertain to research question two. The results of the test were also used to select a representative sub-sample for the interview, including large, small and medium-size vocabularies.

Based on the test results, 12 participants were selected for the interview (4 with a high score, 4 with a medium score and 4 with a low score). The questions pertained to how the participants study English vocabulary. Based on the interview results, the existing survey was reviewed for possible adjustment. The survey was then administered to all the participants who had taken the test in order to answer research question one and an aspect of research question two. The final survey questions

(attached) are based on literature (Schmitt, 1997; 2000) as well as on the interview, the protocol for which is also found in the appendix.

The survey is based on Schmitt's (1997) VLS taxonomy, including a number of questions for each of the five main strategy categories. Thus, questions 1–9 refer to types of determination strategies (DET), with the embedded questions 6 and 7 about social strategies (SOC), while questions 10–17 relate to memory strategies (MEM). Questions 18–21 are associated with cognitive strategies, whereas questions 22–24 ask about metacognitive strategies. Questions are based on literature review and the interviews with the selected students.

Procedures

The qualitative data on vocabulary learning strategies was collected through the interviews and survey. The findings were compared with the existing strategy taxonomies by Schmitt (1997) and Xu and Hsie (2017) to find out whether any new strategies should be added to the existing taxonomy or the taxonomy should be revised altogether. The emerging taxonomy was then used to establish learning patterns. The vocabulary size data was correlated with the learning strategy patterns using the Person-Product-Moment correlation formula, which is commonly used in educational settings, to identify the ones that correlate well with large vocabulary sizes. These were deemed likely to be more successful strategies. Conversely, the ones that correlate strongly with low vocabulary sizes might be interpreted as less successful vocabulary learning strategies.

The test took 45 minutes to complete, the survey 15–20 minutes, while the interview took 15–20 minutes. The participants were given the principal investigator's contact details for follow-up or withdrawal. The test was administered to the participants on school premises and so were the survey questionnaires.

The study plan was previously vetted by the institutional review board (IRB) of the sponsoring university, making sure that all procedures were compliant with the international human subject regulations. The IRB permission was granted and the research tasks proceeded according to the approved plan.

Results

This section presents the results according to the chronological sequence of the procedures used to answer the research questions, while the discussion, in an evaluative effort, attempts to relate the data with the research questions directly. As previously discussed, there are three research questions in this study, the first of which seeks to establish the inventory of VLS, with the second seeking to investigate the relationship between the strategies used and vocabulary size. Based on the outcome of the first two, the third and final question seeks to assess the effectiveness of individual strategies. The effectiveness of the procedure required the vocabulary size as a measure of vocabulary learning success to be addressed first, as it was important that the VLS information be elicited equitably across the levels of lexical proficiency. This was achieved by selecting interviewees based on their VST score. Hence, the VST scores are presented first.

VST Scores

The VST scores also roughly overlap with proficiency levels (advanced, intermediate and lower intermediate). As can be seen in Table 5.1, seeking to identify a group of highly effective vocabulary learners, the scores from the private sector were compared to those in the public sector. With the mean of 7909.02, participants in the private sector tested higher than the participants in the public sector, who scored a mean of 5266.20. This difference was found to be statistically significant ($p < 0.0001$).

Table 5.1 Private vs. public education

Group	Private	Public
Mean	7909.02	5266.2
SD	2594.09	2520.23
SEM	224.94	171.48
N	133	216

Table 5.2 Tertiary vs. secondary education

Group	Uni all	HS all
Mean	8350.59	5604.55
SD	2954.96	2474.55
SEM	320.51	152.30
N	85	264

School vs. University

Another way to identify a group of particularly successful vocabulary learners was to compare the VST scores of university students, due to their length of exposure to the English language, with those of high school students. This is presented in Table 5.2. Eighty-five participants from the total sample were university students, whereas 264 were high school students. With a mean score of 8350.59, the university students tested better than the high school students, whose mean score was 5604.55 words. Since this difference was found to be highly statistically significant ($p < 0.0001$), it could be established that university students generally overlap with advanced English level, while high school students mostly fall into the categories of intermediate and lower intermediate. This set of results indicated that interview sample could be selected from the tertiary level students to represent advanced level and from the high school subset to represent the intermediate and lower intermediate levels.

Private Schools vs. Private University

Similarly, in comparison between tertiary and secondary students within the private sector subsample, which is presented in Table 5.3, tertiary students tested statistically significantly better ($p < 0.0001$).

Public Schools vs. State University

However, this was not the case in the public sector subsample, where there was no statistically significant difference between the two groups ($p = 0.5207$). The breakdown of this comparison can be seen in Table 5.4.

Table 5.3 Private university vs. private school

Group	Private university	Private schools
Mean	10,651.06	6410.47
SD	1532.95	1658
SEM	223.6	178.79
N	47	86

Table 5.4 Public school vs. state university

Group	Group One	Group Two
Mean	5215.17	5505.26
SD	2703.78	1365.59
SEM	202.66	221.53
N	178	38

Table 5.5 Private schools vs. public schools

Group	Group One	Group Two
Mean	6410.47	5215.17
SD	1658.00	2703.78
SEM	178.79	202.66
N	86	178

Private Schools vs. Public Schools

In the secondary education subsample, the private schools outperformed the public schools at a statistically significant level ($p = 0.0002$). This comparison is reflected in Table 5.5.

Private University vs. Public University

The difference between the VST results of private and state universities, reflected in Table 5.6, was found to be statistically significant ($p < 0.0001$).

The presented datasets indicate that the length of exposure to English was not necessarily connected with a higher rate of vocabulary learning success, whereas the type of schooling received proved relevant under all circumstances.

Table 5.6 Private university vs. state university

Group	Private uni	State uni
Mean	10,651.06	5505.26
SD	1532.95	1365.59
SEM	223.60	221.53
N	47	38

Interviews

In order to address the second part of research question two, which seeks to relate vocabulary learning success to the VLS used, interviews were conducted with an equal number of representatives at each level of proficiency (advanced, intermediate and lower intermediate, 3 for each level), which also roughly corresponded with the VST scores. This explains why the VST had to precede the strategy survey. Interview results indicate that all the strategies named by the participants are found in Schmitt's (1997) taxonomy. Thus, participants bring up extensive reading, watching TL movies, listening to songs, guessing word meaning, looking them up, asking friends or teachers about the meaning of the word, writing down the word and/or the meaning, i.e. definition using bilingual or monolingual dictionaries, searching for examples, learning words from lists, keeping an entry log of newly learned words, repetition, use in spontaneous communication. The only slight difference with regard to Schmitt's taxonomy might have been the explicit naming of online dictionaries and search engines for determination. However, it was deemed that this information just added another layer of specificity which might be unhelpful in survey design, as Schmitt's use of dictionary and context covered both aspects in a more general sense. Hence, the interview results did not lead to changes in survey design.

Survey

The survey investigating the frequency of use of a variety of strategies indicated that the most frequently used strategies were determination strategies (DET = 825), closely followed by social strategies (SOC = 793),

cognitive strategies (COG = 778.75), memory strategies (MEM = 771) and finally metacognitive strategies (MET = 769.6). Students in the private sector used strategies more frequently than the public sector students, but not at a statistically significant level ($p = 0.3385$).

The results of the interview and survey so far address research question one, i.e. the one seeking to identify the VLS inventory in the Armenian context of EFL instruction, while the following statistical analysis serves the purpose of answering one aspect of research question two.

Relationship Between Strategy and Vocabulary Size

The relationship of the VST use frequency and vocabulary size was calculated using Pearson's product moment correlation coefficient. There was some positive correlation between the use of strategies and vocabulary size for all participants at a statistically significant level, but no significance was found in either of the two subsamples, i.e. successful learners vs. the less successful ones.

The correlation coefficient for all participants was $r = 0.2367$, which indicates a weak positive correlation. The *P*-Value is 0.000036, which means that the result is significant at $p < 0.05$. Within the subgroup of participants with significantly larger vocabulary, $r = 0.1716$. The *P*-Value is 0.094578, which means that the result is not significant at $p < 0.05$. Within the subsample of participants with significantly smaller vocabulary size, $r = 0.0707$. The *P*-Value is 0.317382, meaning that the result is not significant at $p < 0.05$.

The advanced group used more higher-order strategies (cognitive and metacognitive), but not statistically significantly so ($p = 0.1354$).

Discussion

This study has attempted to answer three research questions, the first of which targeted the inventory of VLS in the Armenian EFL context, the second examined the strength of the relationship between the individual

strategies and the vocabulary learning success, while the third one sought to identify the most successful strategies, based on their use by successful vocabulary learners.

Regarding the first question, i.e. the type of VLS, it seems that Armenian students across the sample use a variety of learning strategies, almost to the same extent. While no strategies are underrepresented overall, students with larger vocabulary sizes tend to use more cognitive and in particular metacognitive strategies, although not statistically significantly so, than the rest of the sample. This confirms the findings by Graham (1997) and Manoukyan (this volume), according to whom advanced learners used more complex strategies.

Regarding the second research question, i.e. the correlation of strategies with participants' vocabulary size, the only albeit weak correlation found to be significant was the one across the entire sample, whereas the subsamples, likely due to small size, exhibited no statistical significance in their weak correlations between VLS use and vocabulary size. This to some extent echoes the study by Alemi and Tayebi (2011), according to which there was no relationship between the strategies used and vocabulary learning success, although the methodologies of the two studies are different. Conversely, the statistical significance of the weak correlation between the variables across the entire sample is partially in line with the previous findings by Ahmed (1989), Porte (1988) and Graham (1997), which points to the existence of some kind of relationship between the two variables.

This brings us to the third and final research question regarding the relative effectiveness of strategies. As the results, similar to Graham (1997) and Manoukyan (this volume), point to the more frequent use of complex strategies by the participants, such as the cognitive and metacognitive strategies, it would be tempting to conclude that the use of such strategies leads to greater vocabulary knowledge, thus making them more successful. However, it may well be that learners at different levels of lexical proficiency require a different set of strategies. Thus Nation (2006; 2013) recommends explicit teaching and deliberate learning of vocabulary at a very basic level, below the 2000 most frequent words. Such learning of words that would be difficult to connect into rich and meaningful contexts or paradigms would mostly depend on determination,

social and perhaps memory strategies, which might explain the relative scarcity of cognitive and metacognitive strategy use at this level.

While the learners with pronouncedly higher vocabulary sizes do tend to use more cognitive and metacognitive strategies, the difference is not statistically significant. This may point to the fact that such learners could already have rich semantic maps and might acquire more words incidentally, rather than having to engage in a deliberate effort which also depends on the use of strategies. This would equally well explain the lack of statistically significant reliance on strategies in vocabulary learning among the advanced learners.

This study has limited itself to only one VLS taxonomy, i.e. Schmitt's (1997), which is actually customary in VLS research, although comparison of taxonomies within the same study could help tease out the ones that could be more suitable, at least for any given population of learners. In addition, due to the use of interview and survey, only the so-called "soft" data (Johns, 1997) could be collected regarding the use of strategies.

One obvious shortcoming of this approach is the fact that the dataset is completely dependent on the accuracy of the participants' recollection of what they actually do when learning vocabulary, and even on their desire to please the researchers by selecting what might be perceived as a socially more prestigious option. A think-aloud protocol might therefore yield more reliable data, although it was an impracticable option within this study. However, VLS studies generally depend on data obtained through interviews and surveys. Hence, this study is no exception.

Moreover, the study used a single measure of lexical proficiency, i.e. the size of a learner's vocabulary. This measure seems justified, as it tends to have a close affinity with the leaners' actual level of attainment. However, the length and the intensity of English instruction and learning has not been explicitly taken into account for all participants, although the results of the interviews would suggest that learners at private institutions receive more English instruction per week than those at public schools. However, it is possible, though not very likely, that some of the public school students might have been receiving additional private English instruction as well.

Another set of variables that have not been investigated in this study are individual differences, which some researchers find to be key to

learning habits and success (Pavičić Takač, 2008). This would have required a very complex study structure and research mechanism, though potentially making the study impracticable within the given support framework. Further research might be able to address the above limitations and also take their agenda beyond the delimitations of the present study.

Conclusions and Implications for the Teaching Practice

It would seem that, generally speaking, vocabulary learning strategies are not crucial to vocabulary learning success, although they might be helpful. However, not all strategies might be equally useful to all learners, but different sets of strategies might be more appropriate at different levels of attainment. Thus the less advanced leaners might potentially benefit more from a subset of determination strategies, i.e. trying to understand a new word, and some memory and cognitive strategies, such as using word cards or learning from lists. In contrast, the more advanced learners could be helped by using more cognitive and metacognitive strategies, such as purposely practicing the word or continuing to study it over time.

Therefore, it would seem that some instruction or training in vocabulary learning strategies (VLS) could be helpful to learners at all levels. Of course, teachers would need to understand the underpinning vocabulary research and theory in order to be able to decide which set of strategies would be most helpful to their students. Research (Dodigovic, 2005) has shown that students are often challenged to learn words which are beyond their level of lexical proficiency and hence not really learnable until the respective lexical gaps have been filled (Nation, 2006; 2013). Therefore, teachers would do well to take a twofold approach: carefully selecting the words that are set as learning goals for their students, perhaps using one of the vocabulary size tests available free of charge (https://www.lextutor.ca/tests/), and even more carefully selecting the matching learning strategies to train the students toward. In order to tease those out, the teachers could use any of the available questionnaires (see the literature review

above), including the one found in the appendix to this chapter. Such procedures are considered best practice in vocabulary needs analysis.

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Appendices

Interview Protocol

1. How long have you been learning English?
2. Do you like learning new English words? Why or why not?
3. What do you do when you encounter an English word that you don't understand?
4. How do you study English vocabulary?
5. Could you elaborate on that?
6. Could you give an example?

Vocabulary Survey

How many times per day does each of the following occur? Write down the approximate number after each of the statements below.

1. It bothers me when I don't understand an English word, so I must find out the meaning of every unknown word.
2. I only look up an English word when it's crucial for the comprehension of the text I'm reading.

3. I like to look up unknown words in a simple Armenian-English dictionary.
4. I like to look up unknown words in an English-English dictionary.
5. I like to guess the meaning of unknown words from the context.
6. I like to ask friends about the meaning of unknown words.
7. I like to ask the teacher about the meaning of unknown words.
8. I go with the first Armenian word mentioned in the dictionary.
9. I explore the different meanings of the new word and try to identify the correct one for my context.
10. I purposely look for examples of this word in different contexts to identify the best fit for my context.
11. I try to find out how the word is pronounced.
12. I try to take note of its spelling.
13. I like to know what its English synonyms are.
14. I like to be able to understand how this word is similar or different to its English synonyms.
15. I like to know what part of speech it is.
16. I like to know what forms it can take.
17. I write the translation above the new word on the page of the text I'm reading.
18. Every now and then, I enter the new word and its meaning in my own vocabulary journal.
19. I try to remember the newly learned word each time I encounter it.
20. I try to relate the new word to familiar sounds or concepts.
21. I like to learn set phrases and idiomatic expressions involving the use of the new word.
22. I try to use the new word in my own speech or writing.
23. I learn a lot from feedback I get from teachers or native speakers when I try to use the word on my own.
24. I do other things to help me remember the word I've just learned.

6

Vocabulary Learning Strategies Used by Armenian EFL Students

Hripsime Manukyan

Introduction

Vocabulary learning plays an indispensable role in language acquisition, whether the language is first, second, or foreign (Decarrico, 2001). Developing vocabulary knowledge is vital and at the same time a constant challenge for EFL/ESL learners. One possible way to overcome this challenge and gain rich vocabulary knowledge is to employ vocabulary learning strategies in the language learning process (Teng, 2015). Vocabulary learning strategies are ways of dealing with a large number of unknown words, and the facilitation of those in vocabulary instruction can enable learners to memorize and retain words easily.

A review of the current literature on vocabulary learning and teaching reveals various studies of vocabulary learning strategies (e.g. Kafipour & Naveh, 2011; Park, 2001; Rabadi, 2016; Teng, 2015). The studies have shown that vocabulary learning strategies can serve as tools to boost

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vocabulary knowledge by making vocabulary learning and teaching more productive and successful. Despite the fact that the interest in studying vocabulary learning strategies has increased among researchers, few studies have investigated vocabulary learning strategies in an Armenian learning environment.

This lack of research seems to be a genuinely missed opportunity, as according to some of the anecdotal evidence vocabulary teaching receives little attention in the Armenian high school curriculum. Since it would appear that the grammar–translation method is the preferred instructional approach to EFL (Ohanyan, 2018), the main emphasis of the lesson is on grammar and translation. Additionally, in spite of the fact that keeping a notebook for daily vocabulary is popular among Armenian learners, they are not provided with sufficient strategies to learn and consolidate the newly learnt words, and later to put them into practice. In this respect, this study aims at identifying vocabulary learning strategies used by Armenian EFL students in order to better understand what strategies might need to be taught explicitly for the purpose of improving vocabulary growth. Therefore, this study attempts to highlight the importance of strategy in vocabulary learning for the sake of both EFL students and teachers.

Literature Review

Vocabulary learning is a constant process which takes time and practice. EFL/ESL learners can encounter different problems trying to learn, remember, or retain a great deal of vocabulary items. The use of vocabulary learning strategies (VLS) can be of great help for learners to learn, remember, or retain vocabulary items. Hedge (2001) believes that learners need to be familiar with different VLS to enrich their vocabulary knowledge and solve the problems faced during vocabulary learning. Schmitt (2000) states that "one approach to facilitate vocabulary learning is vocabulary learning strategies" (p. 132). Therefore, vocabulary learning strategies are important for EFL/ESL learners as they can not only help language learners cope with obstacles encountered in learning

vocabulary, but they can also give them a chance to increase the efficiency of language learning (Dóczi, 2011; Saengpakdeejit, 2014).

Researchers define the concept of vocabulary learning strategies (VLS) differently. According to Nation (2013), it is not easy to come up with the definition of a strategy; in order to get the teachers' interest, a strategy should have the following features: "involve choice, be complex, require knowledge and benefit from training and increase the efficiency and effectiveness of vocabulary learning and vocabulary use" (p. 326). There are diverse strategies that comprise these features, and learners not only need to be taught these strategies but also gain a skill to apply them. Pavičić Takač (2008) points out that VLS are "specific strategies utilized in the isolated task of learning vocabulary in the target language" and learners could utilize them in other fields of language learning (p. 52).

According to Catalán (2003 cited in Saengpakdeejit, 2014, p. 1102), vocabulary learning strategies are knowledge about "the mechanisms (process, strategies)" used for learning vocabulary and "steps or actions taken by students" aimed at finding out the meaning of unfamiliar words, retaining them in long-term memory, recalling them whenever they need, and using them in spoken and written production (p. 1102). On the other hand, Nation (2013) holds the idea that "vocabulary learning strategies are a part of language learning strategies, which in turn, are the part of general learning strategies" (p. 230). It is broadly accepted that students use certain learning strategies to improve their lexical competences. Both language learning strategies and vocabulary learning strategies promote learning autonomy and pave the way for learners to become independent learners. Consequently, vocabulary learning strategies are vital in light of the fact that they are steps for autonomous learning which in turn is significant for the development of learners' lexical competence (Teng, 2015).

Studies on vocabulary learning strategies have shown that learners use different strategies (Asgari & Mustapha, 2011; Dóczi, 2011; Hong Lip, 2009; Kafipour & Naveh, 2011; Rabadi, 2016; Teng, 2015). However Schmitt (2000) mentions that the learners mostly tend to use simple strategies such as memorization, repetition, and taking notes. Learners find it beneficial to use "shallow" strategies despite the fact that they "may be less effective than deeper ones" (Schmitt, 2000, p. 132). Indeed,

studies on "deeper" vocabulary learning strategies (Cohen & Aphek, 1981; Hulstijn, 1997), such as forming word associations or keyword method, i.e. "combining phonological form and meaning of a word in a mental image" (Schmitt, 2000, p. 121), have shown that these strategies can be better for word retention than rote memorization. Furthermore, "shallower" strategies, such as "asking classmates for the meaning of a word" or "using a dictionary", may be more applicable for beginners, as they include less material that may distract them, while high-level learners can have an advantage of using context, which usually is a part of "deeper" strategies (Schmitt, 2000).

However, while introducing vocabulary learning strategies to EFL/ESL learners, teachers need to take account of learners themselves and their overall learning context (Schmitt, 2000, 2007). Besides, learners' proficiency level is important as well, as one study shows (Cohen & Aphek, 1981) that the use of word lists is better for lower proficiency learners, while contextualized words are better for higher proficiency learners. Other factors to take into account are L1 and culture of learners, their motivation and purpose for learning a language, the task and text being used, and the nature of the foreign language (Schmitt, 2000, 2007).

Research on Vocabulary Learning Strategies

Vocabulary learning strategies are not only gaining attention from teachers and learners but also have become a popular area of study for researchers in the past two decades (Gu, 2010). Considerable research was done to investigate EFL/ESL learners' vocabulary learning strategy use from different perspectives. In addition, each study displays different results by studying VLS in a particular context. For instance, Nosidlak (2013) conducted a study on 102 students of English philology at the Pedagogical University of Cracow, Poland. The aim of the research was to study advanced students' vocabulary learning strategy use, and determine whether there is a relationship between the type of strategy use and students' English proficiency level. Vocabulary learning strategy questionnaire with 13 questions was employed for data collection. The findings of the research revealed that advanced students use similar kinds of

strategies, such as using dictionary, using context, asking someone the meaning of the words, using imagination, learning the spelling and pronunciation of the words, and creating mental linkage. Besides, the findings also indicated that the higher the learners' level of proficiency, the fewer types of strategies were applied for learning vocabulary items.

