

University of Bahrain

College of Arts

**Department of English Language
and Literature**



Vocabulary Size and Depth of Knowledge: A Study of Bahraini EFL Learners

A Thesis Submitted in Fulfillment of the Requirements for the Degree of
MA in Applied English Language Studies

Submitted by _____

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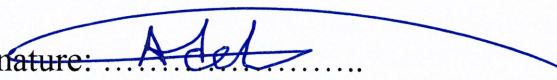
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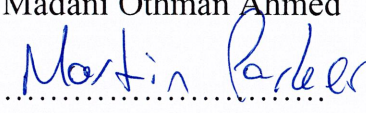
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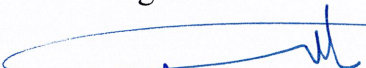
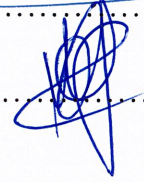
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Dedication

This thesis is dedicated to my great parents, Wael and Mona, and also to my beloved sisters and dearest brothers. My family and my wife have always encouraged me to thrive and chase after every academic journey, and to excel in my career.

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CHAPTER ONE

Introduction

CHAPTER ONE

Introduction

1.0. Introduction

It is widely accepted that vocabulary plays a significant role in the acquisition of English as a second language (Knight, 1994; Laufer, 1997; Yoshii and Flaitz, 2013). Vocabulary knowledge is known to be one of the fundamental components in the language acquisition (Schmitt, 2008), and it has been considered a major factor in language proficiency (Alavi & Akbarian, 2012; Read, 2004). As Richards and Rodgers (2001, p. 132) strongly assert, “the building blocks of language learning and communication are not grammar, function, notions, or some other unit of planning and teaching but lexis, that is, word and word combinations.”

Wilkins (1972, p. 111) argues that “without grammar very little can be conveyed, without vocabulary nothing can be conveyed.” It is impossible to reach a mutual understanding of the context with inaccurate vocabulary, such as when describing a car using the word **sky* instead, as in **he has a red sky*. Thus, in order to master a L2 (second language), learners and language instructors must pay more attention to vocabulary knowledge.

Recent literature has recognised two substantial aspects related to vocabulary knowledge (Schmitt, 2014). The first aspect is known as size, or breadth, of vocabulary knowledge, which can be defined as how many words learners know. The second one is known as depth of vocabulary knowledge; that is, to what extent learners know those words. On the one hand, vocabulary size refers to the linear and one-dimensional domains of words. On the other hand,

depth of vocabulary knowledge is related to linguistic characteristics. These characteristics include the meaning of words, semantic relationships, collocations and syntactic patterns (Bardakçi, 2016).

It is evident that the size and depth of vocabulary knowledge are not difficult to measure (Meara, 2009; Milton, 2009). First, the size of vocabulary knowledge can be evaluated by measuring two types of vocabulary: receptive and productive. Second, depth of vocabulary knowledge can be investigated through assessing the semantic relationships of words. This goes hand in hand with Schmitt's (2014) argument that vocabulary depth can be assessed by focusing on word associations and collocations.

This study investigates the role of the size and depth of vocabulary knowledge in the language acquisition journey by learners of EFL (English as a foreign language) at the University of Bahrain. These two interrelated topics play a significant role in the development of vocabulary knowledge, which is one of the essential elements in L2 acquisition.

1.1. The Research Problem

Literature shows that there is a strong emphasis on assessing vocabulary knowledge and its importance in achieving excellence in learning EFL (Meara, 2009; Milton, 2009; Schmitt, 2010; Nation & Webb, 2011). A systematic study examining the extent of general language proficiency of EFL learners in terms of the size and depth of vocabulary knowledge in the context of Bahrain is lacking. Therefore, this study sheds light on the importance of the measurement of the size and depth of vocabulary knowledge of EFL learners at the University of Bahrain (ranked number 1 in the Kingdom of Bahrain). This study investigates the extent to which size and depth of

vocabulary knowledge affect the general language proficiency of EFL learners who are taking English language courses at the University of Bahrain.