Asgari and Mustapha (2011) studied Malaysian ESL students' vocabulary learning strategy use by applying qualitative research design. For data collection, ten students were interviewed separately. As a result of the interviews, it became clear that Malaysian students mostly used determination strategies such as guessing from context, using dictionaries, social strategies like practicing the new learnt words in groups, asking classmates for a meaning of a word, interacting with native speakers, and metacognitive strategies particularly using English-language media (e.g., songs, movies, computer games).

Teng (2015) explored the correlation between direct and indirect vocabulary learning strategies and the breadth and depth of vocabulary knowledge by investigating 145 low-proficiency EFL students. A questionnaire, Vocabulary Levels Test and Word Associates Test were administrated to collect data. The study results showed that students used more direct vocabulary learning strategies (direct cognitive creative strategy, direct cognitive practice, direct memory applying strategy, etc.), than indirect ones (indirect social cooperation, indirect metacognitive planning, indirect metacognitive monitoring and evaluating, etc.). Besides, the result of the Pearson correlation indicated that there was a significant positive correlation between students' test scores and strategy use, i.e., the higher the students' test score was, the more vocabulary learning strategies they applied during vocabulary learning.

In his study, Askar (2013) investigated ELT (English language teaching) and ELL (English language and literature) students' vocabulary learning strategy use as well as the impact of gender and grade levels on strategy use. Four hundred forty-six undergraduate students were studied and the data was collected with the help of a five-point Likert scale questionnaire with 36 items. The findings of the study indicated that cognitive strategies were the most frequently used strategies among students, while social strategies were the least used ones. The findings also revealed that female students used vocabulary learning strategies more frequently

than male students. Furthermore, there was a significant difference between the students' grade levels and strategy use.

Thus, reviewing current literature and considering the results of research studies, this study attempts to answer the following research questions:

- What types of vocabulary learning strategies do Armenian EFL students commonly use?
- What are the most useful vocabulary learning strategies according to Armenian EFL students' perception?

Methodology

In this study, mixed methods was employed. Mixed methods research is the collection and analysis of quantitative and qualitative data in one study. The purpose of mixing the two methods is to get an elaborate and comprehensive understanding of a target phenomenon by studying it from different angles as well as to validate findings through triangulation (Dörnyei, 2007).

The typology of this research was QUAN + qual, i.e. both types of data were collected concurrently (Dörnyei, 2007). According to the concurrent procedure, the researcher collects quantitative and qualitative data in order to give an inclusive analysis of the research area. The researcher collects both types of data simultaneously, and then he/she integrates the obtained information in the analysis of the overall results (Creswell, 2003). Furthermore, based on the applied typology, in this study, the quantitative data was the core of the analysis.

Setting and Participants

The research was conducted at one of the high schools in Armenia. Participants in this study were 50 students. All of the students were EFL learners studying at an Armenian high school. The participants' mother tongue was Armenian. The gender distribution was 18 males and 32

females. The age of the participants ranged from 15 to 17, and they were at the elementary level of English. The research applied convenience sampling because of geographical proximity and easy accessibility of the location (Dörnyei, 2007).

Instruments

In this study, a questionnaire for quantitative data collection and a semi-structured interview for qualitative data collection were employed.

Questionnaires are the most widely used instruments applied to measure learners' strategy use. One of the ways to design questionnaires is to convert an existing taxonomy of vocabulary learning strategies into self-reporting questionnaires (Xu & Hsu, 2017). In this study, the aim of the questionnaire was to find out what types of VLS Armenian EFL students commonly use. The form of the questionnaire was taken and adapted from Hong Lip (2009), and was based on Schmitt's (2000) classification of VLS.

The questionnaire had two sections. In the first section, questions were formulated to get background information (age, gender, and years of studying English) about participants. The second section contained questions about vocabulary learning strategies. The questionnaire included 27 items. It included five cognitive strategies, nine determination strategies, ten memory strategies, and three social strategies. Cronbach's Alpha was run to test the reliability of the questionnaire. Cronbach's Alpha value was 0.77, which shows a good reliability.

A five-point Likert scale was applied to determine the frequency of the students' strategy use. The reason for choosing Likert scale was that the questions in the questionnaire were in a statement form and had five options (1 = never, 2 = sometimes, 3 = often, 4 = usually, and 5 = always). Students were asked to read each statement and rate the relevant choice. In addition, all the questions in the questionnaire were written both in English and Armenian, so as to eliminate the possibility of misunderstanding each statement.

The format of a semi-structured interview is open ended, i.e. during an interview the interviewer not only provides probes and direction but also

let interviewees elaborate on certain topics (Dörnyei, 2007). In this study, the aim of the semi-structured interview was to find out strategies perceived as the most useful by Armenian EFL students. Five open-ended questions and ten yes/no statements were selected for the interview.

Data Collection Procedure

First, the researcher got an oral permission from the headmaster of high schools. Then, the researcher started to collect data from students. The students were asked to give their consent verbally. Before administrating the questionnaire, the researcher introduced the aim of the study and the purpose of the questionnaire in the study. The researcher also informed the students that the survey was anonymous and conducted on a voluntary basis. Hard copies of the questionnaire were distributed to those students who agreed to take part in the survey. The respondents were given about 20 minutes to read all the questions and give their responses.

Then, 15 students were chosen randomly from different grades for the interview. The interview was carried out either in English or Armenian depending on the students' English proficiency level. The students were interviewed on a voluntary basis. It took about 30 minutes to interview each participant. The interview was conducted either in English or in Armenian, and was audio-recorded with the students' consent. During the interview, the names of the participants were not recorded, thus the information remained confidential.

Data Analysis

Both quantitative and qualitative data were collected for this study. The quantitative data collected through questionnaire was analyzed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics were used to find out frequencies, percentages, means and standard deviations of the variables.

Content analysis was employed to analyze the qualitative data obtained from semi-structured interviews. The first step of content analysis was to

transform the obtained data into a textual form. After data transcription, a coding technique (such as initial and second-level coding) was applied to identify key points and categories in the data.

Results

Quantitative Data Analysis

In order to answer the first research question, which is *What types of vocabulary learning strategies do Armenian EFL students commonly use?*, quantitative data was collected though a questionnaire. The first step of quantitative data analysis was to determine the overall strategy use of the proposed sample. Table 6.1 displays the overall strategy use of the participants.

As displayed in Table 6.1, the mean score of the participants' overall strategy use is 2.61 (*SD* = 0.52), which indicates medium strategy use.

The next step was to find out the most and least frequently used strategies among four vocabulary learning strategy categories. Table 6.2 shows the result of descriptive statistics of the four categories of vocabulary learning strategies.

According to Table 6.2, social strategies (*M* = 2.84, *SD* = 0.38) were reported as the most frequently used strategies by the participants,

Table 6.1 Results of overall vocabulary learning strategies use

N	*M*	*SD*
50	2.61	0.52

Note: *N* = number of participants, *M* = mean, *SD* = standard deviation

Table 6.2 Descriptive statistics of four categories of vocabulary learning strategies

Strategy category	*N*	*M*	*SD*
Cognitive	50	2.57	0.39
Memory	50	2.53	0.50
Determination	50	2.66	0.46
Social	50	2.84	0.38

Table 6.3 Descriptive statistics of participants' cognitive strategies use

N	Strategy item	*M*	*SD*
1.	I repeat the word over and over in my mind.	2.78	1.11
2.	I spell the word over and over in my mind.	1.90	0.93
3.	I say the word over and over out loud.	2.90	1.18
4.	I write the word over and over.	2.54	1.05
5.	I remember words by doing a project.	2.74	1.12

followed by determination strategies ($M = 2.66$, $SD = 0.46$) and cognitive strategies ($M = 2.57$, $SD = 0.39$), while memory strategies ($M = 2.53$, $SD = 0.50$) were determined as the least frequently used strategies.

Then, each strategy item of four VLS categories was analyzed to reveal the most and least frequently used strategy items employed by the participants. Table 6.3 indicates the results for each item of cognitive strategies utilized by the participants.

As Table 6.3 indicates, for consolidating word meaning, students most frequently used strategy item 3, i.e. "repeatedly say the word out loud" ($M = 2.90$, $SD = 1.18$) and strategy item 1, i.e. "repeatedly say the word in mind" ($M = 2.78$, $SD = 1.11$). The least frequently used strategy was item 2 which is "repeatedly spell the word in mind" ($M = 1.90$, $SD = 0.93$).

Table 6.4 shows the results of each item of memory strategies employed by participants.

As Table 6.4 indicates the most frequently used memory strategies employed by the participants to consolidate the meaning of the words were item 1 "link the word to a visual image in mind" ($M = 3.52$, $SD = 1.28$), item 6 "remember the sentence in which the word is used" ($M = 3.00$, $SD = 1.08$), and item 7 "remember the new word together with the context where the new word occurs" ($M = 2.84$, $SD = 1.21$). The least frequently used memory strategy items were item 9 "remember words by doing dictation" ($M = 1.68$, $SD = 0.65$), item 3 "link the word to an Armenian word with similar sound" ($M = 2.24$, $SD = 1.06$), and item 2 "link the word to another English word with similar sound" ($M = 2.34$, $SD = 1.08$).

Table 6.5 presents the results for each item of the determination strategies used by the participants.

As Table 6.5 shows, among determination strategies the most frequently used items for discovering new words meaning were strategy

Table 6.4 Descriptive statistics of participants' memory strategies use

N	Strategy item	*M*	*SD*
1.	I think of an image to connect to the word.	3.52	1.28
2.	I think of an English word similar in sound.	2.34	1.08
3.	I think of an Armenian word similar in sound.	2.24	1.06
4.	I think of sound and meaning links.	2.36	1.17
5.	I put words into groups to study them.	2.48	1.12
6.	I remember the sentence featuring this word.	3.00	1.08
7.	I remember the new word together with the surrounding context.	2.84	1.21
8.	I try to use the new vocabulary in the situations I imagine.	2.72	1.26
9.	I memorize words through dictations.	1.68	0.65
10.	I memorize words through group work activities in class.	2.20	0.94

Table 6.5 Descriptive statistics of participants' determination strategies use

N	Strategy item	*M*	*SD*
1.	I analyze the word by breaking it into sounds or syllables.	1.80	0.88
2.	I analyze the word by breaking it into meaningful parts.	2.46	1.28
3.	I create my own sentences featuring the new word.	2.70	1.11
4.	I analyze the part of speech (noun, verb, adjective, etc.) of the new words.	2.06	1.15
5.	I analyze the endings, prefixes and roots of the new word.	1.90	0.97
6.	I check for the Armenian meaning of the new English word.	3.88	1.17
7.	I analyze any available visuals to guess the word.	2.88	1.23
8.	I try to guess the meaning of the new word from context.	2.96	1.27
9.	I use an English–Armenian dictionary to check the meaning of new words.	3.30	1.48

item 6 "check for the Armenian meaning of the new English word" (M = 3.88, SD = 1.17), item 9 "use an English–Armenian dictionary to check the meaning of new words" (M = 3.30, SD = 1.48), and item 8 "guess the meaning of the new word from the story" (M = 2.96, SD = 1.27). The least frequently employed determination strategies by the participants were item 1 "analyze the word by breaking into sound segments" (M = 1.80, SD = 0.88) and item 5 "analyze affixes and roots of the new word" (M = 1.90, SD = 0.97).

Table 6.6 displays the results for each item of social strategies utilized by the participants.

Table 6.6 Descriptive statistics of participants' social strategies use

N	Strategy item	*M*	*SD*
1.	I ask the teacher for the new word's synonym.	3.02	1.48
2.	I ask the teacher for a paraphrase or Armenian translation of a new word.	3.10	1.23
3.	I ask classmates for meaning of the word.	2.40	1.03

As illustrated in Table 6.6, for discovering the meaning of the new words, among the social strategies participants most frequently used item 2 "ask the teacher for a paraphrase or Armenian translation of a new word" (M = 3.10, SD = 1.23) and item 1 "ask the teacher for the new word's synonym" (M = 3.02, SD = 1.48), while the least frequently used social strategy was item 3 "ask classmates for meaning of the word" (M = 2.40, SD = 1.03).

Qualitative Data Analysis

In order to answer the second research question, which is *What are the most useful vocabulary learning strategies according to Armenian EFL students' perception?*, qualitative data was collected with the help of a semi-structured interview. Content analysis was applied to analyze the qualitative data. The results of qualitative data will be presented in accordance with interview questions. In addition, some of the most representative responses given by the participants will be introduced.

The first question of the interview sought to determine whether participants consider vocabulary learning difficult or not, and if so, how they cope with it. Nearly half of the participants found vocabulary learning difficult, and each of them noted that they used a variety of strategies (using online or printed dictionaries, making up sentences with the new words, making word lists, learning the Armenian definition of the words, etc.) to overcome its difficulty. Supporting this statement one of the participants mentioned:

> *As for me learning vocabulary is difficult, because sometimes it's hard to remember new English words. In order to make my vocabulary learning easy I use flashcards. Flashcards help me learn words more effectively, and remember them*

better. Besides, during my English classes we did a lot of writing assignments and I need to know words' spelling for doing them. Flashcards also help me learn words' spelling.

The second question of the interview focused on the participants' general use of vocabulary learning strategies. This question mainly attempted to find out the types of vocabulary learning strategies the participants employed to learn English words. The participants gave various responses to this question. Some of them mentioned that they kept a notebook, listened to English songs, and watched TED talks with an English subtitle for learning English vocabulary, while others pointed out that they read English stories or used some online applications related to vocabulary learning. Moreover, one of the participants noted:

I learn the new English words by recording them. I record the Armenian definition of the words and through listening I either say the English definition of those words or write them down. Then I open my notebook and highlight those words which I did not know.

The next question asked the participants' opinion about the extent of the usefulness of vocabulary learning strategies in the vocabulary learning process. Overall, the participants gave a positive answer to this question. Half of the participants highlighted the fact that it was very helpful to use vocabulary learning strategies as they gave them a chance to learn the vocabulary items in a better and easier way. The other half of the participants believed that it was necessary and effective to use vocabulary learning strategies because they not only helped to remember the words better, but also made their vocabulary learning more successful and productive.

Thus, it can be concluded that the Armenian students seemed to have a positive attitude towards the use of vocabulary leaning strategies.

The purpose of the last question and seven statements of the interview was to reveal those strategies which participants consider the most useful ones. Table 6.7 shows the type of strategies perceived as the most useful ones by the participants.

As Table 6.7 displays, overall nine types of strategies were determined by the participants as the most useful strategies to learn vocabulary items.

Table 6.7 The most useful vocabulary learning strategies

Types of vocabulary learning strategies
Using flashcards
Using printed or online dictionaries
Listening to English songs
Watching English TED talks or movies
Reading English stories
Keeping a vocabulary notebook
Doing self-dictation
Studying the spelling of the words

Discussion

This research attempted to answer the following research questions.

1. *What types of vocabulary learning strategies do Armenian EFL students commonly use?*
2. *What are the most useful vocabulary learning strategies according to Armenian EFL students' perception?*

In order to answer the first research question, quantitative data was collected through a questionnaire and analyzed. The mean score of the participants' overall strategy use showed that the participants of this study were medium strategy users (Oxford, 1990). This could mean that the participants were not explicitly exposed to various vocabulary learning strategies during vocabulary teaching and learning. This finding is consistent with the findings of Askar (2013), Kafipour and Naveh (2011), and Rabadi (2016). Additionally, Askar (2013) as well as Kafipour and Naveh (2011) believe that the medium use of strategies by the participants is because of their insufficient knowledge of vocabulary learning strategies.

The results of the study also revealed that during vocabulary learning the participants commonly employed social, determination, and cognitive strategies. This result is in line with the findings of the studies conducted by Askar (2013), Asgari and Mustapha (2011), and Rabadi (2016). In terms of social strategies, the participants preferred to get the meaning of the new words with the help of a teacher. They could ask the teacher either for the new word's synonym or its Armenian translation.

Hence, we can assume that there is a strong social interaction between the participants and the teacher during English classes.

Among determination strategies, the most frequently applied strategies were "using English–Armenian dictionary to check the meaning of the new words" and "guessing the meaning of the new words from the story". This finding supports the findings of Saengpakdeejit (2014), which showed the common use of these two strategies among ESL/EFL students. Using a dictionary gives learners an opportunity to be more self-directed in language learning, enabling them to find the explanation of new words without counting on teachers' explanations (Rabadi, 2016). Guessing the meaning of vocabulary items from context promotes the development of the learners' reading comprehension skills, and is generally applied by successful language learners (Hunt & Beglar, 2005). Thus, frequent use of dictionaries and the guessing meaning from context strategy could mean that the participants wanted to be more independent in English learning, and work on the development of their reading skills.

The next common strategies utilized by the participants were cognitive strategies. As it became obvious from the literature review, cognitive strategies belong to the category of consolidation strategies. Therefore, in order to consolidate the meaning of the words the participants most frequently utilized strategies such as saying the word out loud repeatedly or saying the word in the mind repeatedly. Gu and Johnson (1996, cited in Askar, 2013) consider the use of cognitive strategies as a "positive predictor of general proficiency" (p. 420). Hence, the frequent use of cognitive strategies might clarify the point that some of the participants were good at English. However, we cannot claim that they had a high English proficiency level because there is no valid evidence for this claim.

Another type of strategy which is also used for consolidating the meaning of the words is memory strategy. Though memory strategies were determined as the least frequently used strategies, the results of descriptive statistics suggested that the participants also used some memory strategies to consolidate the meaning of the words. For instance, linking the word to a visual image in mind, remembering the sentence in which the word is used as well as remembering the new word together with the context where the new word occurs, were among the most frequently

used memory strategies. Schmitt (2000) believes that memory strategies can help learners retain words in their long-term memory effectively. This implies that the participants employed the above-mentioned memory strategies because they enable them to retain and recall the words easily.

In order to answer the second research question, qualitative data through semi-structured interviews was collected and analyzed. The interview results revealed that strategies like using flashcards, using dictionaries, listening to English songs, watching English TED talks and movies, keeping a vocabulary notebook, doing self-dictation, studying the spelling of the words, and reading English stories were reported as the most useful strategies for vocabulary learning by the participants. Some of the findings such as listening to English songs, watching movies, and reading English stories are consistent with the results of some previous research (Asgari & Mustapha, 2011; Saengpakdeejit, 2014; Dóczi, 2011). From the results of the interview it also became apparent that the participants seemed to have positive attitudes towards vocabulary learning strategies. Vocabulary learning strategies provide the participants with an opportunity to acquire, memorize, and retain the words in their memory easily and effectively.

Summarizing the results discussed above, we can conclude that the participants favored three categories of strategies during vocabulary learning. The participants utilized these strategies to make their vocabulary learning more effective. Hence, as Schmitt (2000) mentions, the combination of a variety of strategies would be more beneficial for vocabulary acquisition rather than using one strategy.

Conclusion

As a result of this study, it became apparent that the participants are medium strategy users, which implies that they lack in applying diverse vocabulary learning strategies during vocabulary learning. Therefore, the teachers should enhance learners' awareness of vocabulary learning strategies and assess their needs for this, e.g., by using one of the approaches found in Chaps. 5, 6 and 7 of this volume. One of the ways of raising strategy awareness is to expose students to vocabulary learning strategies

while teaching them explicitly. Another way of developing learners' knowledge of vocabulary learning strategies is to provide them with opportunities for strategy training. Nation (2001) provides a list of options which the teachers can apply during strategy training. A thorough knowledge of this list, as well as its implementation in the Armenian EFL context would be of tremendous benefit to language teachers as well as to their students.

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7

Cognitive and Metacognitive Vocabulary Learning Strategies: Insights from Learning Diaries

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Introduction

As every foreign language learner in the world knows, learning vocabulary in a new language is a long-lasting and demanding task, not only because of the complex nature of vocabulary, but also because of the myriad of factors that influence the process of learning, such as learner individual differences, and external and learner-independent factors. In formal learning contexts especially, achieving the goal of acquiring vocabulary calls for planning, investing efforts and monitoring one's progress.

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The tools implemented to this end have become widely known as *learning strategies*. The essence of strategic learning, which implies acting consciously and proactively towards more effective learning, is captured by the concept of *self-regulated learning* (SLR) (cf. Dörnyei, 2005; Pintrich, 2000b, c; Zimmerman, 2000). Although it has been recognized as an important predictor of student academic achievement for a considerable time, applied linguists have only recently started endorsing the SRL theory as a new approach to the conceptualization of strategic learning (cf. Dörnyei, 2005; Oxford, 2011, 2017; Tseng, Dörnyei, & Schmitt, 2006). SRL refers to the self-directive processes and self-beliefs that enable learners to transform their mental abilities into an academic skill (Zimmerman, 2008). In other words, it helps students manage their thoughts, behaviours and emotions in the learning process.

As opposed to traditional teaching and learning where the teacher plans and implements classroom strategies for student engagement, SRL shifts this emphasis onto the learner. Self-regulated learners are metacognitively and cognitively active, strategic in learning and goal oriented (Pintrich & De Groot, 1990). They take control of their learning by becoming active participants in the learning process, they deliberately apply learning strategies to enhance academic outcomes and monitor their performance (Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005), evaluate their academic progress (De Bruin, Thiede, & Camp, 2011), create better learning habits and strengthen their study skills (Wolters, 2011), and plan and control their time and effort invested in task accomplishment. Self-regulated students consciously plan and monitor their cognitive, behavioural and affective processes toward the achievement of academic and personal goals (Schunk, 2001).

A number of studies show that the effective use of strategies significantly correlates with the academic achievement in FLL (Andrade & Bunker, 2009; Andrade & Evans, 2013; Gunning & Oxford, 2014; Ma & Oxford, 2014; Oxford, 2011; Pintrich & De Groot, 1990; Sinclair, 2000; Tseng et al., 2006; Seker, 2015). Furthermore, some studies show that an effective and frequent strategy use enables learners to be more successful in all foreign language learning skills such as speaking (Ehrman, 1996; Ma & Oxford, 2014), reading comprehension (Ehrman, 1996),

writing (Andrade & Evans, 2013) and vocabulary learning (Bown, 2009; Rasekh & Ranjbary, 2003; Wang, 2007; Wong, 2005).

However, research on the relationship between self-regulated cognitive and metacognitive strategy use and vocabulary learning in the ESP field is still rather scarce. Since vocabulary knowledge is particularly important in the ESP field, its systematic acquisition calls for the development of autonomy, which encompasses adopting ways of self-regulating one's learning (Tseng et al., 2006). This study set out to explore the use of cognitive and metacognitive self-regulated strategies in learning ESP vocabulary. To this end, structured diaries written by fifteen undergraduate students of mechanical engineering were analysed following the SRL model proposed by Pintrich (2004). In what follows we first briefly outline the most important aspects and tenets of his theory, and then present the results of the study.

Theoretical Background: Pintrich's Model of Self-regulated Learning

Among the different models of SRL (Bandura, 1986; Boekaerts, 1997; Boekaerts & Niemivirta, 2000; Borkowski, 1996; Pintrich, 2000b; Winne & Hadwin, 1998; Zimmerman, 2000) that have tried to identify self-regulation and establish relations between SRL and academic performance, Pintrich's model (2000a, c), based on Bandura's socio-cognitive perspective (1986), has been recognized as one of the most important ones since it offers a comprehensive theoretical framework from which it is possible to analyse different cognitive, motivational, behavioural and contextual processes that contribute to the development of SRL.

Pintrich (2000c, p. 453) defines SRL as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behaviour, guided and constrained by their goals and the contextual features in the environment". This definition comprises several important elements. First, learners metacognitively and cognitively actively participate in the learning process to achieve their academic goals and select strategies to

accomplish those goals. Secondly, constructive process refers to the 'construction' of personal knowledge, i.e. learners 'build' their knowledge. Furthermore, the learning is self-regulated since the learner constantly monitors, controls and regulates the learning process and accordingly reaches decisions, and changes the use of ineffective strategies and learning environment to accomplish the goal. The last, but equally important, aspect of SRL is the motivation. According to Pintrich, motivation is the crucial aspect of self-regulation since self-regulated learners set higher goals, have high perception of self-efficacy and frequently evaluate their learning which, in turn, reflects on the perception of self-efficacy, motivation and the effective use of strategies. Learners who recognize an activity or a subject as important and interesting are more likely to employ self-regulated strategies, such as cognitive and metacognitive ones to increase the likelihood of success (Pintrich & Zusho, 2002).

Pintrich proposed a model consisting of four regulatory phases (planning, self-monitoring, control and evaluation) where each phase consists of four areas (cognitive, motivational, behavioural and contextual). These phases, regulated by a learner, can occur simultaneously, i.e. a self-regulated learner is involved in the learning process in a flexible and adaptive way in order to successfully control and monitor all learning aspects.

Cognitive strategies (i.e. rehearsal, elaboration and organization strategies) involve intentional manipulation of information through rehearsing, elaborating or organising the material in such a way that the new information is stored in the learner's associative network and accessed for retrieval (Weinstein, Husman, & Douglas, 2000). Rehearsal strategies such as recitation, repetition, copying material, taking notes or marking texts are used to select information and keep it in working memory (Pintrich, 1999). Elaboration strategies include summarizing, paraphrasing, using mnemonic techniques, creating analogies, associating new information to prior knowledge, teaching peers or other persons and asking questions about the material. Organization strategies include outlining the information, finding main ideas in the text, grouping the information in meaningful groups, drawing charts or mental maps.

Metacognitive strategies are additional set of tools used to regulate learning processes (Garcia & Pintrich, 1994) and control effective use of cognitive strategies. When employing metacognitive strategies,

self-regulated learners become aware of their learning process, they know what to do and what to change in order to achieve their academic goals. Metacognitive strategies, such as planning, monitoring and regulation, are directly responsible for task execution. Planning strategies help learners employ cognitive strategies and can activate important aspects of prior knowledge. They include setting the goals, scanning the text before reading to activate prior knowledge, forming questions or making predictions about the upcoming text and analysing the problem, dividing the task into subtasks and determining deadlines and steps (Pintrich, 1989, 1999). Monitoring strategies help learners become aware of what they are doing. They alert the learners to breakdowns in attention and comprehension and emphasize the importance of self-reflection during and after the learning. The ability to monitor actions, behaviours and thoughts enables learners to use or adapt effective strategies, replace less effective strategies with more effective ones, and consequently increase the knowledge of strategies, which can permanently influence learner's learning abilities. Regulation strategies are directly connected to monitoring strategies and include changing the pace of reading, re-reading, making notes, test-taking strategies, regulating learning environment, time, etc. (Pintrich, 1989, 1999).

Regarding self-regulated vocabulary learning strategies, there have been several note-worthy studies. For example, the findings of the studies by Mizumoto (2013) and Haji Hassan Hamedi (2013) suggest that the process of self-regulated vocabulary learning influences the degree of self-efficacy, and self-efficacy in turn leads to the growth of vocabulary knowledge. Heidari, Izadi, and Vahed Ahmadian (2012) also reported a significantly positive relationship between self-efficacy and the use of vocabulary learning strategies and thus confirmed the importance of learners' self-efficacy beliefs and their impact on successful learning experiences and achievement. Another study also pointed to a connection between the use of strategies and the level of success and revealed the positive impact that self-regulated strategy development can have on vocabulary learning (Araya, Pena, Rodriguez, Spate, & Vergara, 2013). But, learners at different stages of FL learning prefer different strategies, and more proficient learners use more sophisticated strategies more frequently (cf. Griffiths, 2003; Takeuchi, 2003).

To our knowledge, studies on SRL and vocabulary learning in the ESP field are few and far between. Jurkovič (2010) found a statistically significant effect of metacognitive strategies on ESP achievement test scores. The findings of a study by Mohammadi and Mahdi Araghi (2013) indicated a positive relationship between self-directed learning readiness (SDLR) and ESP course accomplishment, but also that half of the learners' SDLR is at an average or below average level, which points to the need for appropriate training to improve learners' SDLR that directly contributes to a successful ESP learning. One of the few studies conducted in the Croatian ESP context showed that there was a statistically significant correlation between strategy use, perception of self-efficacy, intrinsic motivation and vocabulary test scores, with perception of self-efficacy having a moderating effect on the relationship between strategy use and academic performance on vocabulary test scores (Bošnjak Terzić, 2018).

The Methodology of the Study

Aims

The aim of the study is to examine the relationship between cognitive and metacognitive self-regulated vocabulary learning strategies and academic performance in an ESP vocabulary course. Its purpose is to gain a more detailed insight into which self-regulated strategies facilitate successful ESP vocabulary learning. Based on previous research findings indicating that adequate strategy use facilitates successful vocabulary learning, our assumption is that more successful learners apply a number of diverse cognitive and metacognitive strategies in dealing with ESP vocabulary, and more so than less successful learners.

Participants

The study was conducted at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb, Croatia. The mandatory ESP course, i.e. Technical English, focuses equally on the linguistic aspect of the technical

language and on specific language skills which future engineers will need in the modern business environment. Special attention is paid to terminology and the characteristics of technical texts in technical English. The minimum required level of English language knowledge for attending the course and passing the exam is B2.

Fifteen undergraduate students (6 female and 9 male students) were asked to keep a learning diary in the period from March 2016 to January 2017. All participants had been learning English as a foreign language for 11 years on average, and their English language proficiency was at least at the B2 level.

Instruments and Procedure

The main research instrument was a structured diary. Using a qualitative approach can provide better insight into behaviours, thoughts and beliefs that participants are aware of. It may reveal the challenges and problems participants face during learning, and it may also develop the skill of self-reflection (McDonough & McDonough, 1997; Nunan, 1992). Diaries record observations, feelings, reactions, interpretations, reflections, hunches and explanations (McDonough, 1994) and thus represent a rich source of valuable data.

The structured diary included 14 open questions in participants' L1, i.e. Croatian. Participants were asked to address the following question: how they participate in classes while learning vocabulary; how they learn new vocabulary; how they plan, prepare and organize their learning, time, place and materials for learning; how they deal with new technical texts; how they associate new and prior knowledge; how and where they apply new knowledge; if they take notes during classes; if they employ any strategies or change the less effective learning strategies. They were also given some prompts in the form of descriptions of vocabulary learning strategies to help them reflect on their learning process, such as *I write new words; I learn new words by heart; I relate new words with my professional field or with what I already know; I summarize new text; I make mental maps, tables or diagrams to help me organize thoughts and memorize the words more easily; I set clearly defined goals*, etc. Participants were given

instructions on how to write diaries and were reminded after each class to record a diary. Diaries were written on a weekly basis and were collected monthly over a six-month period. Each participant handed in four diary entries in the 1st semester and six diary entries in the 2nd semester, so a total of ten diary entries were collected from each of the 15 participants. The content of the diaries was examined for descriptions of strategies employed in learning technical English vocabulary. The identified strategies were classified into cognitive and metacognitive strategies following Pintrich's model described above.

To measure participants' achievement in the lexical aspect of the ESP course, two vocabulary tests were designed. The tests were administered on two occasions, at the end of the second and third semester. Both tests had the same structure, but covered different terminology. The tests consisted of five tasks focusing on the productive lexical knowledge. The first task was word formation of isolated target terms aiming at testing the meaning of specialized technical vocabulary and the difference between verbs, adjectives, nouns or adverbs. The second task focused on translation of isolated L1 target items into English and vice versa. Both tasks were context-independent and test the knowledge of meaning of the target words without reference to the linguistic context. The third task was a context-dependent gap-fill task with no prompts supplied: participants were expected to correctly use adverbs, adjectives or preposition in technical texts. In the fourth task participants were asked to describe a graph using adjectives or adverbs appropriately. The fifth task was different from the previous ones in that it focused on reading a technical text and identifying synonyms to the lexical items listed below the text. As established through informal needs analysis at the beginning of each semester, almost none of the vocabulary tested had originally been a part of the participants' repertoire.

The vocabulary test results were used to divide the students into two cohorts: successful students (those whose tests were scored as excellent or very good) and less successful ones (those whose tests were scored as good, sufficient or insufficient).[1] Out of 15 participants, 10 were successful and 5 were less successful in the vocabulary tests.

Results and Discussion

The data obtained by the analysis of learning diaries revealed that the participants reported the use of all cognitive and metacognitive strategies according to Pintrich's model. Successful students described 29 cognitive and 18 metacognitive strategies, while less successful students described only 11 cognitive strategies. Examples of specific strategies described and employed by both cohorts are shown in Table 7.1.

Successful students described 47 strategies: 8 rehearsal, 16 elaborations, 5 organization and 18 metacognitive strategies. Less successful students, on the other hand, reported the use of only 11 strategies: 6 rehearsal and 5 elaboration strategies. None of the participants from the less successful group described any organization or metacognitive strategies (cf. Table 7.1).

Both cohorts used rehearsal strategies, such as reciting and naming items from a list and underlining and marking new words. Examples 1, 2, 3, 4, 5 and 6 illustrate the use of rehearsal strategies reported by both successful and less successful students.

Example 1 (successful student; reciting and naming items strategy)
When I learn new words, I like to make a list of words. I repeatedly read the words from the list and then cover either the translation or the word in English, so I test myself out loud.

Example 2 (successful student; underlining and marking strategy)
I underline the important things, unknown words with a marker, some information printed on the side.

Example 3 (successful student; underlining and marking strategy)
I write a lot of new words from the texts on my own list. When I read the text, I underline all unknown words and write them on paper.

Example 4 (less successful student; reciting strategy)
My vocabulary learning comes down to reading all the words a few times, and if I can't remember some of them, I recite them a couple of times.

Table 7.1 Cognitive and metacognitive strategies identified in learner diaries

		Successful students	Less successful students
Cognitive strategies	*Rehearsal strategies*	Reciting and naming items from a list (n = 6) Underlining and marking new words (n = 2)	Reciting and naming items from a list (n = 4) Underlining and marking new words (n = 2)
	Elaboration strategies	Creating mental images (n = 5) Associating new knowledge to prior professional knowledge (n = 5) Relating new knowledge to English language knowledge (n = 3) Summarizing and paraphrasing (n = 1) Asking and answering questions (n = 2)	Associating new knowledge to prior professional knowledge (n = 4) Relating new knowledge to English language knowledge (n = 1)
	Organization strategies	Grouping information into meaningful categories (n = 2) Highlighting/underlining the words and phrases (n = 2) Selecting key ideas that are central to understanding (n = 1)	
Metacognitive strategies	*Planning*	Goal setting (n = 2) Task analysis (n = 3) Skimming the text before reading (n = 4)	
	Monitoring	Self-testing (n = 2) Tracking one's attention as one reads (n = 4)	
	Regulation	Checking and correcting the pace of reading and rereading (n = 3)	

Example 5 (less successful student; underlining and marking strategy)
I always understand new texts only by reading. I never use markers or red pens to underline. I either know or understand from context.

Example 6 (less successful student; underlining and marking strategy)
If I don't understand, I don't mark the words, but just skip them.

Even though these strategies may play an important role in simple tasks, when attempting to activate information in the working memory, they have some limitations. Namely, they will not help students to store newly learned words in long-term memory, or to associate new words with prior knowledge (Pintrich, 1999). Thus, new information can easily be forgotten. The data implies that successful students effectively use rehearsal strategies but that they also combine rehearsal strategies with other strategies (e.g. planning, underlining and marking strategies), which enables them to more deeply process the learning material. Less successful students employ these strategies only for the purpose of passing the test because they focus only on the type of test tasks. They, it seems, only superficially process new information.

The cohort of successful students altogether reported the use of 16 elaboration strategies, while less successful students described only 5. Creating mental images was reported by 5 successful students; associating new knowledge to prior professional knowledge was described by 5 successful and 4 less successful students; relating new knowledge to English language knowledge was mentioned by 3 successful and 1 less successful student; summarizing and paraphrasing was described only by 1 successful student and the strategy of asking and answering questions was reported only by 2 successful students (cf. Table 7.1).

The Examples 7, 8, 9, 10, 11, 12 and 13 illustrate the use of elaboration strategies as reported by both successful and less successful students.

Example 7 (successful student; creating mental images/pictures)
I usually associate pictures with words (and practically everything I learn) because if I don't know what something looks like and what it is (klystron tubes, hm, nothing in my head—just a translation), I quickly forget. Also, pictures and images that we used in classes clearly described machine parts which greatly help visual types like myself.

An effective learning strategy for building academic vocabulary is to use visualization strategy. Learners associate new lexical units to existing concepts or images that already have meaning for them. Successful students create mental images while learning, which implies active engagement with the text and improves comprehension and learning new words. This is a highly useful strategy for ESP students for it allows them to connect new words with images or pictures by applying their professional knowledge, thus facilitating the storage and recall of information.

Example 8 (successful student; associating new knowledge to professional knowledge)

This text is much more interesting to me than the previous one, perhaps because we are addressing a similar topic in another course, so it is interesting to see it from a different perspective.

Example 9 (successful student; associating new knowledge to professional knowledge)

Thermodynamics is my favourite topic. So, there weren't even so many unfamiliar words in this lesson. Or the context is pretty clear here, and a lot could be understood from it.

Example 10 (less successful student; associating new knowledge to professional knowledge)

In my opinion, the content itself significantly influences the vocabulary learning, whether that influence is positive or negative.

Example 11 (successful student; associating new knowledge to English language knowledge)

If I see words that have a similar or the same meaning, I connect them and mark them as synonyms. I search for unknown words in the dictionary, and if I still don't understand, I look for the context in which the word is used.

Elaboration strategies that connect information to be learned with information that students already know were used by both cohorts. With all elaboration strategies, it is important to always critically review the credibility of new material and to compare it with existing knowledge (Weinstein et al., 2000). This strategy is another extremely interesting

approach to learning ESP vocabulary, because it makes it easy for students to associate professional courses or fields with new words and store new information in long-term memory. Furthermore, activating prior English language is an essential step in learning for students who already possess considerable knowledge in English because learning new content is facilitated by associating it with the already known.

Even though summarizing and paraphrasing strategies are important because they enable students to convey the most important information concisely and accurately and are often used to check the understanding of a task or a text, these strategies are described only by one successful student (Example 12).

Example 12 (successful student; summarizing and paraphrasing strategy)

The hardest part for me was writing a text summary. I had the feeling that if I knew the words, I would understand what it was about, but even when I somehow managed to translate, I had the feeling that 80 words were not enough for a summary. Finally, I succeeded because I highlighted keywords in each paragraph and then wrote a summary from the key words.

Another strategy used only among successful students was asking and answering questions (Example 13). The strategy enables deep processing since it requires students to think about the meaning of the material, teaches students how to ask questions, helps them think about the text creatively and work cooperatively.

Example 13 (successful student; asking and answering questions)

Within this text, questions were provided: This is a good strategy to test myself whether I fully understood the text, and whether I correctly used new words in my own sentences. It was a great exercise when we were presented with an engineering problem and we were supposed to formulate questions about it and ask other students to answer in order to think of a solution.

Only successful students described using some organization strategies. Specifically, they listed grouping information into meaningful categories (n = 2), strategies that include highlighting/underlining the words and phrases (n = 2), and a strategy for selecting key ideas that are central to understanding (n = 1) (Table 7.1). Students who employ organization strategies are more likely to be more successful at remembering new

words, writing notes, creating new ideas, using imagination, and focusing on the task. Consequently, they are likely to generally fare better in the course in terms of grades on assignments and exams as well as overall course grade (Duncan & McKeachie, 2010).

Examples 14, 15 and 16 illustrate the use of organization strategies.

Example 14 (successful student; grouping information into meaningful categories)

The mental map we have to fill after reading the text helped a great deal in understanding it better since words were grouped logically.

Example 15 (successful student; grouping information into meaningful categories)

I like to copy words or a group of words from a text on a piece of paper. I copy them in a table since it is easier for me to learn this way. In this way I do not bother with the text, but with words I want to learn. I group the words in the table in some, personally, meaningful groups; for example, by machine parts or by processes and alike. Something that makes sense to me.

Example 16 (successful student; highlighting/underlining strategy)

Underlining and taking notes next to paragraphs helps me when I re-read the text and it helps me find important information in the text. The notes also help me because they are kind of a summary of the text with key unknown words.

Grouping words into meaningful categories or highlighting/underlining strategies helps students organize what they have read by selecting key words, phrases, vocabulary and ideas that are central to understanding the reading. Furthermore, information that is organized in meaningful groups makes sense to students and it is easier to memorize (Pintrich, 1989, 1999; Weinstein et al., 2000).

Metacognitive strategies are concerned with how to learn and they involve planning, monitoring and regulation strategies. None of the students from the less successful group reported the use of metacognitive strategies, while the group of successful students described planning strategies (goal setting; $n = 2$); task analysis ($n = 3$); skimming the text before reading ($n = 4$); monitoring strategies that include self-testing and tracking one's attention as one reads ($n = 6$); regulating strategies such as

checking and correcting the pace of reading and re-reading (n = 3) (cf. Table 7.1).

Examples 17, 18, 19, 20, 21, 22 and 23 illustrate the examples of metacognitive strategies.

Example 17 (successful student; goal setting)
My goal is to find key words in the text.

Example 18 (successful student; goal setting)
Before reading, I always check the length of the text; I set my goal and ask myself what do I have to do? How long will it take to accomplish the goal?

Example 19 (successful student; task analysis)
I check, count and divide the text or material or words in meaningful groups and then I start to study.

Example 20 (successful student; skimming the text before reading; task analysis)
The first step is to evaluate the situation and see the content, skim through the texts, see how many unknown words there are.

Example 21 (less successful student)
I don't prepare or think about the task at first. I just don't do it. I do not review or organize.

Setting specific, measurable, achievable and realistic goals is what motivates students' behaviour towards goal accomplishment. In order to accomplish set goals, students employ different strategies, adapt the goals to their abilities and activate prior knowledge. Planning strategies, such as pre-reading, checking the length of the material before reading or organizing material and language tasks, involves planning, evaluating and thinking about learning. These strategies direct students' attention, activate students' background knowledge and prepare them for learning. They enable better time planning and better organization of learning.

Example 22 (successful student; monitoring strategy)
I read the whole text once and try to understand generally what it is about, then I read it for the second time and I underline the new words, find their

meaning and try to fit it into the context of the sentence. If the text becomes boring I read it again and again, until I finally understand it.