1.2. Research Objectives

In an attempt to answer the research questions stated above, this study aims to do the following:

1. Measure the development of receptive and productive vocabulary sizes of EFL learners at the University of Bahrain. In particular, the study focuses on the effect of general language proficiency on the development of both size and depth of vocabulary knowledge, and the nature of mental lexical networking.
2. Evaluate the organisation of mental lexical networking of EFL learners at the University of Bahrain to examine the role of general language proficiency.
3. Investigate the relationship between the size of vocabulary and the organisation of lexical networking in relation to general language proficiency.

1.3. Research Questions

The research questions for this study stem from the call in literature for more emphasis on measuring the size and depth of vocabulary knowledge. Several lines of evidence report on the importance of vocabulary for EFL learners. Therefore, this study aims to answer the following questions:

1. What is the effect of general language proficiency on the sizes of the receptive and productive vocabularies of learners of English at the University of Bahrain?

2. How does general language proficiency affect the depth of vocabulary knowledge of learners of English at the University of Bahrain?
3. What is the relationship between receptive and productive vocabularies and the depth of vocabulary knowledge?
4. What is the relationship between vocabulary size and the nature of lexical networking?

1.4. Research Significance

The topic of this research together with the empirical approach used will likely contribute to the body of knowledge in L2 vocabulary acquisition. In addition, although no pedagogical experimentation will be conducted, the study could have clear implications that may benefit vocabulary teaching and learning. The outcomes of this study are expected to provide a clear insight into the process of learning L2 vocabulary regarding the variation of English levels at the University of Bahrain. By assessing EFL learners' vocabulary size and depth of knowledge, the study carries out a detailed exploration of their vocabulary knowledge and the nature of their mental lexical networking. The findings of this study will help in understanding the impact of general language proficiency on the University of Bahrain students. This will contribute to the creation of opportunities for the development and enhancement of general language proficiency at the University of Bahrain.

1.5. Research Setting

This study was conducted at the University of Bahrain. The sample consists of students who were learning English at the Department of English Language and Literature in the College of Arts. These students were divided into two

groups representing Intermediate and Advanced levels of English. The data of the study was collected during March 2019.

1.6. Definition of Key Terms and Acronyms

The following terms are used in this thesis:

L1: first language.

L2: second language.

EFL: English as a foreign language.

ESL: English as a second language.

IELTS: International English Language Testing System.

TOEFL: Test of English as a Foreign Language.

Word family: a group of words, i.e. the base form of the word with its inflections and derivations (Nation, 2001).

Receptive vocabulary: vocabulary that can be recognised when read or heard (Meara, 2009).

Productive vocabulary: vocabulary that can be produced (written and spoken) (Meara, 2009).

Collocation: “sequences of lexical items which habitually co-occur [i.e. occur together]” Cruse 1986, p. 40).

Lex30: a word association task used to measure productive vocabulary size (Fitzpatrick & Meara, 2004).

Collex Test: a test used to evaluate depth of vocabulary (Gyllstad, 2007).

1.7. Organisation of the Study

The study consists of five chapters. Chapter One is an introduction which briefly (1) describes the topic of the study, (2) discusses the research problem, questions, objectives and significance, and (3) defines terms that are

frequently used. Chapter Two is divided into two sections: theoretical frameworks and literature review. Chapter Three describes the methods and procedures of the study. Chapter Four presents the results and discussion. Chapter Five is a conclusion.

CHAPTER TWO

Theoretical Framework and Literature Review

CHAPTER TWO

Theoretical Framework and Literature Review

2.0. Introduction

The study of this research draws on two complementary and overlapping theoretical frameworks of vocabulary knowledge. While the first one is known as Richards's (1976) vocabulary knowledge framework, the second one is known as Nation's (2001) vocabulary knowledge framework. The combination of these two frameworks embraces a sense of fully-fledged structure for comprehending the concept of vocabulary knowledge. Thus, the first section of this chapter discusses these two frameworks separately, and the second section reviews the relevant literature.