Monitoring strategies are self-testing, monitoring comprehension and attention, alerting learners to breakdowns in attention or comprehension. They occur during reading or learning, and it is through monitoring strategies that the student assesses how he/she is progressing and whether he/she is focused on the content and understands it (Weinstein et al., 2000). Students who are aware of their progress can regulate their learning by employing or changing strategies to achieve a given goal. It is in this way that they upgrade their knowledge of strategies, as they continue to use effective strategies, or change ineffective ones. This leads to building a repertoire of strategies and raising their metastrategic awareness.

Example 23 (successful student; regulation strategy)
I read slowly as soon as I realize I don't understand. When I write a test, I always skip the more difficult tasks, then I go back and try to concentrate more.

Regulation strategies are closely linked to monitoring strategies. By the feedback gained from the monitoring strategies, learners regulate their learning by changing the pace, time, environment or motivation. By using regulation strategies, self-regulated learners may improve their academic performance (Dörnyei, 2005; Pintrich, 1999, 2000c; Schunk, 2001; Weinstein et al., 2000).

Conclusions and Pedagogical Implications

The analysis of the structured vocabulary learning diaries confirmed our initial assumption: it indicated that the cohort of successful students described all cognitive and metacognitive strategies, while less successful students listed only rehearsal and elaboration strategies. This implies that the effective use of self-regulated strategies plays a significant role in successful vocabulary learning.

It seems safe to conclude that successful students achieve good results because they are self-regulated. Self-regulated students know how to

apply cognitive strategies that help them transform, organize and retrieve information (Winne, 1995; Zimmerman, 2001). Such students plan, control and manage mental processes to fulfil a set goal (Corno, 2001) and acquire knowledge and skills by applying cognitive and metacognitive strategies (Pintrich & De Groot, 1990). On the other hand, there are still some who need assistance in the development of SRL, despite the fact they are experienced tertiary-level students. We assume that they are not aware of the importance of employing strategies or they use them ineffectively.

The results of the study clearly point to the importance of integrating vocabulary teaching, professional context and, content and strategy instruction into ESP courses. Such content-based strategy instruction aims at developing students' strategic awareness which can be achieved by providing multiple examples of the use of strategies when introducing new concepts, by improving rehearsal strategies that help develop deeper encoding strategies and by encouraging students to ask questions about the information they learn and to associate new knowledge with prior knowledge. What should be emphasized is not only the potential efficiency of one strategy but the fact that a combination of strategies may be even more beneficial. Also, one should keep in mind that a strategy might not work in the same way for every student. That is why students should be encouraged to develop awareness of their own strategic approach to learning, expand their learning strategy repertoire, set their own learning goals and track their own progress. A learning diary, such as the one used in the present study, might be a useful learning tool assisting students in those efforts.

Although the sample size of only fifteen participants may not be suitable for making generalizations, it is sufficient for a qualitative study, but a future study could be based on a larger sample representing various ESP fields. Although learning diaries are obviously an excellent source of valuable information, the quality of the data depends on many factors, such as clarity of instructions, the degree of structure and openness, participants' ability to remember and reflect on key behaviours, thoughts and feelings and their ability to maintain motivation to keep the diary. Future studies might also incorporate follow-up interviews which would not only enable participants to elaborate on their thoughts described in the

diary, but also diminish the subjectivity inherent in the analysis and interpretation of diary data. To conclude, the field can only benefit from further research which would shed light on various aspects of strategy use and thus deepen our understanding of learning and, hopefully, by the same token—of teaching too.

Note

1. The Croatian national grading system consists of five grades with numerical equivalents: Excellent—5 (highest grade); Very good—4; Good—3; Sufficient—2 (minimum pass grade) and Insufficient—1 (requires student to retake exam/resubmit work).

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Part III

Examining Lexical Errors

8

Lexical Errors in the Writing of EFL Students in the Armenian Context

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Introduction

Lexical Errors are the most numerous ones among EFL/ESL learner errors (Agustín-Llach, 2011), while being the most complex ones at the same time (Agustín-Llach, 2017). Agustín-Llach (2011, 2017), emphasized the fact that lexical errors are not random, but adhere to a certain pattern and can be attributed to systematically repeated causes. There are two ways of looking at errors, a negative and a positive view. Thus behaviourist approaches look at errors as negative verbal behavior to be avoided lest it be learned, while cognitivist and other contemporary approaches welcome errors as evidence of learning (Richards & Rodgers, 2014). To a needs analyst, errors present a wealth of information about the learners

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and the level of their target language (TL) knowledge, as they pinpoint the vocabulary that might be either too difficult for the learner or not adequately taught or learned (Thornbury, 2002).

The first language of the learner might play a part in error formation (Dodigovic, Ma, & Jing, 2017). Hence it is vital to analyse learner errors in light of their first language (L1). Only a handful of such studies have been conducted in the Armenian English as a Foreign Language (EFL) context. Those mostly concentrate on the negative transfer from L1 (Aleksanyan, 2010; Levonyan, 2015; Yerznkyan & Chalabyan, 2015). However, none of them specifically targets lexical errors. Therefore, this study seeks to remedy the situation by conducting an analysis of lexical errors in fairly advanced Armenian leaners of English.

It is worth mentioning that Corder (1967) separates mistakes from errors because he finds mistakes of "no significance to the process of language learning". In contrast, errors "provide evidence of the system of the language" that the L2 learner is using. James (1998) suggests another criterion for the distinction between mistakes and errors, which is self-correction. Here, mistakes can be corrected by the learner, if he or she is made aware of them, whereas errors cannot be self-corrected. The present study endorses James' (1998) criterion of distinction and focuses on genuine errors only by compiling a corpus of academic writing which has already undergone the process of editing, most commonly based on self-correction. Thus, whatever erroneous language remains can be seen as genuine error, rather than mere mistake.

Background

Any inventory of errors would be useless if not grouped around some kind of taxonomy. According to Agustín-Llach (2011), a taxonomy helps describe the data coherently and analyse it systematically. In addition to bringing a sense of order and the potential to quantify the findings, error taxonomies, if adequately postulated, can expose regularities in learner language and learning processes (Chan, 2010). The present study is no exception. Hence this section examines the most common premises on which such taxonomies are built.

Form and meaning have always been considered important aspects of words. Thus, James (1998) classified lexical errors into two main categories: formal and semantic, which was later adapted by Hemchua and Schmitt (2006), who devised 24 subcategories of lexical errors found in their study under these two main categories: formal and semantic features, where semantic errors were twice as numerous as the formal ones. Three broad subcategories of formal errors according to this source are formal misselection, misformations and distortions, while the subcategories of semantic errors appear to be confusion of sense relations, collocation errors, connotation errors and stylistic errors.

The leaners' first language is another criterion for an error taxonomy (Kaweera, 2013). While Lado (1957) built his contrastive analysis on the idea that L1 has the potential to negatively impact L2, Selinker (1972) considered the concept of interlanguage, i.e. the patterns of learner language. In research literature, interlanguage is often associated with the leaners' L1. Thus, Yip (1995) devotes an entire volume to the description of the Chinese-English interlanguage. Interlanguages are sometimes compared with each other. An example of this is a research study on lexical errors conducted by Meara and English (1986) aimed to establish the effectiveness of English dictionaries both as an error correction tool for EFL beginner level learners and as a tool for lexicographers to develop more effective materials. The study (Meara & English, 1986) suggests that there are systematic differences between the errors made by students with various L1 backgrounds. For example, the findings revealed that the proportion of *totally wrong words* was very high among Chinese and Indonesian learners, whereas the same learners showed a very low proportion of *semantically related errors*, compared to all other first languages in the sample. This is to say that the proportion of error types varies significantly based on the learner's L1.

Echoing the framework of error analysis (Corder, 1967), errors can also be classified according to their source, which is found either in L1 or within the learner L2 itself. This taxonomy mainly differentiates between interlingual errors, caused by L1 interference or transfer (Corder, 1967), and intralingual or developmental errors (caused either by faulty generalization from L2 rules, their inadequate use or forming incorrect hypotheses about how L2 works (Richards, 1971; Chan, 2010). Building on this

underpinning idea, Carrió-Pastor and Mestre-Mestre (2014) subdivided lexical errors into interlingual, intralingual and conceptual. Among the first category are calques, adaptations and unnecessary borrowings. The second category comprises erroneous collocation, coinage, omission of parts of words, misformation and misordering of words, while the final category consists of confusion about meaning and form of a word, as well as a use of a general word or a near synonym. It is interesting that these authors classify collocation errors under the category of intralingual errors, whereas Dodigovic et al. (2017) identify transfer as a source of collocation errors in Chinese student writing, which would position the collocation errors into the interlingual category. Furthermore, Dodigovic et al. (2017) identify transfer by word polysemy as the cause of some of the incorrect choices of near synonyms, which also differs from Carrió-Pastor and Mestre-Mestre's (2014) taxonomy.

Agustín-Llach (2011) proposes an error taxonomy which comprises misspellings, borrowings, coinages, calques, misselection and semantic confusion, which in 2017 was appended to include borrowings, lexical adaptation, semantic confusion, wrong cognates, spelling problems and construction errors. On the surface, both look very similar to that of Carrió-Pastor and Mestre-Mestre (2014), except for one major difference, which is the absence of the underlying division of all lexical errors into interlingual, intralingual and conceptual. Perhaps one of the reasons for this difference is Carrió-Pastor and Mestre-Mestre's (2014) decision to take the conceptual errors outside the scope of both interlingual and intralingual aspects of lexical errors, which has the potential to become a stumbling block in some linguistic contexts, such as the Chinese one (Dodigovic et al., 2017).

Language transfer in itself constitutes a way to classify lexical errors, including both its positive and negative aspects (Dodigovic et al., 2017; Agustín-Llach, this volume). Wang (2011), who investigated Chinese L1 transfer in the acquisition process of light verbs (such as do, make, give, take or have) + noun collocations among 150 intermediate level non-English college students, found that 61.84% of such collocations are due to either negative or positive transfer from Chinese.

Relevant research (Hemchua & Schmitt, 2006; Zhou, 2010; Xia, 2013) suggests that lexical errors do not only occur at single word level,

but also at collocation and multi-word unit (MWU) levels (Gray & Biber, 2013). Among those are lexical transfer errors which have been identified at every level (Yang, Ma, & Cao, 2013; Li, 2005; Yamashita & Jiang, 2010), although not necessarily all within the same study. Dodigovic et al. (2017) base their study of Chinese leaner errors on these three lexical levels. On the understanding that most single item transfer-related errors are based on the polysemy of L1 words, they differentiate between polysemy, collocation and multiword unit (MWU) errors. They find that a large majority (50%) of Chinese lexical errors in English are caused by the polysemy of L1 words, leading to the choice of an inadequate translation equivalent in English. Agustín-Llach (this volume) provides more information on lexical transfer.

Nativelike expression or the depth of lexical knowledge is also known to have been used as a criterion. In this respect, adequate use of collocations is often regarded as an attribute of nativelike language command (Nation, 2001; McGarrell & Nguien, 2017). A study by Yamashita and Jiang (2010) therefore focuses on this aspect of learner language. To investigate the influence on the acquisition of L2 collocations, Yamashita and Jiang (2010) examined the accuracy and speed of the performance of both the speakers of English L1 and Japanese L1 EFL and ESL learners when using congruent and incongruent collocations. In congruent collocations, the lexical components are similar in L1 and L2 while in incongruent collocations, lexical components are different in L1 and L2. The results revealed that there was a significant difference between Japanese EFL learners, who needed more time and made more errors (when choosing the incongruent collocations), while Japanese ESL learners needed less time to respond in both types of collocation, but again had more difficulties with the incongruent collocations.

Finally, aspects of word knowledge (Nation, 2006; Dodigovic, 2005) can be used to build error taxonomies. Agustín-Llach (2017) acknowledges this when allowing for construction error, which refers to the way a word impacts the choice of phrase or clause construction, and is one of the important aspects of word knowledge (Nation, 2006). In a similar vein, Dodigovic, Li, Chen, and Guo (2014) suggested classifying lexical errors under six criteria related to what can be known about a word, i.e. the meaning, form, function and spelling. The taxonomy applied to

categorize the academic vocabulary used in the writings of Chinese EFL university students consists of six criteria: *Context, Collocation, Word Form, Structure, Part of Speech* and *Spelling*. Context here relates to meaning. Other categories appear to be self-explanatory.

The above taxonomy seems to have the potential of being exceedingly useful to language teachers, as it draws their attention to aspects of word knowledge most commonly missed by leaners. This in turn can lead to the adjustment of the curricula and teaching foci, bringing about possible advancement in vocabulary learning. Especially in Armenia, a small Eurasian country plagued by budgetary concerns, understanding the most frequently erroneous aspects of word knowledge, especially when produced by advanced learners, can to some extent help regroup the existing resources in language education. Therefore, one of the aims of this study is to identify the aspects of word knowledge most commonly found erroneous in the academic writing of Armenian tertiary students. Another aim is to offer practical suggestions for pedagogical action toward the prevention and remediation of such errors.

Accordingly, the study attempts to answer the following research questions:

1. What are the most frequent lexical errors in the academic writing of Armenian EFL students?
2. What are the causes of these errors?
3. Which English words are prone to most errors?

Methodology

The present study is descriptive in nature, seeking to explore the lexical errors of the Armenian EFL students' in writing and establish their possible causes. It is mostly based on qualitative research which was eventually quantified by tallying the occurrences of every error type.

Data Collection

In this study, essays written by 39 freshman-year students studying in the English Communication (EC) department of the American university of Armenia, all with Armenian as L1, were collected as a source for creating a learner corpus. The corpus comprises 28,602 tokens. The essays were written in response to one of their first assignments, and the topics for the essays varied from social media and sexual harassment to educational system in Armenia and self-reflection on essay writing techniques. The instructors of the course had informed the students about the possibility that their papers may be used as an empirical data source for a research study, and the students gave their verbal consent.

Data Analysis

In the process of data analysis, all the following steps were adhered to: examining and identifying errors, describing and classifying them into a taxonomy (Dodigovic et al., 2014), examining the source of their possible cause (Interlingual or Intralingual).

Each sentence was checked manually, sentence by sentence and all the possible lexical errors were extracted by the researcher. As a point of reference for double checking the collocations and as a tool to enhance the overall analyses LEXTUTOR (Compleat Lexical Tutor. Retrieved from https://lextutor.ca/) was used. Several online dictionaries—Online Collocation Dictionary, Cambridge Learner's Dictionary—were used to check the meanings, synonyms and collocations of words.

After proofreading by the researcher, the findings were verified and approved by an experienced researcher and a native speaker. To describe the errors of the same pattern, initially they were coded by the researcher, as *wrong word meaning, wrong collocation, wrong word form, synonym confusion*, etc. Here is the list of error types with brief explanations:

- Context—indicates wrong word choice, including wrong meaning, synonym confusion, opposite meaning
- Collocation—indicates wrong collocations, including fixed phrases and lexical chunks
- Word Form—indicates wrong word form, including wrong form of plural/singular, comparative forms of the adjective
- Structure—indicates words or phrases that require certain structure, including erroneous usage of prepositions with certain words
- Part of Speech (PS)—indicates the use of one part of speech instead of another.
- Spelling—indicates misspelled words

Errors were classified according to the taxonomy presented by Dodigovic et al. (2014). Once an error list was generated, each error was described in terms of L1 or L2 influence, depending on whether it was deemed to be interlingual or intralingual. Errors in each category were then tallied and their percentages calculated accordingly. Moreover, the percentages of Interlingual (L1) and Intralingual errors (2) were calculated for each of the categories.

Results

As indicated in Table 8.1, the corpus comprised 28,065 tokens, out of which a total of 279 lexical errors were detected. Errors falling under the category Context, including wrong word choice, wrong meaning of a

Table 8.1 Descriptive statistics of lexical errors according to their categories

Error category	*f*	%
Context	111	39.56
Collocation	35	12.58
Word Form	52	19.06
Structure	32	11.15
PS	20	7.19
Spelling	29	10.43
TNT	28, 065	
Total number of errors	279	

Note: *f* = frequency, % = percentage, PS = Part of Speech, TNT = total number of tokens

word and synonym confusion, have the highest frequency (110 total, 39.56%). Part of Speech, on the other hand, presents the lowest percentage (7.19%). The next largest portion of errors belongs to the category Word Form (19.06%), followed by Collocation (12.58%) and Structure (11.15%). Spelling errors were just slightly fewer than Structure errors (10.43%) partially due to unnecessary capitalization of some words such as government, globalization, sophomore and freshman, which have been repeatedly capitalized in the corpus.

An example for each error type is given in Table 8.2.

In addition, the current study aimed at identifying the words that are most prone to errors to understand their nature and the source which triggered those errors. So, among the most erroneously used words (9), five are verbs: *make, put, protest, connect, and distribute*; and five are nouns: *network, protest, addict, connect* and *need*.

Table 8.2 Taxonomy of lexical errors

Explanation	Example	Correction
Wrong word (e.g. "inaccuracy" instead of "mistake")	The other **deception** is mixing Armenian structure with English, like "giving priority role" instead of "giving priority"	Deception—confusion
Words used together (e.g. "high fear")	This phenomenon itself helps people become a global citizen, and to come out as a **whole** unity, in which everyone is equal	Whole unity—true/absolute unity
The form of the word (e.g. "mean" vs '"mean")	…there were a list of **the worse** ten countries in which to be a blogger	The worse—the worst
Sentence structure required by a particular word (e.g. to be interested in something)	**…share** with your ideas…and express your thoughts	Share with—share your ideas
Subject vs verb (e.g. "criticism" instead of "criticizing")	While a tax paying legal citizen of a country generally doesn't need to be afraid of mass surveillance, Corrupt officials, Military criminals, and all other sorts of Illegal **activates**…	Activates—activities
Correct or incorrect	It **bens** Facebook for political reasons	Bens—bans

The most frequent aspects of word knowledge that proved erroneous in this study were Context and Collocation, while the least frequent ones were Structure and Spelling.

The bar chart in Fig. 8.1 shows the 9 words that are most prone to errors according to the number of their erroneous appearances in the learner corpus. The result shows that the verb *make* had the highest number (9) of erroneous uses among the verbs. Next, words with equal number (5) of errors in the corpus are the verb *put* followed by content words *network* and *protest*. It is interesting that the latter is often incorrect, whether used as a verb or as a noun. Moreover, all of the above are among the 3000 most frequent words of the English language.

Table 8.3 depicts a detailed summary of findings from the LC on words most prone to errors with respect to the source or error, the category they appeared in and the number of appearances both in the sources and in criteria. The results show that Interlingual errors, labelled as L1 negative transfer, are dominant in six out of nine words. Furthermore, the highest number of erroneous appearances for these words was detected in Context and Collocation (14 and 10, respectively), whereas the lowest count is in categories of Structure and Spelling (two errors in each).

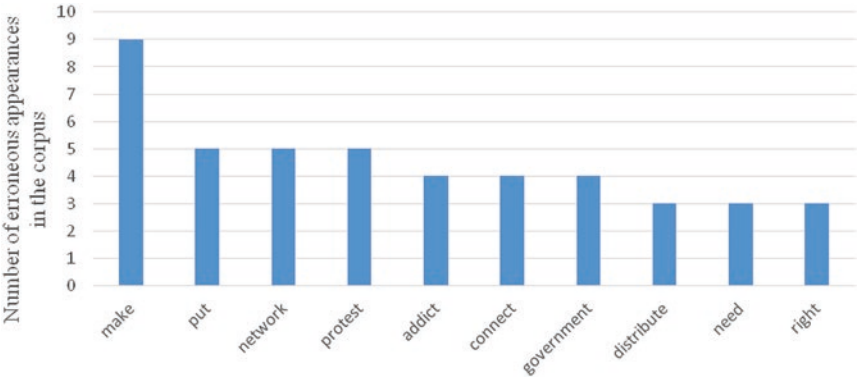

Fig. 8.1 Frequency of words most prone to errors

Table 8.3 Findings on words most prone to errors

Words	Total NE	NE in L1	NE in L2	Criteria	NE in each criteria
Make	9	6	3	Context	2
				Collocation	7
Put	5	4	1	Context	5
Network	5	3	2	PS	4
				Structure	1
Protest	5	3	2	Context	2
				Spelling	2
				Word Form	1
Addict	4	3	1	Context	1
				PS	3
Connect	4	2	2	Context	1
				Word Form	2
				Structure	1
Government	4	Null	4	Spelling	3
				Word Forms	1
Distribute	3	2	1	Context	2
				Collocation	1
Need	3	3	Null	Context	1
				Collocation	2

Note: NE = number of errors; PS = Part of Speech

Table 8.4 Number of lexical errors according to the source of their cause

Criteria	*f* of Interlingual errors	*f* of Intralingual errors
Context	84	27
Collocation	28	7
Word Form	25	27
Structure	24	8
PS	13	7
Spelling	0	29

Note: PS = Part of Speech, *f* = frequency

Table 8.4 depicts the results of causes for each category of errors by way of their distribution between Interlingual (L1) and Intralingual (L2) errors. In all criteria L2 errors exceed the number of L1 errors, except for Spelling. The highest number of Interlingual errors is found in the category of Context (*84*), where the Armenian EFL writers often literally translate L1 expressions into L2.

Discussion

It is ironical that structure and spelling, linguistic concepts which in this study present as the two least frequent lexical error categories, are notions most frequently focused on in the Armenian ESL classroom (Ohanyan, 2018). According to James (1998), such errors are in the formal category. In contrast, the highest number of errors is in the categories of context and collocation, which according to James (1998) as well as Hemchua and Schmitt (2006) count as semantic errors. This would suggest that aspects of word knowledge are a viable way of differentiating between errors (Dodigovic et al., 2014). Some deliberations on the errors in the top two categories are presented below.

In the current learner corpus, wrong word meaning, wrong word choice, confusion of sense relation and synonym confusion were considered under the umbrella of *Context*. Similar to Hemchua and Schmitt (2006), these semantic errors outnumber all of the other categories (111 errors in total), out of which 83 were due to negative transfer from L1 and 27 to L2. Here is an example:

- *The matter with **false** used prepositions also comes from the dissimilarity of Armenian and English languages*.

First, the possible explanation is the influence of Armenian with respect to polysemous L1 words, the analogy of which is found among Chinese EFL writers (Dodigovic et al., 2017; Wang, 2011), or direct translation of Armenian words into English, parallel to the analogy among Thai EFL writers (Kaweera, 2013). For example, the verb *provide* is a polysemous word in Armenian used to indicate different meanings in different contexts (provide education: կրթություն տալ (krtoutyun tal), provide opportunities: հնարավորություն տրամադրել (hnaravoroutyoun tramadrel), which is not the same in English. Unfortunately, the use of the Grammar-Translation method in the Armenian English classroom (Ohanyan, 2018) provides a fruitful ground for the influence of L1 on TL.

Second, the students from whose essays the corpus is comprised are studying at an English medium university and are required to compose well-written texts. Their writing instructors often urge them to consider the choice of synonyms in order to add lexical variety to their composition. This might lead to the choice of what seems to be a more sophisticated word, which would make this an intralingual error. This differs from the interpretation of Carrió-Pastor and Mestre-Mestre (2014), who would classify this as conceptual error. Here is an example:

- *Children grow up hand in hand with the* ***abrogating***** effects of social networks*. (harmful)

Third, there are cases, where a wrong choice of preposition distorted the meaning of a word and was counted as a context error rather than a structural one. In the majority of cases these kinds of errors were caused by negative L1 transfer, such as the following:

- *I have made a checklist of several points, which I must always have* ***under hand****, when I write an essay* (at hand).

Finally, context errors could be a result of wrong word choices, because of simply not knowing the word in L2, for example:

- *While others* ***possess*** *that it contributes getting an addiction and enhance the chances to restless nights* (insist).

The stage of error classification revealed that collocations were the hardest to isolate because many times collocation errors could as well be counted as context errors. The high level of frequency—12.58% of total errors—is a good indicator of frequent usage of collocations. The frequency of collocations found in the current corpus is almost the same (12.12%) as the one mentioned by Shalaby (2009), but much lower than the frequency of collocation errors (26.05%) indicated by Hemchua and Schmitt (2006). This might well be due to the differing methodologies in the two studies. Whereas the present study used the edited student papers, written over a period of time in a setting in which various aids were

available, in the Hemchua and Schmitt (2006) study, the participants wrote their papers under controlled conditions, with no dictionaries available. The different nationalities of the participants in the two studies, Thai and Armenian, and hence the different L1 Thai and Armenian, might also have been responsible for this difference, if examined in light of Meara and English (1986).

There are several examples of wrong collocations with the words *information*, *time* and *knowledge* that are a direct translation from L1 (Kaweera, 2013), which indicates the limited lexical competence of the students. Also, it seems that learners are inclined to overuse those collocations that they feel safe with (Chan, 2010). For instance, students have used "right consideration" instead of "careful consideration".

Collocation and context-related errors might also explain the fact that the most frequent erroneously used words such as *make* or *put* are found among the 3000 most frequent words, which the participants would have encountered in the early stages of learning English. The fact that they use these words productively suggests some knowledge of them, without an adequate depth (Nation, 2006) however. Most likely, they based their perceptions of these words on what they knew about their L1 translation equivalents (Dodigovic et al., 2017).

Thus, it seems that collocation errors are predominantly interlingual in nature, which corresponds to the findings by Yamashita and Jiang (2010), although there are intralingual reasons as well, which to some extent conforms to the deliberations of Carrió-Pastor and Mestre-Mestre (2014). In any case, the results suggest that the leaners need more time and a vast amount of exposure to authentic texts in order to make collocations a part of their lexical repertoire (McGarrell & Nguien, 2017). Word meanings should equally be studied in context (Nation, 2006), rather than from lists in isolation, such as might sometimes be the case in Armenia (Ohanyan, 2018).

Regarding the most frequently misused words, the top two are *make* and *put*, both belonging to the category of the so-called light verbs, which according to Wang (2011) are frequently misused in collocations by Chinese L2 learners. In fact, Wang (2011) found that a large majority of the leaners' uses of English light verb + noun collocations could be traced to either positive or negative transfer from L1. Similarly, most erroneous

collocations in this study are interlingually caused and contain a light verb, with a noun being the second most frequently misused part of speech. Overall, the trends in most frequent error types as well as the most frequently misused words seem to echo those found in previous research. They also suggest that the issue at hand is the depth of vocabulary knowledge.

Conclusions

The results of this study revealed that among the six categories of errors, Context errors are the most common, and among those errors most are wrong word choice, synonym confusions or literal translations. Thus, the number of context or semantic errors is twice the number of word form errors, followed by word structure, which indicates that there may be lexicogrammatical errors due to the lack of adequate input, extensive output or constructive feedback.

Also, it became evident that there were twice as many interlingual (176) as there were intralingual errors (103), which means that L1 is one of the main causes of lexical errors in the written production of the Armenian learners of English. However, the results also showed that there is no difference between the two sources of errors with regards to Word Form (25 L1 vs 27 L2 errors).

In general, it can be concluded that high frequency words are most prone to errors, which suggests that depth of knowledge has suffered somewhere along the vocabulary acquisition path.

Pedagogical Implications

The above conclusions are telling. In line with Ohanyan's (2018) study, they seem to suggest that there are deficiencies in the way vocabulary is taught that could and should be rectified. One of the main issues might be excessive focus on word form in the EFL classroom, at the expense of the much needed focus on meaning (Nation, 1990). The fact that Armenian as L1 seems to be responsible for the majority of lexical errors is well in line with Ohanyan's (2018) finding that the Grammar-Translation

Method is the main approach to EFL teaching in Armenian public schools. It could be argued that indiscriminately using translation in the learning process might lead to the habit of basing all production on an L1 model (Dodigovic et al., 2017).

For this reason, the learners should be made aware of the fact that there is no exact one-to-one L2 equivalent for each L1 word. Thus, the use of bilingual dictionaries should gradually decrease (Schmitt, 2008), especially with higher L2 proficiency students. Likewise, over-reliance on translation may hinder EFL learners at developing an independent L2 lexicon, because the learners will try to access the word through its L1 equivalent rather than directly (Thornbury, 2002). That is why monolingual learners' English dictionaries should be encouraged, especially those which are reliable and model the use of words in authentic sentences. It is also very important to encourage students to use collocation dictionaries and concordances, particularly such as can be generated using tools such as the Compleat Lexical Tutor (lextotor.ca), with its helpful analytical tools and a wide range of authentic corpora.

In addition, words should be studied in context (Nation, 2006). Decontextualizing memorization of words from word lists and drilling can be a useful part of the learning process which nonetheless relies on a limited range of learning strategies (Schmitt, 2000). In contrast, the learner's active involvement in word processing is required, since the higher the learners' involvement in accessing a word, the more memorable it becomes (Thornbury, 2002). The same view is supported by many researchers such as Ferris (1999), Ghandi and Maghsoudi (2014), Kurzer (2018) and Sheen (2007), who support the effectiveness of indirect feedback over the direct one. One of the major arguments for this is a deeper level of learner's involvement in the process of self-editing or task revision, which in turn results in better performance in their writing.

Moreover, both size and depth of vocabulary play an important role in language proficiency. The present study has indicated that the size of the participants' vocabulary might be greater than its depth. Thus teaching should shift from size to depth, by reinforcing "situational presentation" (Thornbury, 2002, p. 81), including contextualized learning based on learners' own experiences, as well as repeating those chunks and collocation in different contexts, so that the learner gains competence in using

the words in a range of contexts (Thornbury, 2002). The activities that can be used to this end are information-transfer and information-gap activities, such as turning diagrammatic representation—graphs, plans and maps—into text. Synthesizing and summarizing information from different sources can also be effective in learning vocabulary (Nation, 2006).

Furthermore, paying more attention to teaching the word form and spelling explicitly can be more effective not only for that specific lexical item, but for learning additional vocabulary items, such as polysemous meaning senses (Dodigovic et al., 2017). As the sound, stress and overall syllable structure of the word determine the way it is stored in the learner's mental lexicon, it is important to highlight the word's shape and stress in its spoken form (Thornbury, 2002), using techniques such as listening drills or chorus mumble drills and phonemic script. Hopefully, the teachers can be empowered to follow through with the above recommendations.

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9

Semantic and Conceptual Transfer in FL: Multicultural and Multilingual Competences

María Pilar Agustín-Llach

Lexical transfer is the influence of a (previously known) language on another language, which is being learned. It has also generally been known as cross-linguistic influence (CLI) in the lexical domain. CLI accounts for the relationships established among all the languages at stake. In other words, not only the influence of the L1 on the L2/L3/Ln is considered, but also how the L2/L3/Ln might affect the L1 knowledge and performance. Lexical transfer is a recurrent phenomenon in language learning and has been widely researched (cf. Arabski, 2006; Jarvis & Pavlenko, 2008; Singleton, 2016).

Lexical transfer can manifest itself in different ways. Traditionally, research distinguishes between positive and negative lexical transfer (see, e.g., Agustín-Llach, 2010). Additionally, the influence of another language can be made patent in lexical reference or lexical choice (Jarvis, 2000). This results in evidence, which does not cause a lexical error, but an error in, for instance, register, pragmatics, style. Sometimes the choice

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of a specific lexical item is not erroneous; it is odd or infrequent as to native standards. Also, elaborating on Schachter's (1974) notion of avoidance, Ringbom (2006) argues that at the lexical level some words might be avoided because learners may not feel at ease with them. This does not result in an erroneous occurrence, but it is the result of L1 influence.

As far as positive lexical transfer is concerned, it refers to the influence of cognate words. Cognates are words which share (similar or same) form and meaning in the source and target language. In European languages, cognates usually come from words of Greek or Latin origin, but also the so-called international words, such as telephone, radio, computer and so on. Cognates are believed to ease the process of foreign language acquisition (see Otwinowska, 2016), because there is less to be learned both in terms of form and meaning. Learners can maximize their linguistic resources. Cognates facilitate communication, and because they represent a common concept, there is no need for modification or retuning of the mental lexicon (see Otwinowska, 2016). We refer to their influence as positive, because it helps or facilitates learning by adding a very slight learning load.

Negative lexical transfer is called so, because it generally results in a lexical error according the L2 standards. This erroneous rendering might hinder or impede communication, it might provoke irritability on the part of listener/reader and it might also damage the speaker's image (see Agustín-Llach, 2010). Notwithstanding their disadvantages, lexical errors help scaffolding and, therefore, learning. They also aid in lexical search (e.g. lexical creation; Zimmerman, 1987), which can lead to successful communication and prevent message abandonment. Finally, lexical errors compensate for the lack of lexical knowledge as the application of a communicative strategy. Thus, good language learners transfer from previous linguistic knowledge as a strategy to make amends for incomplete lexical competence. Given the above, negative lexical transfer might not be so negative after all.

Within negative lexical transfer, formal or semantic/conceptual lexical errors can be distinguished. Formal or lexemic errors (Jarvis, 2009) affect the form, oral or written, of the target word. There are different classifications or taxonomies, but the most widely recognized type of lexical errors are as follows (see James, 1998; Celaya & Torras, 2001):

- Borrowing refers to the situation when an L1 word is inserted into the L2 syntax without any further tailoring, as in the following example:
  - My grandmother is *coja* (Eng. lame)
- Phonetic rendering, which can also be called misspelling, refers to those instances where the target word is written as it is pronounced by the learner, for instance (from Spanish pronunciation of liquid "s" as "es"),
  - I can *espik* English (Eng. speak)
- Lexical invention frequently known as coinage refers to the invention of a target word which can be based on the target language or assume characteristics of the L1. An example of a lexical invention with Spanish-L1 base appears below:
  - My favourite *equip* is F.C. Barcelona (Eng. team, Sp. *equipo*).

There might be other categories or types of formal lexical transfer; here we have included the most relevant ones.

Semantic and conceptual lexical transfer resides at the level of meaning or at the level of the concept. First, an explanation of the differences of the two is called for (see Jarvis, 2009, 2016). Semantic transfer refers to an interference at the level of mapping one form with its corresponding meaning; it is an interference, which is linguistic in nature, which happens within the realms of language. When a new language is learned there is a relinking of existing concepts or meanings with new forms, the target words. This can result in an erroneous linking of the already existing concept with the new, such as in:

> *He bit himself in the language* (vs tongue both rendered as *lengua* in Spanish). (see Jarvis, 2009, 2016)

In this example the same word is used for two different concepts in Spanish, but in English each of the concepts is rendered with two different words. What the learner does in this particular example is extending the meaning of the L2 word to cover all the meaning range its equivalent has in Spanish.

Some types of semantic lexical transfer have been distinguished in the literature (see James, 1998; Jarvis & Pavlenko, 2008; Dodigovic, Ma, & Jing, 2017). Below we identify the most relevant categories of semantic transfer (see James, 1998):

- Literal translation or calque just refers to the transposition of the L1 word with its meaning into the L2, for instance:
  - I have a new *table study* (Eng. desk, Sp. mesa de estudio)
- Semantic extension involves the transfer of L1 semantic features to the new L2 target word:
  - In my class is 27 *boys* (Eng. children, Sp. *niños*: boys and girls).
- Wrong word choice results when the learner chooses a target word which is close in semantic terms to the right L2 word, but which does not correspond with the intended meaning. The origin of the confusion rests in the L1 where both meanings are rendered with the same L1 word, such as in:
  - My sister is *waiting* a baby (Eng. expect, Sp. esperar).

On its part, conceptual transfer (see Jarvis, 2009, 2016) is an interference at the level of the concept, that is, it resides in the realm of thought and originates when the learners have to learn a new concept or restructure already existing ones so as to fit into the L2 conceptual paradigm. As to the first case, the need to create a new concept, there is the example of the German word *Pfand* which denotes the money one gets after giving back a recycling container, a bottle, a cup. There is no word for this type of money in English or Spanish, because there is no concept for that, at least not in the current cultural reality; the reality does not exist in Spain or the English-speaking world. One example of the restructuring of an already existing concept might be with the concepts "bread", or "village" which represent different realities in Spanish and English, for instance. The respective words are language equivalents but the concepts they denote are slightly different in the corresponding cultures. The learner needs to retune their conceptual competence in order for it to fit in the new language/culture. Conceptual and semantic transfer are very difficult

to distinguish in practice especially if deprived of context. The following contextualized example might serve to illustrate the idea of concept transfer:

- I want to earn enough money to buy a house out of the *suburbs* [Eng.: high-class residential area, Sp.: low-class, unsafe borough].

Conceptual transfer is based on L1 culture, and belongs to the level of thought (Jarvis, 2016). Concepts can be said to be mental representations or pictures of reality each speaker has in their mind, so questions such as the following might help us define and delimit concepts and thus better identify conceptual transfer: What do I picture in my mind when I hear the word: *pueblo* and "village"? What are the mental pictures and associations? Are they the same? Are they different? What does a native speaker of the target language picture when he hears the word "village"?

These mental representations are not always objective renderings of reality. They are influenced by speakers' experiences, which are generally embedded within L1 culture. Thus, we agree with Jarvis (2016, p. 611) when he says: "because of the subjective nature of conceptual representations, there is a great deal of room for different people to form different conceptual representations of the same experiences". From this, it is reasonable to ask whether speakers of the same L1 can be grouped to share common mental or conceptual representations. This is what is called linguistic relativity. Linguistic relativity argues that the L1 shapes the mind, and accordingly when the task of learning a new language appears, the L1 concepts need to be retuned, the world needs to be reconceptualized to meet L2/Ln standards and learners are compelled to think about experience in new ways in compliance with the foreign language and culture. For linguistic relativity there might also be a possibly unconscious cultural influence, which might as well contribute to shaping language.

Cultural awareness has been a rather neglected area in SLA (see, for instance, Cifone Ponte, 2019) and as a result, learners show lack of L2 cultural proficiency or awareness. Hence, when one concept has a different referent or refers to a different reality in L1 and L2, learners tend to transfer from their existing knowledge in the L1, which is what we call concept or conceptual transfer. Underlying conceptual scenarios are

expressed linguistically and transferred from the L1 language/culture to the L2 language/culture during the process of foreign language acquisition. Concepts are based on cultural knowledge and uses. Learners need to either recode those concepts or learn the new ones (Jarvis, 2016). Despite its relevance in L2 learning and teaching, conceptual transfer, to our knowledge, has not been devoted much attention in the literature, and experimental studies with participants' lexical productions are not abundant.

Finding an instrument that helps elicit large enough amounts of productive vocabulary is not easy. In this sense, the lexical availability task has consolidated as a primary instrument to, first, examine how lexicalization of the same reality varies across languages and, second, identify cultural words and conceptual differences in the source and target language (Canga Alonso & Cifone Ponte, 2016; Palapanidi & Agustín-Llach, 2018). The lexical availability task is not an association test in the traditional way, since words establish relationships not only with the stimulus word or centre of interest but also with the preceding words (words having been produced earlier in the task), also called chain associations. In the present study, we will focus on the associations between stimulus and responses, solely.

Bearing all these considerations in mind, in the present study, we intend to look into the influence of the native language and culture in the production of vocabulary when completing a lexical availability task.

The Study

Participants

A total of 265 EFL learners participated in the study. They were attending the 2nd grade of the Baccalaureate (year 12), which is the pre-university year. Thus, they were 17–18 years old. They had Spanish as their L1 and could attest an A2-B1 CEFR proficiency level according to the pen-and-paper version of the Oxford Placement Test with a mean

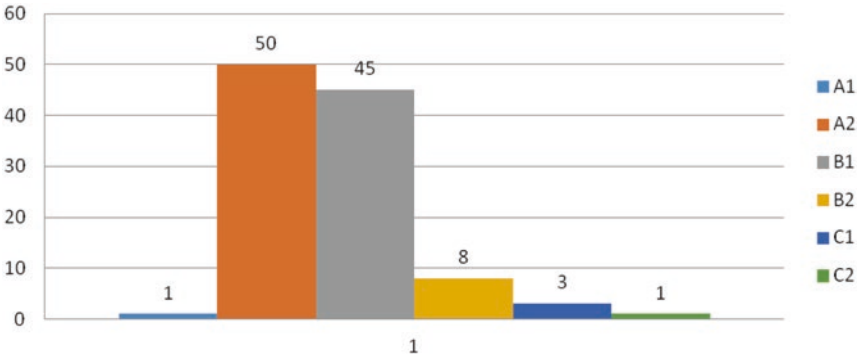

Fig. 9.1 Distribution of participants across CEFR proficiency levels

score of 31. Figure 9.1 shows the distribution of learners into the different CEFR levels.

Instruments for Data Collection

Apart from the above-mentioned Oxford Placement Test to establish the mean EFL level of the informants, we had learners complete a lexical availability task. The lexical availability task is a pen-and-paper task which elicits lexical items as associative responses to the stimulus word. In this case, it consists in responding in writing to a prompt or stimulus with the lexical items that first would come to their mind. Participants had 2 minutes per prompt to write as many words as they could come up with. In total, participants had to respond to 15 prompts: Parts of the body, the house, clothes, food and drink, animals, town, countryside, school, professions, hobbies, black and white, make, love, hate, sad. However, for the study we only selected the responses to two prompts: "food and drink" and "countryside". We opted for these two prompts because they are more prone to L1 cultural influence (Canga Alonso & Cifone Ponte, 2016) and they are also found most productive in Spanish FL (e.g. Šifrar Kalan, 2014) and in EFL (e.g. Jiménez Catalán & Fitzpatrick, 2014).

Procedures and Analyses

Participants completed the tasks in their own classes with the presence of the teachers and the researcher. As we said above, the tasks were completed using pen and paper. The responses were typed in excel files, one sheet per prompt by the researcher. Answers were not corrected or modified in any way, since we were interested in looking into L1 influence. Thus, instances of semantic and conceptual transfer were identified. Only transfer examples were included in the analyses. We also calculated the total number of students who transfer concepts.

In order to get the semantic scenarios of the words elicited, we used the definitions in dictionaries, we used *WordReference* and *Merriam-Webster* for English and *DRAE* for Spanish in their online versions.

Results

We are going to focus the account of results on the concepts that were most frequently included in the learners' responses and which we identified as possible instances of conceptual transfer.[1]

Countryside: Village

The word "village" appears 42 times, that is it is produced by 15.85% of all learners in response to the prompt Countryside. The concepts "village" and its equivalent *pueblo* share some features, such as referring to a small and rural settlement. However, there are certain features which are not shared between the two cultures/concepts and which represent different visions of reality. In Spanish as L1, the concept *pueblo* relates to the ideas of vacation, summer, family, fun, freedom, animals. These ideas are not embedded in the English L1/L2 concept.

Accordingly, when an English L1 speaker hears/reads the word "village", what they see or picture in their minds is a rural settlement with stone or wooden houses, scattered houses, one main street and few people.