2.1. Theoretical Frameworks

As discussed above, this section discusses two theoretical frameworks related to the study: Richards's (1976) vocabulary knowledge framework and Nation's (2001) vocabulary knowledge framework.

2.1.1. Richards's (1976) Vocabulary Knowledge Framework

This framework describes the nature of knowing a word as a multi-dimensional domain. Vocabulary knowledge is not only about knowing the meaning of words, but it is also related to several linguistic aspects, such as semantic, syntactic and paradigmatic features. Eight assumptions are provided in this framework in an attempt to describe this multi-dimensional domain, in which assumptions two to eight define the meaning of knowing a word, as shown below (Richards, 1976, p. 79-83):

Knowing a word means:

1. *The native speaker of a language continues to expand his vocabulary in adulthood, whereas there is comparatively little development of syntax in adult life.*
2. *knowing the degree of probability of encountering that word in speech or print. For many words, we also know the sort of words most likely to be found associated with the word.*
3. *knowing the limitations imposed on the use of the word according to variations of function and situation.*
4. *knowing the syntactic behavior associated with that word.*
5. *knowing the underlying form of word and the derivatives that can be made from it.*
6. *knowing the network of associations between that word and other words in language.*
7. *knowing the semantic value of the word.*
8. *knowing many of the different meanings associated with the word.*

Richards (1976) defines the meaning of vocabulary knowledge through seven assumptions (numbered two to eight). Assumption two suggests that the frequency of words has a significant role in communication. Some words are used more frequently than others. For example, a word like *day* can be used in more contexts in comparison to words like *nook* or *swath*. In addition, assumption two asserts that knowing a word requires the learners to know the associations of the word. For instance, when mentioning the word *blood*, there is a probability of thinking about words like *bank* and *donation*. The third assumption mentioned argues that some words are specified to be used in specific fields. For example, words like *agent*, *ally*, *embassy* and *protocol* are used in diplomatic fields, whereas *diagnosis*, *patient*, *injury* and *procedure* are

used in medical fields. The fourth assumption proposes that knowing a word means knowing its collocations. The fifth assumption suggests that knowing a word means to also know the derivative forms of the base word. For example, knowing the word *connect* means to also know the words *connected*, *disconnected* and *reconnect*. The sixth assumption argues that knowing a word means to be aware of the word's associations including synonyms, antonyms and subordinate classification. For example, to know the word *star* is to know the associated words such as *universe*, *moon*, *shine* and *bright*. Richards's (1976) seventh assumption suggests that knowing a word is to know that there are different values of the word semantically; concrete words like *cup*, *student*, *table* and *chair* have more semantic value in comparison to words like *peace*, *pain*, *love* and *feel*, which are known as abstract words. Finally, the last assumption of Richards's (1976) framework proposes that knowing a word is to know its different and multiple meanings. For example, the word *bow* can mean a knot tied with two loops and two loose ends, or bending as a sign of respect.

There has been criticism in the literature that Richards's (1976) framework is not an integrated framework of vocabulary knowledge. Besides the lack of the convention between the productive and receptive vocabularies, Meara (1996a) comments that Richards's assumptions (1976) cannot be held as a systematic account of word knowledge for several reasons. One of these is that Richards's endeavour to identify word knowledge is related to another genre, in which it is "an honest attempt to give an account of contemporary linguistic research with inferences and applications to teaching where appropriate" (Meara, 1996a, p. 2). Added to that, for example, assumption four is mainly involved in a "short-lived development in syntactic theory, case grammar,

which faded shortly” after the appearance of these assumptions (Meara, 1996a, p. 2). Assumption eight “does not appear to be based on any specific research” but instead, it is based on “language teachers’ points of view”, which show a clear gap in the research at that time (Meara, 1996a, p. 2). Alternatively, Nation’s (2001) recent contribution to the literature provides an improved framework of vocabulary knowledge, which is discussed in the next section.