However, when a Spanish L1 speaker hears or reads "village" the picture that emerges is something very different, also a rural area, but full with children in the summer, animals, people in the streets sharing a chat. The ideas associated with each of the linguistic terms are different in the two languages, although the terms are frequently seen as equivalent. The scenario created in each of the languages is dependent on culture, and therefore concept transfer can happen when the L2 learners assume the L1 conceptual scenario to be the same as the L2 conceptual scenario of two equivalent terms.

Countryside: Outskirts

Two students (0.75% of the total sample) included the term "outskirts" (Sp. *a las afueras*) as a response to the prompt Countryside. In this case, the conceptual transfer from Spanish L1 into English L2 is even more evident, since in the case of the English term, outskirts does not really fit under countryside. It is defined as a high-class residential area, within the city limits (cf. wordreference.com), whereas the equivalent Spanish expression *a las afueras* refers to a less urbanized area, outside the city or town. So, in both cases, the term refers to a place away from the centre of the town, but if in English it is within the limits of the town, in Spanish it is outside and can be understood as "in the countryside" as opposed to "within town".

Countryside: Square

Two students (0.75%) included the word "square" (plaza) as a response to countryside. The considerations for this are similar to those of village and *pueblo*. The shared features of both concepts are that they refer to a geographical space or form. However, the feature of a "plaza" being the centre of a Spanish village, especially, and a prominent meeting place are not included in the English conceptual scenario. Also the idea that the main square is where the church is located is alien to the English concept, but present in Spanish.

Other examples of possible instance of conceptual transfer as response to the prompt "countryside" and their frequency of occurrence are included below:

- Canteen (1 // 0.38%)
- Forest (38 // 14.33%)
- Festivity (1 // 0.38%)
- Camp (20 //7.55%)
- Ground (2 // 0.75%)
- Animation (1 // 0.38%)
- Suburb (1 // 0.38%)
- Afternoon (2 // 0.75%)
- Cellar (1 // 0.38%)
- Bar (2 // 0.75%)
- Party (8 // 3%)
- Festival (1 // 0.38%)

The prompt "food and drink" was also prone to some instances of conceptual transfer. We comment the most frequent and conspicuous occurrences below.

Food and Drink: Bread

At first sight, the terms "bread" and *pan* (Spanish) fit perfectly as responses under "food and drink", and thus a total of 60 informants (22.64%) use this answer as a response. What is interesting here is that the conceptual scenarios of two apparently simple and completely equivalent words are very different. The main differences rest on their non-shared features respective the form, type of cereal/grain they are made of, the cooking style, and their use or function being mainly reserved for sandwich making in the English L1 scenario and for a side for main dishes in the Spanish conceptual scenario.

Food and Drink: Pepper

Still in the realm of food, we find another very illustrative example with peppers and *pimientos*. A total of 16 informants (6% of the total) gave the response "pepper". The English and Spanish conceptual scenarios have some shared features, such as being food, vegetables, which are eaten as garnish or side dish. However, they differ in many more conceptual subtleties, which make both scenarios slightly different. In Spanish *pimientos* are a longish, thin vegetable in red or green, in English "peppers" are shorter, thicker and can also be found in yellow. Peppers are frequently eaten raw in salad, whereas pimientos are cooked (boiled or mainly roasted) and eaten as a side dish with meat.

Food and Drink: Chops/Choplets

To finish with the examples of the most important conceptual imbalance between English and Spanish terms, we deal with "chop" vs. *chuleta*, produced by 3 informants in total (1.13% of all informants). As in previous examples, both scenarios share some features such as being food, meat specifically, in this case. But, the number of non-coincident semantic features is bigger. Choplets are generally made of pork meat and they are fried in the pan, and eaten alone or with vegetables of fries. Whereas, *chuletas* are roasted in fire, are made of lamb meat and most frequently eaten with *pimientos*. They are also typically eaten at social gatherings outside the home, than as regular meal at home.

Other examples in the responses related to the semantic field of food and drink where we observe discrepancies in the conceptual scenarios of English and Spanish are rendered below:

- Lentil (2 // 0.75%)
- Chip (115 // 43.4%)
- Vegetable (84 // 31.7%)
- Lettuce (48 // 18.11%)
- Plate (4 // 1.5%)
- Bean (24 // 9%)

Discussion and Conclusion

In the chapter, we were interested in examining the influence of the native language and culture in learners' production of L2, for which purpose we used a lexical availability task. The results show that this influence is especially frequent and prevalent in more open and less internally cohesive fields, which are more prone to elicit words, which have cultural connotations and at the same time, which are more permeable to L1 influence. Open and less cohesive fields or prompts are those which have been found to elicit a wider range of different responses among participants. The terms produced were analysed and those words related to cultural issues with entrenched and underlying cultural referents were examined. Participants are well aware of the linguistic requirements of the task, and they are successful in suppressing L1 formal influence, but their conceptual information is, at least partially, L1 shaped.

In our analyses, we could identify different tendencies. For instance, new concepts are rendered in L2 form, for example farmer, cottage, country music, wine bar, barbecue, with apparently no further difficulty (conceptual non-equivalence in Pavlenko's 2009 words). However, partially (non)equivalent concepts, those under study in the present chapter, are the tricky ones to learn, and thus liable to be rendered inadequately. Learners L2 proficiency, which lies at the intermediate level, may account for this. In order to fully master conceptual differences between the native and the target language, learners need a threshold language level, but it is our belief also cultural level (metalinguistic and cultural awareness).

Because of the close link between culture and language, Culturally related fields or centres of interest also stimulate conceptual transfer. We believe that this (unconscious) cultural influence (culture shaping language?) can be understood as evidence for linguistic relativity (Jarvis, 2016). Additionally, the limited amount of time to respond to the task might also trigger recourse to the L1 conceptual world. This phenomenon can be seen as evidence of a thinking-for-speaking influence in lexical development. The thinking-for-speaking hypothesis assumes that language influences thinking or cognition during the processes of language production. Accordingly, the learners' L1 would guide how

speakers think about certain concepts, or semantic domains of experience while interpreting or producing language, and this would manifest in the preferred use of certain lexical items (over others) (see Han & Cadierno, 2010).

Learners display, at points, lack of L2 cultural proficiency and awareness, which manifests in conceptual transfer, such as in the examples commented above. Students assume the L1 conceptual scenario and transfer it to the L2 term. But, as we have probed above, some equivalent terms do not have equivalent semantic or conceptual scenarios.

The task of learning a new language implies the need to reconceptualize, to re-structure the L1 world and culture to fit into the new target language and culture. This implies, thus, the development of the so-called sociocultural competence (CEFR, 2001; Canale & Swain, 1980). Explicit teaching of sociocultural aspects in the FL class is a way to trigger that competence (CEFR, 2001; Cifone Ponte, 2019). Stay abroad periods are recommended as well to fully and firmly develop the sociocultural competence and avoid an interpretation of the world and its realities almost fully based on L1 knowledge and L1 culture.

Language learning, and especially lexical learning is experiential; it is tied and dependent on learners' experiences. A clear consequence of the analyses of conceptual transfer, and their considerations of evidence of linguistic relativity is a question of what vocabulary we need to teach. Because, students learn and use the vocabulary to express their experiences, we need to focus lexical teaching on two main sources. First, the vocabulary available to native speakers of the target language of similar characteristics, age, schooling, background. Second, the equivalent in the target language of their most available vocabulary in their L1/learners' L1. The first group will provide learners with the information about the words that embody the target language and culture, the target language experiences. The second group will provide them with the tools to express their own culture and experiences in the target language. We consider both groups are necessary for learners to achieve a complete/an adequate lexical competence that serves their communicative purposes.

From studies on lexical availability (Palapanidi & Agustín-Llach, 2018; Canga Alonso, 2019), it seems reasonable to argue that it is our experience of the world and our world knowledge, which seems inextricably

linked to our culture, that guides our lexical learning and use. This looks like strong evidence of thinking for speaking, evidence that experience, culture and language are closely linked in our minds. The way we organize our mental lexicon depends on the associations made based on experience, on world knowledge, and this is culturally determined.

There seems to be an imbalance in the lexical repertories obtained through frequency lists/criteria and from lexical availability tasks. Associations typical of lexical availability tasks are experiential (Palapanidi & Agustín-Llach, 2018), and so is (lexical) learning. Hence, for FL learning purposes, we need the words that help us express our experiences, emotions and cultural referents not only belonging to the L2 but also to the L1.

Another interesting possibility is to check the lexical availability index of highly available words in EFL and their frequency in frequency lists. This can help us see whether there are discrepancies attributed to experience, or culture. The example of village is a good one, but also study, go out, which are translation equivalents of L1 concepts and experiences attached to culture/cultural experiences. We believe this is especially practical to anticipate cultural differences and act upon by informing learners of them.

Note

1. The associations prompted by the lexical items discussed were taken from the Merriam-Webster dictionary of definitions and thesaurus for English and from the *Diccionario de la Real Academia Española* for Spanish.

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Part IV

Developing Needs Based Procedures and Tools to Support Vocabulary Learning

10

Fostering the Teaching of Cultural Vocabulary in EFL Contexts

Andrés Canga Alonso

Introduction

As stated in this volume, vocabulary knowledge in the L2 (English) is vital to foster students' interaction in multilingual and multicultural contexts. Previous studies have purported that a limited vocabulary repertoire in the L2 would make social interactions harder (Verhoeven, 1990; Jiménez, García, & Pearson, 1996; Hu & Nation, 2000). For this reason, English as a Foreign Language (EFL) curricula worldwide have considered vocabulary to be an essential feature in EFL teaching and learning.

In recent decades, thanks to the phenomena of globalisation and the recommendations and documents passed by the European Council [e.g. The *Common European Framework of Reference for Language. Learning, Teaching and Assessment* (CEFR, 2001)], notions such as sociocultural competence, intercultural competence and intercultural communicative competence (Byram, 1997) and plurilingual and pluricultural

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competences (CEFR, 2001) moved to the core of international teaching pedagogies. In this vein, it seems reasonable that EFL curricula and textbooks should foster the introduction of cultural vocabulary in EFL classrooms. Therefore, EFL learners' lexical selection should involve the thematic areas required for the achievement of communicative tasks relevant to learners' needs, which, at the same time, "embody cultural difference and/or significant values and beliefs shared by the social group(s) whose language is being learnt" (CEFR, 2001, p. 150). To foster this lexical selection, the CEFR (2001, pp. 102–103) suggests a list of cultural topics which are supposed to raise students' sociocultural awareness and sociocultural knowledge (e.g. everyday living). This list is the basis for the decision making process to select and design appropriate activities to foster the teaching of cultural vocabulary that will be developed in section "A Framework to Foster ICC and Cultural Vocabulary Learning" of the present chapter.

Following these premises, this chapter reviews former literature on the influence of culture in EFL teaching to foster intercultural communication and intercultural communicative competence, plurilingual and pluricultural competences and the importance gained by cultural content in ELT materials worldwide (Mahmood, Asghar, & Hussain, 2012; Canga Alonso & Cifone Ponte, 2015; Cifone Ponte, 2019) to provide a framework for the teaching and learning of cultural vocabulary according to CEFR A1–A2 levels to be implemented in any EFL classroom context.

Culture, Intercultural Communicative Competence and Cultural Vocabulary in English Language Teaching (ELT)

This section tries to portray the relationship between culture, foreign language learning, intercultural communicative competence, plurilingual, pluricultural competence and cultural vocabulary.

Learning a foreign language involves a process of enculturation in which the learner acquires knowledge about the new culture/s and even gains awareness of their own culture (Alptekin, 2002). What is more, the

connection between vocabulary and culture lies in the differences in regard to form and meaning and is also strongly influenced by peoples' feelings, ideas and experiences related to the source and target communities (Williams, 1976; Wierzbicka, 1997; Bennett, Grossberg, & Morris, 2005). This close relationship is made explicit in the CEFR (2001) as it states that the cognitive organisation of vocabulary and expressions is affected by the cultural features of those language communities the speaker is familiar with. Moreover, the lexicon is a linguistic form where the influence of culture could be more significant so that words can encrypt "culturally contexted conceptual systems" (Liddicoat & Scarino, 2013, p. 28). These conceptual systems are affected by the language communities in which they interact, so we can conclude that the lexicon is also affected by cultural conceptualisations (Sharifian, 2003). Cultural conceptualisations, then, reflect the way people represent their cultural values regardless of whether they refer to the source culture, the culture of the language they are learning (target culture) or values which are considered global (international culture). Cultural conceptualisations are usually rendered by means of cultural words which can be defined as those terms used "for special kinds of 'things', 'events' or 'customs' […] that cannot be translated literally, because translation will distort its meaning" (Hapsari & Setyaningsih, 2013, p. 76).

In the light of the abovementioned literature, the inappropriate use of words as well as the lack of understanding or familiarity with the culture they refer to can cause misunderstandings in conversation which may lead to communication failures (Dimitrijevic, 1977; Baker, 2013). Hence, there is a need to foster the inclusion of cultural vocabulary teaching in EFL curricula.

The term culture is at the root of Intercultural Communication (IC) and Intercultural Communicative Competence (ICC). Byram and Fleming define IC as the ability of people who participate in different cultural contexts to "reconcile or mediate between different modes present" (1998, p. 12). Despite the fact that culture and IC are intertwined, we can set a distinction between both concepts since traditional cultural perspectives focus on a culture which is external to the learner while an intercultural scope to culture assimilates learners' source culture in the process of learning (Liddicoat & Scarino, 2013). This intercultural scope

is reinforced in the CEFR (2001) as it claims that ICC can be fostered when foreign language learners acquire: (i) intercultural know-how skills (*savoir faire*) which include social, living, vocational, professional and leisure skills, and (ii) the ability to relate the speaker's source culture with the foreign/target culture to solve intercultural misunderstandings and identify cultural stereotypes. Therefore, EFL teaching pedagogies should promote tasks to raise learners' (socio)cultural awareness.

The communicative language competence includes the linguistic, sociolinguistic and pragmatic component (CEFR, 2001). IC is mostly represented by the sociolinguistic competence as it highlights that communication within different cultures is affected by the sociolinguistic component. Therefore, FL courses should aim at raising EFL learners' awareness of the social conventions that are implied in the source and target languages.

The command of the aforementioned *saviours* will enable students to use the foreign language/s for the purposes of communication and to take part in intercultural interactions, where a person, viewed as a social agent, has proficiency at varying levels, (A1–C2) in several languages and experience of several cultures (plurilingual and pluricultural competence). These latter competences (plurilingual and pluricultural) cannot be understood as the superposition or juxtaposition of distinct competences, but rather as the existence of a complex or even composite competence on which the user may draw.

As stated in the CEFR (2001, p. 168), the concept of plurilingual and pluricultural competence tends to move away from the supposed balanced dichotomy established by the customary L1/L2. By pairing and stressing plurilingualism where bilingualism is just one particular case since a given individual does not have a collection of distinct and separate competences to communicate depending on the languages they master. They should aim to acquire a plurilingual and pluricultural competence encompassing the full range of the languages available to them. The pluricultural dimensions of this multiple competence are also stressed, but without necessarily suggesting links between the development of abilities concerned with relating to other cultures and the development of linguistic communicative proficiency.

Finally, the notion of culture in FL teaching can also be approached from three complementary angles: source, target and international

culture (Risager, 1990; Kramsch, 1993; Byram, 1997). Source culture words refer to students' native culture (e.g. 'paella', 'wine', 'Spanish omelette'), whereas target culture is that culture or cultures involved in the study of a language. Words such as 'tea', 'Yorkshire pudding' or 'roast beef' refer to this type of culture. Recently, a third subtype has been added to this classification: international culture (Cortazzi & Jin, 1999; Alptekin, 2002). International culture includes a great variety of cultures set in English-speaking countries or in other countries around the world. It exemplifies the manner in which English is used to communicate with others for international purposes. International culture is represented by words which were borrowed from other cultures different from our students' source culture and have gained international recognition (e.g. 'pizza', 'spaghetti' or 'kebab').

This latter classification would provide students with a basis to gain a fuller understanding of how English as an international language (EIL) serves a great variety of international purposes in a broad range of contexts (e.g. economy, education, travel or broadcasting) (Crystal, 2000; McKay, 2003).

Now that we have discussed the relationship among the different approaches to culture, ICC, plurilingual and pluricultural competence, the next section of this chapter will explore the role assigned to cultural vocabulary/content in ELT materials worldwide.

Cultural Vocabulary in ELT Materials

In section "Culture, Intercultural Communicative Competence and Cultural Vocabulary in English Language Teaching (ELT)", we claimed that language is the representation of a culture since language comprises and conveys culture and is a source of cultural information for a particular community (Byram & Risager, 1999, p. 147). For all the above, culture should be properly presented in language teaching curricula and instruction. Therefore, teachers should not only rely on EFL textbooks, but they should become another credible source of cultural information for their students. Textbooks should not only be a source of grammatical and lexical knowledge but the representation of different cultures and their

respective values. Consequently, they need to be a prospective tool to enhance IC in the classroom. In fact, some studies ascertained that students' attitudes towards the foreign language were highly influenced by textbooks (Wright, 1999; Rahimi & Hassani, 2012). Despite the fact that textbooks are the main resource in language teaching worldwide (Jiménez Catalán & Mancebo Francisco, 2008; Criado, 2009; Criado & Sánchez, 2012; Canga Alonso & Cifone Ponte, 2015), we have stated a scarcity of research on culture-related vocabulary in ELT textbooks. To our knowledge, only seven studies have reported a content analysis of the culture-related vocabulary in EFL textbooks (Georgievska, 2000; Han & Bae, 2005; Mahmood et al., 2012; Xu, 2013; Silvia, 2014; Canga Alonso & Cifone Ponte, 2015; Cifone Ponte, 2019). Georgievska (2000) conducted an analysis of two textbooks (a locally produced material and an internationally compiled textbook) which were used to teach EFL at secondary school level in Macedonia. She compared both teaching materials by, on the one hand, providing a general description of the treatment given to the cultural component and then focusing her analysis on each of the materials. To define her framework of analysis she followed Byram and Morgan's list (1994) (social interaction, stereotypes and national identity) and Risager's (1990) four category guide for the assessment of IC (daily life activities, social issues, politics and history, international and intercultural issues and the author's style and point of view). Her findings corroborated that both books lacked references to socio-cultural vocabulary and they did not specify cultural connotations whenever worthy chances to show cultural-related vocabulary were given.

Han and Bae (2005) analysed the vocabulary items comprised in exercises from ten English textbooks used at high school and university level in China. Five of them were used at university and written by native speakers while the remaining five materials were employed in high school and edited by non-native speakers. The authors aimed at evaluating the difference in cultural content between textbooks written by native and non-native English speakers. To this end, they developed six categories: three of them made reference to culture with a capital C—Institutions, Arts and Major Achievements, and Places and History, and the other three to culture with a small c—Social Identities, Individual Persons and Ways of Life, and Stereotypes (2005, p. 58). Among their main findings,

the target culture was the most recurrent in both kinds of textbooks, although in those written by non-natives there were more references to the source culture. Moreover, they highlighted an imbalance between cultural elements from culture with C and culture with c. Culture with C is more popular especially in those textbooks written by native authors.

As for the presence of references to source, target and international culture in ELT textbooks, Mahmood et al. (2012) carried out a quantitative content analysis of an ELT textbook in Pakistan to determine the most frequently represented culture as well as exploring its references to learners' native culture. They identified an absence of information about the students' native culture and claimed that textbooks should represent just the target culture and avoid representing international cultures. In addition, Canga Alonso and Cifone Ponte (2015) explored the cultural vocabulary of two ELT textbooks from two different educational levels in Spain (4th grade of secondary education [10th form] and 2nd baccalaureate [12th form]). Their findings revealed that these two ELT materials tended to focus on the target culture. They also ascertained that the number of words related to culture included in the textbooks was not balanced. Geographical locations and famous or influential characters were highlighted, whereas controversial topics (e.g. politics and religion) were not present in their corpus.

Nevertheless, this predominance of the target or international cultures over the source one is not a global trend in ELT materials. Thus, Xu (2013) explored five volumes of a locally produced textbook in China to test how they enabled Chinese EFL learners to associate their own daily life and activities with those of another culture. His findings showed that the ongoing globalisation and multicultural awareness, alongside the paradigm shift to teaching EIL in the Chinese context have engendered desirability for incorporating multicultural and multimodal ELT materials in China. These textbooks also focused on the source culture since "it is (…) natural and timely to focus on the local learners as the legitimate users of English in the ELT materials" (2014, p. 19).

Silvia aimed at exploring the cultural content of English textbooks used in Jakarta and its implication to foster ICC. The study found that the in-use English textbooks portrayed cultures mainly in the form of visuals. This portrayal means that culture was regarded as tangible objects

of certain countries, but this information does not include practice of the source and target cultures. This representation of culture seems to show that culture was mostly taught as products, popular people and places (2014, p. 242).

Recently, Cifone Ponte (2019), in her unpublished PhD, surveyed the cultural content of eleven textbooks from twelve different high schools in La Rioja. She found that second baccalaureate students (12th form) are being exposed to a number of cultural words that vary based on the level of the textbook used in their high school. However, the input they receive regarding the level of the cultural vocabulary is not adapted to the level they are supposed to acquire. Spanish culture (source culture) is not represented in EFL textbooks and students are in contact with stereotypes caused by the cultural vocabulary about the target culture as it intends to idealize and make the target culture more attractive.