2.1.2. Nation’s (2001) Vocabulary Knowledge Framework

The second theoretical framework of this research is known as Nation’s (2001) vocabulary knowledge framework. According to Schmitt (2010), this particular framework has been regarded as one of the most widely used by researchers. Nation (2001) states that vocabulary knowledge is composed of three categories. As Table 1 demonstrates, these categories are *form*, *meaning* and *use*, which are essentially related to both receptive (*R*) and productive (*P*) aspects of word knowledge.

Table 1: What is involved in knowing a word (Nation, 2001, p. 27)

F o r m	spoken	R	What does the word sound like?
		P	How is the word pronounced?
	written	R	What does the word look like?
		P	How is the word written and spelled?
	word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express this meaning?
M e a n i n g	form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
U s e	grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	constraints on use (register, frequency...)	R	Where, when and how often would we expect to meet this word?
		P	Where, when and how often can we use this word?

As indicated above, Nation's (2001) framework shows three categories of vocabulary knowledge. These categories encompass nine degrees of knowledge. First, there is the form category, which includes the knowledge of the spoken form, written form and parts of words. Second, the meaning category shows the knowledge of the form of meaning, concept and referents, and associations. The third one is the use category, which includes the knowledge of the grammatical functions, collocations and constraints on use.

Thus, knowing a word form embraces the spoken form, written form and word parts. Both spoken and written forms assist learners of the language to enhance their lexical knowledge by improving their literacy. Added to this, knowledge of phonics, word recognition and spelling provides L2 learners with an advantage in recognising and decoding word meaning. Knowing the spoken form refers to the receptive ability to understand and comprehend words when they are heard. In addition, knowing the spoken form refers to the productive ability of pronouncing words correctly. Furthermore, as a receptive domain, knowing the written form refers to the ability of recognising words when read and as a productive domain, knowing the written form refers to the knowledge of spelling words correctly (Schmitt, 2000).

Prefixes, suffixes and stems are involved when discussing the knowledge of word parts. It is possible to know the meaning of any unknown word when the prefix, suffix or stem of the word is known. For example, when learners know that the word *unbelievable* contains the prefix *un-*, which means *not*, and the suffix *-able*, which means *can be*, then it is easy to know that the meaning of the word is *not to be believed*. Also, Nation (2001) believes that the connection between form and meaning, concept and referents, and word associations is meant to be the knowledge of word meaning. For example,

when a word is seen or heard, the meaning of this word is retrieved simultaneously, similarly, when a meaning is needed to be expressed, the form of the word also comes to mind. As Richards (1976, p. 81) claims, words are not stored separately within blocks in the human being's mind: "words do not exist in isolation." Words are linked or joined together with their associations in the minds of human beings. Each single word is stored in the mental lexicon of the learners of the language with its associations – words that are related to each other which share common things. For example, words like *school*, *chair*, *table*, *classroom*, *students* and *teachers* can be stored together in the mental lexicon.

In addition, Nation (2001) argues that the knowledge of using a word correctly refers to the grammatical function of the word, collocations and the awareness of the constraints of the word. To make it clear, the grammatical function factor plays a vital role when using a word. For example, learners do not utter sentences like *I reading a lot* or *I eaten a lot*; instead, they say *I read a lot* and *I eat a lot*. Choosing correct word classes is needed to form grammatical sentences. Added to that, register and frequency are two other factors that are essential in using words. Schmitt (2000, p. 31) defines register as the stylistic constraints that "make each word more or less appropriate for certain language situations or language purposes." Frequency, however, is a different word capacity level; e.g. a word like *laugh* is used more than *guffaw*, *giggle* and *chuckle*, and therefore it is a high frequency word. That is, the process of recalling and recognising high frequency words is easy to do in the mental lexicon. Hence, learners have to be aware of how to use the word with its constraints.

2.2. Defining the Word

In order to define a word, it is necessary to know that it can be conceptualised through different linguistic domains. First, it can be defined through the distinction between lexical words and functional words. Lexical words, or content words, are known as those which have meanings; that is, nouns, verbs, adverbs and adjectives. This type of word does not strip off the meaning when the word stands alone, outside a context. For example, the words *book*, *read*, *slowly* and *big* refer to a meaning whether they are used inside or outside a context. Alternatively, functional words, or grammatical words, cannot stand alone. Pronouns, conjunctions, articles and auxiliary verbs “have a largely grammatical role” (Carter 2012, p. 23-24) and they “have little or no independent meaning” (Singleton 1999, p. 11). That is, words like *he*, *at*, *so*, *a*, and *would* should be used in a context to show their grammatical relationship.

As Singleton (1999) states, a word can be conceptualised according to orthographic, phonetic, phonological, semantic and grammatical domains. According to the orthographic entity, a *word* can be defined as “a group of letters between two blanks” (Lahtikallio, 2016, p. 6). For example, the phrase *I would like to build a big house* contains eight words. It seems that this definition is simple and widely used, but it does not make sense in languages with no boundaries between words, such as Japanese and Chinese, or even with indigenous languages that do not have a writing system.

Defining a word phonetically is difficult to analyse; that is, individual words do not “stand out as discernible units in physical terms in the ordinary flow of speech” (Singleton, 1999, p. 12). Also, the words that are uttered by speakers do not have distinct pauses between them. For example, the words in *I play*

tennis every week cannot be identified because they sound like *Iplaytenniseveryweek* as one unit.

According to the phonological domain, a word can be defined easily at first sight, and this can be shown by three points. First, it is easy to identify words in terms of their syllables. Most English words, for example, “have only one stressed syllable” (Singleton 1999, p. 12-13); that is, words like *full* and *moon* can be known as English words because they both have one stressed syllable. However, when putting the word *full* and *moon* together as one unit, i.e. *full moon*, only the first syllable takes the case of stressing, and then they are considered as one phonological word. Second, some languages have a case of vowel harmony, which is when “the vowel structure of the stem determines that of the suffixes and inflexions which follow it”, such as the Finno-Ugric languages (Ullman, 1962, p. 43). For example, in Hungarian, vowels of the suffixes and inflexions can be changed from *é* to *á*, as illustrated in *kegy-etlen-ség-ük-ben*, that is literally, *pity-less-ness-their-in*, which means *in their cruelty*, and *gond-atlán-ság-uk-bán*, which literally means *care-less-ness-their-in*, that is, *in their carelessness*. Third, some languages have a specific phoneme, or a cluster of phonemes, which can be seldom found, or cannot be found at all. For instance, in English, the sound /ŋ/ cannot be found at the beginning of words (Singleton, 1999).

Furthermore, in accordance with semantics, the definition of the semantic word seems to be attractive for language learners (Singleton, 1999). As Carter (1987, p. 5) defines it, a word is the “minimum meaningful unit of language.” Providing meanings for each single word in the language is the reason that leads it to be attractive. However, this definition seems to be problematic. Compound words are known to be two units, or two words, such as *school*

teacher and *train driver*. These compound words include two units, each one with its own meaning, but when these two units are linked together, they present a different meaning.

Singleton (1999) states that defining words grammatically can be achieved through two criteria. These criteria are known as positional mobility and internal stability. On the one hand, the first criterion – positional mobility – refers to the case that words do not have a particular position in the context. For instance, the order of the words in *the boy scored a goal* is permutable; they can be placed variously. Other ways of placing these words are in the sentences *a goal the boy scored*, or **scored the boy a goal*. On the other hand, the second criterion – internal stability – refers to the stable sequence of morphemes that are attached to words. For example, the word *disconnected* contains two affixes, *dis-* and *-ed*, and they cannot be placed the other way around, i.e. **edconnectdis*.