In light of these findings, we cannot reach a consensus on the culture/s portrayed in ELT materials at different educational levels worldwide. The reviewed research seem to indicate that culture/s and cultural vocabulary are presented in isolation since they focus on a certain approach to culture (source, target or international). Therefore, there is a need to design teaching modules which refer to different approaches to culture to foster students' ICC, plurilingual and pluricultural competence. Similarly, to our knowledge, there is a lack of studies targeted at the relationship between cultural vocabulary, cultural awareness and the levels of reference developed in the CEFR (A1–C2). The present chapter tries to cover this research niche.

The following section, then, provides a framework for the design of tasks to promote cultural vocabulary learning in EFL classrooms at A1–A2 levels from the CEFR (2001).

A Framework to Foster ICC and Cultural Vocabulary Learning

The development of the learner's communicative language competences (linguistic competence) is an indispensable aspect of language learning, and word knowledge is essential in order to interact with other speakers.

Table 10.1 Topics and descriptors for the classification of cultural words

Cultural topic	Descriptors
Everyday living	Food and drink; public holidays; working hours and practices; leisure activities
Living conditions	Living standards; housing conditions; welfare arrangements
Interpersonal relations	Class structure of society and relations between classes; relations between sexes (gender, intimacy); family structures and relations; relations between generations; relations in work situations; relations between public and police, officials, etc.
Values, beliefs and attitudes	Social class; occupational groups; wealth; regional cultures; security; institutions; tradition and social change; history, especially iconic historical personages and events; minorities (ethnic, religious); national identity; foreign countries, states, peoples; politics; arts (music, visual arts, literature, drama, popular music and song); religion; humour.
Body language	Knowledge of the conventions governing such behaviour form part of the user/learner's sociocultural competence.
Social conventions	Punctuality; presents; dress; refreshments, drinks, meals; behavioural and conversational conventions and taboos; length of stay; leave-taking.
Ritual behaviour	Religious observances and rites; birth, marriage, death; audience and spectator behaviour at public performances and ceremonies; celebrations, festivals, dances, discos, etc.

Adapted from CEFR (2001, pp. 102–103)

Cultural vocabulary should be, then, introduced and taught to EFL learners so that they can develop their plurilingual and pluricultural competences.

The CEFR (2001, pp. 102–103) lists seven cultural topics (see Table 10.1) with their correspondent descriptors which should be taken into account by academic authorities, curriculum designers, teachers, teacher trainers and publishers to design EFL curricula and plan EFL teaching in the countries which belong to the Council of Europe.

These seven issues address features distinctively characteristic of a particular society and its conforming culture (e.g. everyday living). They should be the cornerstone to propose classroom activities whose aim is to foster communicative language competences, ICC, plurilingual and pluricultural competences.

The aforementioned communicative language competences fostered according to the descriptors of language competences developed for young learners (ages 7–10) (Goodier, 2018a). We have chosen this age group since it usually corresponds with the end of primary school education, i.e. level A1+–A2 from the CEFR (2001). The second volume on the descriptors of language competences (Goodier, 2018b) targets 11–15-year-old students who are usually enrolled in secondary school education and their level of proficiency is supposed to be B1.

The vocabulary range students should learn to attain A1 in the communicative language competence according to the CEFR descriptors and the ELP can-do statements includes words related to food. This word knowledge will let learners attain "a basic vocabulary repertoire of words and phrases related to particular, concrete situations" (Goodier, 2018a, p. 51). It is also considered relevant for learners to be able to "understand some short sentences with names of […] food […], recognise the names of other countries in the world or name and write words for different foods" (Goodier, 2018a, pp. 51–52).

In regard to plurilingual and pluricultural competences, students at A1 level should establish connections among the different languages they are familiar with "to recognise internationalisms and words common to different languages […]". Cultural awareness and knowledge will let them "use a very limited repertoire in different languages to conduct a very basic, concrete, everyday transaction with a collaborative interlocutor" (Goodier, 2018a, p. 56).

A2 level descriptors intend to measure learners' ability to establish connections between their language repertoires to "recognise and apply basic cultural conventions associated with everyday social exchanges" (Goodier, 2018a, p. 95). This ability can foster their capacity to "mobilise his/her limited repertoire in different languages in order to explain a problem or to ask for help or clarification" (Goodier, 2018a, p. 96). The aforementioned recognition will help them use a word (or phrase) from another language in his/her plurilingual repertoire "to make him/herself understood in a routine everyday situation, when he/she cannot think of an adequate expression in the language being spoken" and "understand short, clearly written messages and instructions by piecing together what

he/she understands from the versions in different languages" (Goodier, 2018a, p. 96).

Once we have outlined the relationship between the descriptors to foster communicative language competence, plurilingual and pluricultural competence at levels A1–A2, we move to describe a framework to design activities to promote the aforementioned competences.

The CEFR (2001, pp. 149–150) suggests a set of questions to help people learn a second or foreign language. We consider that learners should be directly exposed to authentic use of language in L2. In this case, they should work with three different unmodified, ungraded, authentic written texts and be introduced to words and fixed expressions used in authentic written texts in their L1 and L2 about food in the target culture (e.g. roast beef and Yorkshire pudding), their source culture (any food popular in their home countries) and the international culture (e.g. hamburgers). Learners will use online or paper dictionaries to look up for unknown words and the teacher will clarify those words which are culturally bound and whose meaning might not be included in dictionaries.

These texts also aim at raising students' cultural awareness with regard to various traditional dishes in different cultures. These foods portray the three cultures present in an average A1–A2 level EFL classroom worldwide by including a piece of writing about a traditional food in students' native country.

The target culture text should provide information about meals associated with English-speaking countries to show a broader picture of foods not only in Great Britain or the USA, but also in Canada, Ireland, New Zealand or Australia.

The source culture could be represented by a document which portrays a traditional dish from the region the students live in and could be used as an introduction to the traditions and culture of this place for those learners who come from different countries or regions.

The international culture should be illustrated with an international meal. This food should be popular among young learners. This popularity might foster a positive attitude to learn about its origins. The same argument can be applicable to the pieces of writing about the source and target cultures. It seems reasonable that learners will be keen to discuss other features that may raise their cultural awareness if they are familiar

with the topics and cultural words that appear in the texts. For example, the term 'roast-beef' is used worldwide as its name has been borrowed from English. There are even languages which have adapted its spelling into the orthographic rules of students' L1 [e.g. *rosbif* in Spanish). Hence, plurilingual and pluricultural competences will be also promoted since learners could recognise internationalisms and words common to different languages (Goodier, 2018a).

The texts should be similar in length and include an analogous number of cultural words and phrases. These terms should be italicized in the texts to help the reader identify them. Words written in a language different from the predominant one in the main texts are also italicized since they will be used to promote students' plurilingual and pluricultural competences.

As a warm-up task, students will be asked to read the texts in groups (4–5 children) to identify how many languages they represent. Therefore, the richer the texts might be in regard to references to different languages, the better for raising students' cultural awareness. Learners will be required to reason why there is a text in their L1 to help them establish connections among the social connotations of meals in different cultures including their own.

Once they have solved this first task, the teacher will introduce the relationship between language and culture and the importance of words and phrases to convey cultural values and will ask them to find similar words or phrases in the texts. This activity, then, aims at raising students' plurilingual and pluricultural competence by showing that using words from different languages in interactions with other peers who are familiar with these languages is not a bad habit but a positive skill to develop plurilingual and pluricultural capacities, as mentioned earlier when we presented the descriptors for levels A1 and A2 (Goodier, 2018a).

Another task may focus on the cultural words and phrases included in the texts. Students will be asked to identify the topics the three texts share (i.e. food), which is part of *everyday living* on the list of cultural topics included in the CEFR (2001), which was discussed at the beginning of this section. Then, the focus of the task will be placed on the cultural words included in each text. Students may be asked to explain the meaning of words from the different cultures represented in the texts. They can look them up in dictionaries, find examples to illustrate their meanings

on the internet or use techniques to guess their meaning. They will share their findings with the rest of their classmates and the teacher will clarify terms they are unable to explain.

Finally, learners will be asked to establish connections among the different cultural words and phrases to show how people spend their mealtime in different cultures. For example, pluricultural people could have their Sunday dinner in a *merendero* (Spanish word for a place where you can cook and spend time with your friends) and share traditional dishes from different cultures.

This last activity proposal illustrates how learners could interact with other peers using words from different linguistic repertoires to share different cultural conceptualisations with the classmates involved in a communicative interaction.

These guidelines are mere suggestions on how three different cultural texts can be introduced in an EFL classroom to raise young learners' (A1–A2 level) cultural awareness. This framework aims to be an inspiring suggestion for teachers involved in teaching English for young learners (A1–A2 level) since all these suggestions are flexible enough to be adapted to various teaching contexts.

Conclusion

This chapter provided EFL teachers with a framework to design tasks to introduce and work with cultural vocabulary at A1–A2 levels to foster their communicative language competence. This proposal seems to favour plurilingual and pluricultural competence since learners are encouraged to use a repertoire in different languages, conduct everyday transactions and make them understood in a routine everyday situation when they cannot think of an adequate expression in the target language.

Further proposals are needed to explore the inclusion of the intercultural diversity that is increasing in our EFL classrooms, as teachers usually face students from different nationalities and cultural backgrounds. Tasks should give voice to these learners by introducing features from their native cultures. This fact may also widen the scope of their classmates' cultural awareness which is usually focused on western conceptualisations of culture.

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11

DIY Needs Analysis and Specific Text Types: Using *The Prime Machine* to Explore Vocabulary in Readymade and Homemade English Corpora

Stephen Jeaco

Introduction

For many decades, analysis of lexical features of collections of texts have formed a basis for helping syllabus designers, textbook writers and language teachers make decisions about the relative importance and usefulness of teaching specific vocabulary. In English language teaching, since the development of the General Service List (West, 1953), through corpus-based developments in learner dictionaries in the 1980s and 1990s (Moon, 2007; Rundell, 1999), various applications of the Academic Word List (Coxhead, 2000), and more recent papers looking at words and collocations in specific academic fields (Ackermann & Chen, 2013; Durrant, 2009), the frequency, distribution and patterning of words have formed a foundation for determining vocabulary levels,

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text difficulty and ultimately what to include in language courses small and large.

While exploration of balanced corpora containing multiple text types across genres and domains can help in the decision making processes for general curricula and courses for mixed disciplines, corpus tools can also reveal useful patterns of language use in highly specific fields and collections of homogenous texts. In most situations, teachers and course designers need to take on the vital task of needs analysis, and corpus data (and corpus-derived examples) play an important role. However, one of the goals of lifelong learning (particularly for English majors, translation students and trainee language teachers) must be to equip students with the skills to perform needs analysis in future (unknown) situations. User-friendly corpus tools can provide a test-bed for the development of these kinds of skills.

This chapter introduces some of the ways a new English corpus tool (*The Prime Machine*, or tPM) can be used with linguistically oriented language students to explore differences between their own use of vocabulary and uses in existing corpora, and to uncover lexical features in their own Do-it-yourself (DIY) corpora. It will introduce some of the main ways readymade and homemade collections of texts can be compared and how further exploration of concordance lines can help language learners gain insights into specific lexical patterning. Following Dodigovic's distinction between "development oriented" and "effect oriented" research on Computer Assisted Language Learning (2005a, p. 48), this chapter is primarily concerned with providing background to concepts, techniques and issues that have informed the development of *tPM* corpus tool. A limited evaluation of its effects will be offered by drawing on examples from Chinese English majors in a Sino-British University in China.

Background

Using a loose definition of a corpus as a collection of electronic texts, and defining corpus tools as software (applications, APPs or websites) that provide means of calculating and presenting data derived from these, this section will explore some of the ways in which corpus tools can be used to explore vocabulary. While corpus linguistics often focuses on

interactions between vocabulary and grammar—the lexicogrammar (Hoey, 2005; Hunston & Francis, 2000)—the purpose here is to present methods which lend themselves particularly to gathering insights about specialist vocabulary and specialized uses of what appear to be more familiar vocabulary items. Each method will be introduced in turn, starting with definitions and purposes, considering potentials for vocabulary analysis, and then explaining procedures in well-known corpus tools. These tools include *WordSmith Tools* (Scott, 2016), *AntConc* (Anthony, 2004), *LancsBox* (Brezina, McEnery, & Wattam, 2015) and *LexTutor* (Cobb, 2000). The use of hands-on corpus activities with language learners will then be reviewed, and some potential difficulties will be summarized.

Corpus Wordlist

One basic function of a corpus tool is to provide a list of different words (types) and their frequencies (token counts). In this chapter, this will be referred to as a *corpus wordlist* to distinguish it from some of the other wordlists described later. Corpus wordlists may be sorted in different ways, but here they are defined as lists of types in a corpus, sorted by descending frequency. In corpus linguistics, each *type* is a unique combination of characters making up a word, and typically for English these would be extracted from text using spacing and punctuation as boundaries. Here, issues related to inclusion or exclusion of numbers and symbols, treatment of hyphenated words and possible groupings of word-forms together will be overlooked; for further discussion about such issues see Scott and Tribble (2006) and Jones and Durrant (2010). Scott and Tribble (2006) introduce the Wordlist function in *WordSmith Tools*, explaining that when sorted by descending frequency, almost any corpus wordlist will first contain a relatively small number of very high frequency words that form the top hundred or so, mostly consisting of grammatical units that hold a text together; then there will be a set of medium frequency words which typically contain what might be considered fairly common nouns, verbs and adjectives; and then at the end of the list there will be "… an enormous tail of hapax legomena (words that occur once only in a corpus)" (p. 11). Indeed, an important concept to understand with regard to the frequencies of different words in text (long or

short; single or collective) is Zipf's Law (Scott & Tribble, 2006; Zipf, 1935). Put simply, Zipf demonstrated that when ranked by descending frequency, there is an extremely sharp decline in the frequency of each word, and moving down a corpus wordlist shows great differences between adjacently ranked items, especially at the top end. Through examples, Scott and Tribble (2006) demonstrate that corpus wordlists are useful as starting points, and may be useful for exploring authorship or indicating that texts were produced in different contexts. Corpus wordlists are often used as a starting point for vocabulary needs analysis, either through the construction of a corpus of target texts, or as a way of evaluating the potential usefulness of a text for teaching. Jones and Durrant (2010) point out that frequency can provide a useful means of determining what could be considered important (by virtue of vocabulary items being widely and frequently used in texts), but note other considerations may mean rankings should not be used to exclude items which could best be taught together (e.g. days of the week) or items that build useful communicative phrases. Generating corpus wordlists is a relatively simple procedure in all well-known corpus tools, involving pointing the application at a set of files on the user's computer and selecting the Wordlist tool in *WordSmith Tools*, *Antconc* and *LancsBox*, or selecting to view the corpus wordlist after texts have been uploaded to the web server in the case of *LexTutor*. However, interpretation of the data is not so straightforward. Since corpus wordlists have potential for authorship identification and provide traces of contexts and production circumstances, word frequencies must be influenced greatly by the style or language habits of the speakers and writers who contributed to the texts they contain and the circumstances of their production. While corpora have much to offer, results and their rankings always need to be treated with caution as corpora are rarely as truly representative as would be desired.

The General Service List, the Academic Word List and Vocabulary Profiles

When wanting to analyse vocabulary in a text or a collection of texts, as well as using the corpus wordlist (derived from the texts being studied), it is also often helpful to match the words against other wordlists. A

number of wordlists are publicly available and the best known of these is probably the General Service List (GSL) (West, 1953), which was created to give an overview of the core vocabulary in English. Other lists of core vocabulary have been generated more recently (Brezina & Gablasova, 2015; Nation, 2000). Corpus wordlists derived from large collections of national corpora such as the British National Corpus (BNC, 2007) and the Corpus of Contemporary American English (COCA) (Davies, 2008–) can also be used for comparison. In order to generate a list of words for general academic language teaching (across disciplines), Coxhead (2000) created a corpus of academic texts and then created a new wordlist of academic words (AWL) by excluding items already on GSL, and including words with a high frequency across academic disciplines. When provided as computer-readable lists of words, corpus tools can make use of such lists for a number of purposes, including to estimate text difficulty by calculating proportions of items which are frequent in the language generally, and so are likely to be well known by students. They can also be used to consider the generalizability of vocabulary in a text by revealing whether items from target wordlists are well represented. Dodigovic (2005b) and others in this volume introduce the power of such profiling for the evaluation of course books and individual texts. Lists for pedagogical application are not all formed with the same methodology: they may or may not exclude general vocabulary and/or general academic vocabulary (Gardner & Davies, 2014), and they may or may not attempt to focus on specialized terminology as opposed to specialized uses of familiar-looking items (Todd, 2017). Nevertheless, despite methodological differences, with the realization of the importance of specialist vocabulary, in recent years there have been further developments in academic and specialist wordlists for specific academic disciplines, including engineering (Khamis & Ho-Abdullah, 2017; Todd, 2017), medicine (Lei & Liu, 2016; Quero, 2017), environmental sciences (Liu & Han, 2015) and core subjects in secondary school (Green & Lambert, 2018).

Tools generating or using such lists have been available for some time, with *LexTutor* being an excellent example of an interface that is not only easy to use, but also provides clearly presented results. One reason for the popularity of the *LexTutor* tool is probably the way the results are presented on a long single webpage in several useful ways: summary results,

types grouped by wordlist and colour-coded running text. As well as results based on the GSL and AWL, *LexTutor* can also provide results for the top 10,000 items in the BNC and/or COCA, and top items from a graded reader collection. Use of such wordlists in other corpus tools is not usually as straightforward; comparing a corpus wordlist with another wordlist is possible in *WordSmith Tools*, for example, but perhaps it is not frequently used for this kind of work.

Key Words and Related Methods

Results from corpus wordlists and vocabulary profiles are usually based on raw frequencies and will include a high proportion of high frequency grammatical words. In order to try to approximate the sense a human reader might have of what is prominent in a text (or a collection of texts), there is another corpus method—known as the Key Words (KW) method—which compares the frequencies of words in the corpus of interest with the frequencies of the same items in a reference corpus. The computation behind this is based on a simple cross-tabulation of the frequencies and total sizes of the item and the two corpora, and Scott and Tribble (2006) provide examples from different text types for different purposes. In recent years, there has been some debate about how results from KW should be ranked and presented to users (Brezina, 2018; Gabrielatos, 2018; Jeaco 2020). Jones and Durrant (2010) present KWs sorted by descending frequency. In terms of vocabulary selection, however, this tends to lead to a similar situation as that of the corpus wordlists when grammatical and common words tend to dominate the top. In whatever way they are ranked, KW lists are simply the results of an automated procedure, and interpretation of the importance of items in the list (and why the computer process may have promoted some items) is the responsibility of the user (Scott & Tribble, 2006).

KWs provide data-driven ways into the analysis of prominent topics, themes and heavy use of lexical items for studies of specific genres, registers and styles. Results based on collections of texts from a specific genre and/or from a specific discourse community will usually give lists containing genre markers (words associated with some essential moves for

the genre); and topics and themes that give clues as to what the texts are about. The status of being a KW means there is data-driven evidence that this word is likely to be important and provides justification for selecting specific words for closer analysis. KWs often also indicate important aspects of register, as features such as personal pronouns may indicate interesting aspects of the situational contexts in which the texts were produced. Similarly, words associated with stance and appraisal in a KW list may indicate interesting points about the way ideas and opinions are typically communicated within a specific domain.

To generate a list of KWs, the corpus tool needs a corpus wordlist for the text (or texts) being studied and a second corpus wordlist as a reference corpus. *WordSmith Tools* requires the user to use the WordList Tool to create a special Wordlist file; to either create a second Wordlist file for the reference corpus or to obtain one previously prepared; and then to use a separate tool within the application to load these two files and present the results. In *AntConc*, the selection of the user's own corpus texts is more straightforward (as loading the texts on the left-hand panel makes them available across all the other tools), but the reference corpus must be specifically loaded from a specially formatted text file or a complete reference text. *LancsBox* provides a slightly different route, with buttons to download a small selection of reference corpus wordlists, so these can be used to generate KWs for the user's locally stored text files. These steps mean that choosing a reference corpus can be based on practical questions of what is ready to use, what is available on the user's own computer, and for larger reference corpora how well the machine can process large amounts of text. When trying to explore specific text types within a larger text variety for the identification of academic vocabulary associated with a specific academic field, for example, being able to select a very general corpus (such as the BNC) or a more specialized corpus (such as the BNC: Academic sub-corpus) can be very useful.

If the corpus contains many texts and the intention is to get a sense of what many of the texts are about, another related method can be employed. The calculation of Key Key Words (KKW) involves first calculating KWs on a text by text basis, and then ordering the results of these batches of KWs according to the number of texts in which each candidate KW is key (Scott & Tribble, 2006). When a DIY corpus is viewed as

a dataset of target text types for needs analysis, it is clear that the KKW list can be particularly useful. For example, to determine words associated with themes of environmental news articles over an entire year, a KKW list will contain words for the major themes or agencies, with scores based on prominence within individual texts so as to screen out KWs which are heavily concentrated in some parts of the corpus but not others, and to screen out KWs which may have a relatively high frequency overall, but actually not be particularly prominent in any of the individual texts. KKWs is not widely available in popular corpus tools, the exception being *WordSmith Tools* (where the technique was first developed). The first step is to create a batch of wordlists with the Wordlist tool. These can then be loaded together in the second step within the KeyWords tool, to create a KW database. Finally, these are ranked according to the number of texts in which they are Key.