2.3. What Does It Mean to Know a Word?

According to Nation (2001), vocabulary knowledge is composed of two main related parts: receptive and productive knowledge. Receptive knowledge refers to the ability to recognise a word when it is heard or read and also the ability to recognise the parts of the word. For example, a word like *antidisestablishmentarianism* is composed of seven parts: *anti-*, *-dis-*, *-establish-*, *-ment-*, *-ari-*, *-an-*, and *-ism*. In addition, receptive knowledge involves the ability to recognise that the word has a particular meaning and that it may have different meanings when used in different contexts. For instance, the word *date* has different meanings; for example, in *his favourite fruit is a date*, in contrast to *he took his classmate out on a date*. Furthermore, receptive knowledge refers to the awareness of related words. For example,

the word *individual* is related to *together*. Receptive knowledge also refers to the ability to use the word correctly in each context and recognise its collocations, such as *lion* and *roar*, *blood* and *bank*, and *do* and *homework*. Finally, receptive knowledge means knowing the constraints of words, such as the word “*underdeveloped*” which is a common word and is not pejorative (Nation, 2001, p. 26).

Knowing a word productively also involves a number of abilities. First, it involves learners to pronounce and write the words correctly. Second, learners should be able to combine the parts of the word to construct it accurately, as shown before in *antidisestablishmentarianism*. Third, learners should be able to produce the exact word to express an intended meaning. Fourth, learners should be able to express different meanings of the word in different contexts. Fifth, learners should be familiar with synonyms and antonyms of the used word. Sixth, learners should be able to use the intended word with its collocations correctly, i.e. *blood donation* and **blood giving*. And finally, learners should be able to define the formality usage degree, that is, whether “*underdeveloped*” is more formal to be used in a sentence than the word “*developing*” (Nation, 2001, p. 28).

By and large, the distinction between receptive and productive knowledge of vocabulary is widely accepted (Meara, 2009; Milton, 2009). Alqahtani (2015, p. 25) refers to receptive vocabulary as the “words that learners recognize and understand when they are used in context, but which they cannot produce”. Zhou (2010) argues that receptive vocabulary refers to the capacity of understanding or comprehending words, especially when they are seen or heard. Particularly, learners of English do not use receptive words in speaking or writing (Webb, 2008). However, productive vocabulary is the type of words

that can be understood and comprehended, and as a main factor here, they can be pronounced by learners of L2 (Maskor & Harun, 2016). In fact, they can be used in both speaking and writing skills. As Zhou (2010) points out, the knowledge of productivity refers to the competency of producing words, such as using them in speaking or even in writing. Moreover, learners use this kind of vocabulary as an active process through expressing their own feelings and thoughts to other people (Webb, 2005).

2.4. Defining the Size and Depth of Vocabulary

Knowledge

It is necessary to know that the size and depth of vocabulary knowledge are known as two separate aspects, and each one has its own domain and characteristics. The first definitions of size and depth of vocabulary knowledge are provided by Anderson and Freebody (1981, p. 93) who state that the former refers to “the number of words for which the person knows at least some of the significant aspects of meaning”. In contrast, the depth of vocabulary knowledge refers to “the quality ... of understanding” the words.

As an illustration, it can be said that vocabulary size refers to the number of lexical items known by EFL learners (Meara, 2009). Simply, it refers to how big the vocabulary knowledge of the EFL learner is. On the other hand, the term depth of vocabulary, as Milton (2009, p. 149) explains, is “the relationship between the various form and meaning components of a word.” That is, the term has a relationship with several word characteristics, such as the shades of the meaning of any word, connotations, collocations and any association the word creates in the mind.

2.4.1. Size of Vocabulary Knowledge and Assessment

A number of researchers in the field of L2 acquisition have pointed out that the beginning of research on the size of vocabulary knowledge was in the 1990s focusing on native speakers; that is, because they were looking for long-term objectives for L2 learners (Goulden, Nation & Read, 1990; Hirsh & Nation, 1992; Laufer & Nation, 1999; Nation, 1993, 2001, 2006). According to Nation and Waring (1997), English includes around 54,000 word families, and most well-educated native speakers know approximately around 17,000 of them (D'Anna, Zechmeister & Hall, 1991; Goulden et al., 1990). Similarly, Schmitt (2010) found that the vocabulary size of most educated L1 (first language) speakers of English ranges between 16,000 and 20,000 word families.

Some researchers shed light on finding the actual size of vocabulary that helps in improving reading and listening skills. According to Nation (2001, p. 97), in order to understand an average of 95% coverage of spontaneous unscripted spoken language, L2 learners should know 2,000 to 3,000 word families. Added to that, understanding an average of 98% coverage requires L2 learners to know 6,000 to 7,000 word families. By the same token, Laufer and Ravenhorst-Kalovski (2010, p. 25-26) suggest that “functional independence in reading” refers to an average of 98% of understanding of written texts, which represents 8,000 word families, and an average of 95% of understanding “enables learners to read with some guidance”, which represents 4,000 to 5,000 word families.

At the same time – the beginning of studying the size of vocabulary knowledge – researchers attempted to assess EFL learners' vocabulary size by purposely developing a number of reliable and applicable vocabulary size tests

(Meara & Jones, 1988; Meara & Milton, 2003; Nation, 1983, 1990; Nation & Beglar, 2007). Thus, the most well-organised tests are called the Vocabulary Levels Test (VLT) (Nation, 1983, 1990), Eurocentres Vocabulary Size Test (EVST) (Meara & Jones, 1988) and Vocabulary Size Test (VST) (Nation & Beglar, 2007). All of these tests were designed to measure vocabulary size easily in terms of the administration and scoring. However, when compared with each other, they differ in their format, data collection method and the level of word frequency. Added to this, the VLT and VST are paper-based tests, which consumes time in marking and scoring the results, whereas the EVST is a computer-based test, which shows the results of learners' responses in a prompt and timely manner.

2.4.1.1. The Vocabulary Levels Test (VLT)

The VLT was developed to assess and measure the level of word frequency that learners have and to develop their size of vocabulary. It was designed by Nation in the early 1980s, and it was available in two publications (Nation, 1983, 1990). All of the words that are used in this VLT were chosen from Thorndike and Lorge's (1944) with reference to frequency data from General Service List (West, 1953) and the Computational Analysis of Present-Day American English (Kucera & Francis, 1967).

The VLT includes five parts of words, with each one being related to a specific frequency level of English words: the 2,000-word level, the 3,000-word level, the 5,000-word level, the university-word level, and the 10,000-word level. Also, the high frequency words of English are involved in the 2,000- and 3,000-word levels. The intermediate level, or the level which is between the high and low frequency levels, is related to the 5,000-word level. The low frequency words are represented by the 10,000-word level. In

addition to this, the university-level words were chosen from the University Word List (UWL) (Xue & Nation, 1984), which consists of 836 words that are frequently appearing in university textbooks.

The VLT was then developed by Schmitt, Schmitt and Clapham (2001). The choice of words in the university-word level was replaced by the Academic Word List (AWL), which was developed by Coxhead (2000). The AWL has a much wider coverage of academic words than the UWL. In particular, the VLT was designed as a form-recognition-matching format with six sections related to the level of word frequency. Each of these six sections contains three meanings or definitions and test-takers should match between them, as shown below:

- | | |
|-----------------------|--------------------------------|
| 1. <i>apply</i> | |
| 2. <i>elect</i> | _____ <i>choose by voting</i> |
| 3. <i>jump</i> | _____ <i>become like water</i> |
| 4. <i>manufacture</i> | _____ <i>make</i> |
| 5. <i>melt</i> | |
| 6. <i>threaten</i> | |

In order to finish this test, participants have to match the words on the left side with their meanings on the right. Each correct matching gives one mark. Two kinds of marks can be given to the test-takers; the first one is out of the maximum mark possible (90) and the second one is out of 18, which is the maximum score possible for each word frequency level. For instance, getting 12 out of 18 in the level of any word frequency means that one-third of the words at this level are not familiar, and in order to master this level of word frequency, test-takers have 200 to 300 words that should be learnt. The VLT is

considered to be one of the most reliable tests (0.92) that are used in L2 vocabulary knowledge research (Qian, 1999, 2002; Laufer, 2001; Ishii and Schmitt, 2009).