Concordance Lines

The methods described above begin with a whole corpus and then provide an overview and possible insights into some prominent or marked uses of vocabulary. The other functions to be described here relate to the way corpus tools can retrieve and calculate patterns based on queries for specific words or phrases. The primary output of corpus tools is typically concordance lines, presented as a list of horizontal lines of text containing the search term with a few words of context to the left and right of the target word. By presenting multiple examples on a single screen, important patterns in the usage of words can be revealed. An important difference between tools is the amount of co-text and contextual information that can be viewed. A vital step when exploring concordance lines is to control the way in which they are ordered as different ways of sorting the results will help make different kinds of patterning more noticeable. Repeated patterns of lexical words in the nearby co-text can help clarify common collocations and/or the use of words in semi-fixed phrases and help users identify semantic associations of a word. Semantic association is defined by Hoey as "when a word or word sequence is associated in the mind of a language user with a semantic set or class, some members of

which are also collocations for that user" (2005, p. 24). From the perspective of vocabulary needs, this term can include related but distinct concepts of semantic prosody (Louw, 1993) and semantic preference (Sinclair, 2004). Linguistic research may distinguish between these kinds of features, but here the main point is that words may have certain connotations or hidden meaning that is evident in multiple examples of actual use, but may not be evident in dictionary definitions (Shinwoong, 2011). Repeated patterns of grammatical items in the nearby co-text can also show how vocabulary items may frequently be used in certain grammatical structures, and can help students identify patterns of prepositions. For a good overview of how concordance lines can be analysed, see Hunston (2002). In terms of how corpus tools provide access to concordance lines, the process typically involves selecting a corpus, typing in a word and tapping a button to retrieve the results.

Collocations

Another way of exploring patterning of specific items is through calculating collocations. As described in Jeaco (2019), while collocation is now known to be an essential aspect of language and is well established as a component of vocabulary teaching, there are many different definitions and means of calculating collocations. For the purpose of this chapter, collocation will be defined using Hoey's definition:

> … collocation is … a psychological association between words (rather than lemmas) up to four words apart and is evidenced by their occurrence together in corpora more often than is explicable in terms of random distribution. (Hoey, 2005, p. 5)

The definition here provides two important considerations for measurement: first being based on words rather than lemmas means that different word forms will have different collocation lists. Lemmas are normally understood to be different word forms of a word within a word class. In vocabulary teaching terminology, following this definition, results are based on specific word forms, not grouped by word families.

The second point is that some sort of statistical test is used to determine the likelihood of repeated co-occurrence of candidate collocations being due to non-random influences. This definition provides information as to how collocations are retrieved as a means of approximating strengths of relationships between words that must exist in the minds of language users. Different statistical tests tend to prioritize (or exclude) words from different points on the Zipf curve; T-test and, to some extent, MI and related measures may include more grammatical items, while DICE and related measures may include lower frequency lexical items. Some tests do not consider the order of the words, others take positioning into account. Some discussion of these differences can be found in Oakes (1998), Gries (2013) and Jeaco (2019). Collocation lists may be generated from concordance lines (*WordSmith Tools*) or from a separate menu (*Antconc* and *Lancsbox*).

Data-Driven Learning in the Classroom

Having presented some corpus methods that can be used to explore vocabulary in texts, the use of corpus tools in the classroom will now be introduced. Learning language through classroom activities related to corpus work is known as Data-Driven Learning (DDL), and the processing of texts by language learners themselves for exploration of language features in which they are interested is not a new activity. The pioneer of DDL was undoubtedly Tim Johns, and in his work with postgraduate students the corpora used were created by the students themselves (Johns, 1986). High-level students who are highly motivated have found work with self-compiled corpora to be particularly rewarding (Charles, 2012b; Yoon, 2011). More broadly, studies on language learning through DDL using readymade or homemade corpora have shown that it is effective (Boulton & Cobb, 2017) and it is considered a fruitful means of providing opportunities for engaging in language-learning processes (Flowerdew, 2015; Thomas, 2015). Some ways these activities can help in terms of vocabulary can be showing a "snapshot" of vocabulary use (Johns, 2002), exploring differences between synonyms (Johns, 1991; Kaltenböck & Mehlmauer-Larcher, 2005) and deepening their word knowledge (Cobb,

1999). Examples of effective DDL work at the postgraduate level include Johns (1991) and Charles (2012a) and undergraduate-level examples include Fligelstone (1993) and Cheng, Warren, and Xu (2003). There have been some recent explorations of its potential in China (Guan, 2013; He, 2015). DDL activities not only offer effective ways to engage language learners critically in language exploration in class, they also afford longer-term advantages as they are skills for self-study and life-long learning (Kaltenböck & Mehlmauer-Larcher, 2005; Mills, 1994).

Despite these benefits, using corpus tools in language learning contexts is not always easy or straightforward and a number of issues have been identified in the literature. Problems include getting hold of corpus texts (Ädel, 2010), being able to think of fruitful starting points, formulating queries and obtaining results (Ädel, 2010; Gabel, 2001; Sun, 2003), needing to spend time analysing and evaluating results (Ädel, 2010; Thurstun, 1996; Yeh, Liou, & Li, 2007), dealing with too much data (Ädel, 2010; Varley, 2009) and keeping a balance between focus on form and focus on meaning (Ädel, 2010).

The Prime Machine (tPM) was initially developed to provide user-friendly corpus access to online corpora for language learners and language teachers. Its interface was designed to address some of these difficulties and to help language learners get started with concordancing, and some of the special features of *tPM* for English language learning in terms of search support and highlighting patterning have been presented by Jeaco (2017). Through working with several cohorts of English majors, the developer added new functions for the investigation of patterns in students' own corpora. Being based on the lexical priming theory of language (Hoey, 2005), *tPM* encourages the exploration of specific vocabulary items to compare these with words with similar meanings, to consider different uses and usage of different word forms and to explore differences between use in different kinds of texts. The purpose of this section is to introduce some ways in which the readymade online corpora and DIY corpora constructed by students can be used for vocabulary needs analysis. To illustrate these techniques, the tasks used in an undergraduate module for English majors at a Sino-British university will be introduced, with particular attention paid to the ways in which these tasks foster self-awareness of vocabulary needs. The students taking this

module were sophomores, and most had little or no prior experience of corpus work. Students at the university typically come from fairly traditional schooling, where grammar-translation methods are most frequently used. After the assessment period, students were invited to give permission for their assignments to be analysed and twenty students from the cohort of sixty-seven students agreed. The performance of these twenty students covered a wide range of marks, so in that respect they can be considered representative of the cohort as a whole.

Task 1: Using Readymade Corpora for a Reflective Writing Task

The first task covered the first six weeks, with weekly two-hour lectures on the background of corpus linguistics and weekly one-hour computer workshops to introduce and practice using the corpus tool. Students had to produce three reflective summaries based on language points in their own writing or speech, using concordance lines and other corpus data to justify possible choices. Suggestions were given for how to select language points and students used a variety of methods. Self-transcribed speech can aid noticing (Lynch, 2001) and 10 students used this for selection of items in 18 reflections. A student from a previous cohort had suggested using machine translation to translate an essay into Chinese and back into English as a way of identifying some possible re-wordings, and 2 students used this for a total of 4 reflections. Feedback from a teacher on a former assignment (2 students, 4 reflections), feedback from friends or peers (4 students, 8 reflections) and general rules of thumb (4 students, 5 reflections) were also starting points for some students. In the other 22 cases, a specific reason for selecting items was not stated, but included having seen something recently, some thoughts on creative writing and re-reading of an assignment written several months previously. One student presented only 2 of the 3 required analyses and 2 students presented additional analyses, so a total of 61 reflections were analysed. Table 11.1 shows the kinds of linguistic data they drew on as they created their own notes on language use in a readymade corpus.

Table 11.1 Kinds of linguistic analyses

Student #	Synonyms	Collocations	Sign-posts	Other phrases	Collocation	Semantic association	Negative meaning	Contexts of use	Fillers
1				1	1	1		1	
2	2	1				2			
3	2	2	1			2		1	
4	1		1			2	2	1	
5	2	2			1	1			
6		1	1	1		2			
7	2	2			1				1
8	1	2	1		2	1			
9	3				1	2	1		
10	2	3		2	1	1			
11	2	2			1			1	
12	3	3	2			1			
13	3	1				2			
14	1	1		2	2	3		1	
15	2	2	1	1	1	1		1	
16	2	3		1		3	1	3	
17	1	3			1	1			
18	2	2			1	2		2	
19		2	1		2				
20	2	3		2		2			
Total	33	35	8	10	15	29	4	11	1
Students	17 (85%)	17 (85%)	7 (35%)	7 (35%)	12 (60%)	17 (85%)	3 (15%)	8 (40%)	1 (5%)

When counting different kinds of linguistic analysis, a single reflective summary may have covered multiple points, with collocations often being used to distinguish between synonyms, and commentary on collocation patterns often including analysis of semantic sets that were evident in the examples. For this reason, from the 61 reflective summaries, 146 linguistic analyses were counted. From Table 11.1 it can be seen that synonyms and collocations were analysed by many students, but there was also some engagement with semantic associations and contexts of use, as evidenced in exploration in different corpora or through noting different kinds of sources.

Task 2: Creating Homemade Corpora to Explore Specialized Language Use

The second task ran over the remaining six weeks, and involved the creation of one or two homemade corpora. Students had to complete a number of smaller tasks to explain the design of their study, to consider the situational contexts (following Biber & Conrad, 2009, p. 40), to produce various kinds of corpus data and then to summarize their findings. One of the main distinguishing features of *tPM*, compared to other corpus tools is that users can access the data from the readymade corpora in their analysis of their own DIY corpora; the currently selected online corpus can not only be used as a reference corpus for KW and KKW analyses, but also searches of specific words can be displayed with results from the DIY corpus displayed side by side with the online corpus. Figure 11.1 shows the DIY corpus wordlist screen, with the one-step buttons that are used to obtain results using the currently selected readymade corpus as reference.

Figure 11.2 shows concordance lines for *innovation* in a student's DIY corpus on the left with results from a subsection of the BNC on the right. *tPM* allows users to access the whole BNC or to select subsections following Lee's (Lee, 2001) classifications.

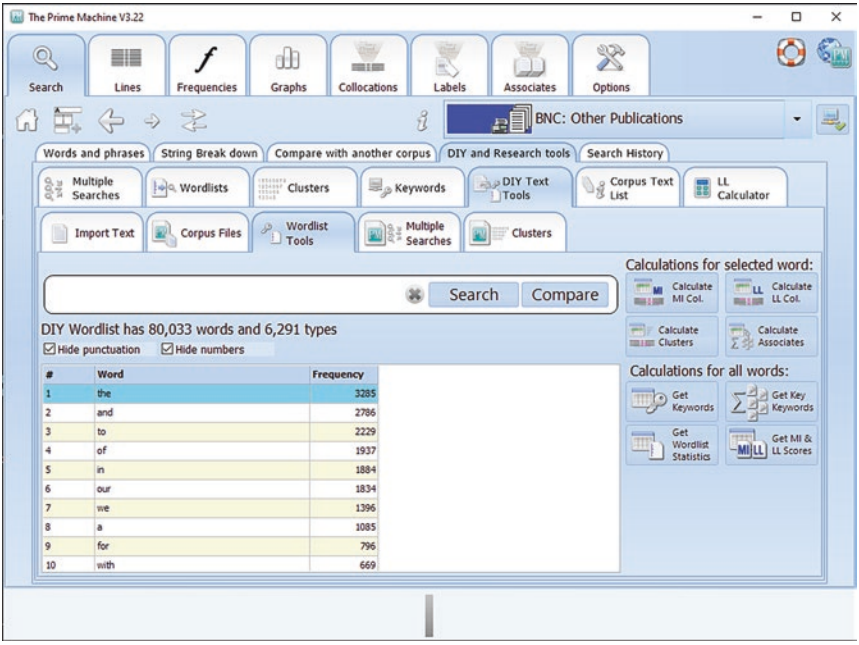

Fig. 11.1 DIY Wordlist Tools tab in *tPM*

Vocabulary Profiles

The wordlist statistics function was developed to draw students' attention to differences in the proportion of commonly used words, academic words and other sets of words within their DIY corpora. The readymade wordlists include GSL, AWL, positive and negative words, modal verbs, personal pronouns, and first- and second-person pronouns. One button retrieves summary statistics of matches to these lists. The lists also include comparisons with the reference corpus, with a log-likelihood calculation like that used for KWs, and arrow indicators to show the directions and degrees of difference. Table 11.2 shows results obtained by the student who compared her Chairman's Statements corpus with the BNC.

The results for GSL and AWL can be used to give an indication of the proportion of words beyond these lists, giving a clue as to how familiar the students are likely to find these. Through learning about features of

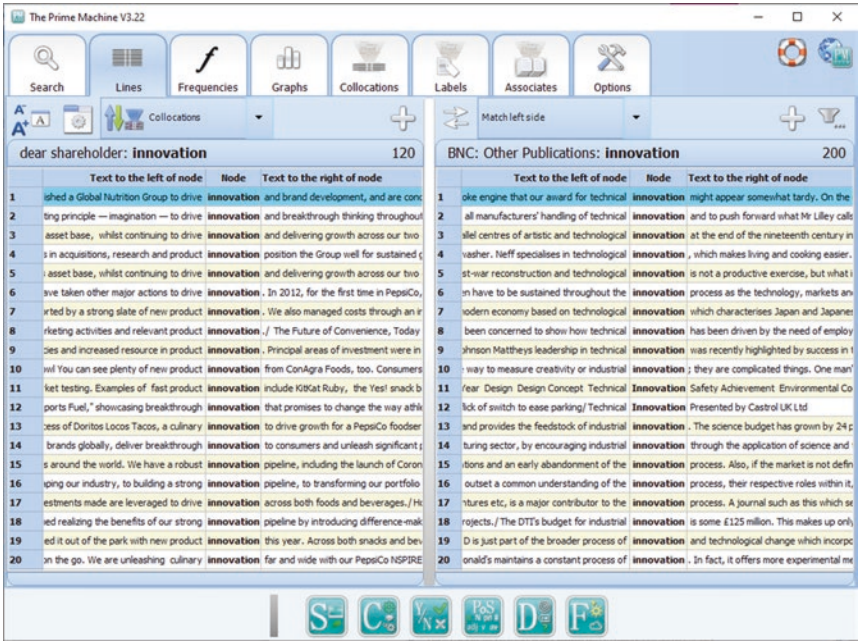

Fig. 11.2 Concordance lines for *innovation* in a DIY corpus of Chairman's Statements and BNC: other publications

academic English in EAP classes, students are often ready to note differences in text varieties when it comes to the use of personal pronouns and modal verbs. The results for first- and second-person pronouns and positive words in Table 11.2 give some useful insights into the features of Chairman's Statements, where *I*, *we* and *our* and a range of positive words often work together to project an image of strong company performance.

Key Words and Key Key Words

Two of the most useful functions for exploring vocabulary in a DIY corpus are KWs and the related function KKWs. Because the DIY text tools are integrated into a client-server corpus tool, generating KWs and KKWs is extremely easy in *tPM*. After importing texts, any of the

Table 11.2 Wordlist statistics for a DIY corpus compared with the BNC

	Wordlist	Study freq.	Study per thousand	Reference freq.	Ref. per thousand	Arrows	LL	Bayes
1	Academic Word List	6998	87.44	4913845	42.63	≧ 2× ↑	2730.92	Very strong evidence
2	1st & 2nd Pers. Pronouns	3785	47.29	2509362	21.77	≧ 2× ↑	1737.53	Very strong evidence
3	Positive words	2537	31.7	1426341	12.37	≧ 2× ↑	1650.73	Very strong evidence
4	General Service List 2	4092	51.13	5414865	46.97	↑	27.3	Strong evidence
5	Modals Subgroup 1	260	3.25	647649	5.62	↓		
6	Modals	438	5.47	1469299	12.75	≧ 2× ↓		
7	Modals Subgroup 3	54	0.67	240052	2.08	≧ 3× ↓		
8	Archaic pronouns	0	0	3940	0.03	↓		
9	Personal pronouns	4441	55.49	6514354	56.51	↓		
10	Function words	30030	375.22	49484588	429.25	↓		
11	Punctuation	4293	53.64	6659675	57.77	↓		
12	General Service List 1	48045	600.31	73117987	634.26	↓		
13	Modals Subgroup 2	124	1.55	579255	5.02	≧ 3x ↓		
14	Negative words	327	4.09	1649527	14.31	≧ 3x ↓		

readymade corpora can be selected from the prominent drop-down menu to be used as a reference corpus, and then KWs or KKWs can be generated at the click of a single button. *tPM* makes the process simple, but the interpretation of the results is still for students to work on by themselves. Most students export the KW and KKW lists to spreadsheets, and they were encouraged to use colour to categorize words. Prompting students to come up with their own classifications of KWs and to shade cells in their spreadsheets has been a good way to ensure they understand the need for interpretation of such lists. Table 11.3 shows the students own classification of other KWs.

As well as producing some results based on the whole corpus, students were requested to perform some analysis of concordance lines and to draw on collocation or other data to demonstrate special features of vocabulary use in specific contexts. Using different sorting methods, students were able to identify some specialized uses of vocabulary with which they were already familiar, as well as uses of new vocabulary in a specific domain. Table 11.4 summarizes the corpus methods students completed in this second task.

As can be seen, there was only one student who did not present concordance line data. Of the other students, a majority not only included Wordlist and KWs data, but also presented analysis of these (some through colour classifications, others by highlighting data in figures and some by describing features in prose). Other corpus methods used in the assignment were almost always presented with some analysis. Twelve students presented analysis of three or more kinds of data, and 6 students analysed four or more.

Student Response

Both assignments also included a short reflective piece about the overall tasks. Responses included many positive comments about the usefulness of the overall learning process and the insights they gained. Several comments related to increased language awareness and insights into contexts of use.

Table 11.3 Top 15 KWs for a DIY Corpus with manual categories created by a student

	Word	Study Freq	Study Per Thousand	Ref Freq	Ref. Per Thousand	Arrows	LL
1	our	1834	22.92	93240	0.81	≧ 10x ↑	8693.94
2	PepsiCo	273	3.41	5	0	≧100x ↑	3921.18
3	we	1396	17.44	350582	3.04	≧ 5x ↑	2567.79
4	growth	408	5.1	12895	0.11	≧ 10x ↑	2306.28
5	brands	191	2.39	773	0.01	≧100x ↑	1819.74
6	clover	132	1.65	221	0	≧100x ↑	1453.8
7	beverage	103	1.29	112	0	≧100x ↑	1200.8
8	business	332	4.15	35430	0.31	≧ 10x ↑	1110.6
9	products	227	2.84	10676	0.09	≧ 10x ↑	1109.87
10	portfolio	142	1.77	1583	0.01	≧100x ↑	1086.67
11	consumers	151	1.89	2294	0.02	≧ 10x ↑	1066.34
12	foods	139	1.74	2085	0.02	≧ 10x ↑	984.99
13	innovation	120	1.5	1694	0.01	≧100x ↑	864.29
14	year	411	5.14	88309	0.77	≧ 5x ↑	863.24
15	ConAgra	59	0.74	0	0	☀ ↑	858.26

Personal Pronoun
company/product name

Table 11.4 Corpus methods used by students in the second task

	Wordlists	KWs	KKWs	Conc. lines	Collocations
Results presented	15 (75%)	20 (100%)	6 (30%)	19 (95%)	4 (20%)
Analysed	12 (60%)	17 (85%)	5 (25%)	19 (95%)	4 (20%)

Task 1:
Learning a new word entails more than knowing its meaning but its surroundings as well. (Student #5)

… corpus linguistic analysis can provide learners with practical opportunities to focus on word choice and collocations in authentic examples, thus, develop language expertise. (Student #13)

Task 2:
I found tPM is a useful tool in both analysing semantic features of words and finding the similarities or differences between two text varieties or a variety with a more general one. (Student #9)

Thus, tPM is an extremely convenient and valuable tool for analysing linguistic features, which from my perspective would be a good choice of the topic of my final year project. (Student #11).

As can be seen, students commented favourably on the task and the software and also demonstrated their increased awareness of language use. It is important to consider that comments were part of the assessment, and this could have led to the expression of overly positive views. However, anonymized feedback from the cohort obtained through an institution-level module evaluation platform revealed higher-than-average responses for "a valuable learning experience" (43 responses, mean 4.79 out of 5, 0.47 standard deviation). In response to an open-ended question about what they enjoyed in the module and why, 4 related to a sense of engagement and/or achievement in the second task, 10 related to the software (all positive), 6 related to insights they gained into language use and 7 related to intentions for future use of corpus tools. Only one response was negative (simply "nothing"), while the other comments were positive reflections on the teacher (18), feedback (4) or assessment design (4).

Conclusion

This chapter has introduced some corpus techniques that have been incorporated and developed in *The Prime Machine* and that can be used to help linguistically oriented English language learners explore their own vocabulary needs. It has provided an overview of ways in which different kinds of corpus data can be used to inform this process, including wordlists, KWs, concordance lines and collocations. Work done by Chinese students majoring in English has illustrated ways the tool can be used and noted a positive response. Future research will need to focus on the evaluation of the depths of insight gained by such learners and the extent to which it actually contributes to on-going learning. Nevertheless, with greater availability of free tools such as *tPM*, it is hoped that more language learners will have the opportunity to steer their own vocabulary needs analyses in future.

The Prime Machine is available for Windows and MacOS from www.theprimemachine.net.

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