2.4.1.2. The Eurocentres Vocabulary Size Test (EVST)

The EVST was purposely designed as a placement test that grades and places non-native speakers of English who are studying in the Eurocentres schools in the United Kingdom on short intensive courses (Meara and Jones, 1988). As Meara (1990) urges, the EVST estimates the overall size of vocabulary of students and places them into classes with other students who have similar scores. The EVST contains high frequency words of English. These words are chosen from the first frequent 10,000 words of Thorndike and Lorge (1944) mixed with some invented words (non-words). The test was designed according to a number of blocks, with each representing 1,000 frequent words of English, that is, from the most frequent to the least frequent words. To illustrate, the first block represents the first 1,000 frequent words, and the second block represents the second 1,000 frequent words of English, and so on, reaching block number 10. Below is an example of how the EVST combines real words and non-words.

Block A:

advisor ghastly contord implore morlorn pitiful profess stourge

moisten discard disdain gleanse weekend boyralty partine indoores

The EVST is a computer-based test, and in order to finish this test, test-takers have to read each word in the block and then decide if they know it or not. In other words, participants have two choices, either *Yes* or *No*. After completing

the test, two types of responses can be shown. The first one is the *Hit Rate*, which is the proportion of knowing the real words, while the second one is the *False Alarm Rate*, which is the proportion of knowing the non-words (or the invented words) (Meara, 1990). As shown in Meara (1990), Meara and Buxton (1987), and Meara and Jones (1988), to estimate the true *Hit Rate*, the calculation of this is made by taking into consideration the *False Alarm Rate*.

2.4.1.3. The Vocabulary Size Test (VST)

The VST is an instrument that measures the learners' overall size of vocabulary (Nation & Beglar, 2007). It measures the overall size of vocabulary in terms of the first to fourteenth 1,000 word families of English based on the British National Corpus. According to the VST, each 10 items represents a 1,000 word frequency level, that is, the VST measures 14,000 words through 140 questions. The following example demonstrates one of the items of the VST, which is the word *drive* that is taken from the first 1,000 word family of English.

First 1,000 word families: DRIVE: He drives fast.

- a) *swims*
- b) *learns*
- c) *throws balls*
- d) *uses a car*

In order to complete this test, test-takers choose the correct meanings for 140 items. Each item has four choices, with one of them being correct, as shown in the previous example. The score of this test is out of 140, that is, every correct choice is awarded one mark. In the previous example, test-takers have to choose *uses a car* as the meaning of the word *drive* to score the mark. As

shown, the word *drive* is chosen from the first 1,000 word families. According to Beglar (2010), the VST has a high score of reliability (0.96–0.98).

2.4.2. Depth of Vocabulary Knowledge and Assessment

Depth of vocabulary knowledge can be established by investigating how well the learners of the language know a word (Anderson & Freebody, 1981; Read, 1993). Literature shows that the depth of vocabulary knowledge can be investigated by two different approaches: the dimensional approach (Nation, 2001; Richards, 1976) and the developmental approach (Wesche & Paribakht, 1996). These two dimensions are discussed in detail in the following sections.

2.4.2.1. The Dimensional Approach

Investigating the depth of vocabulary knowledge according to the dimensional approach depends on achieving various dimensions or aspects of vocabulary knowledge. As Cronbach (1942) explains, there are five behaviours that lead to understanding a word: (1) generalisation, which is related to the definition of the word; (2) application, that is, how to use and recognise the word appropriately; (3) breadth of meaning, which is to know multiple or different meanings of the word; (4) precision of meaning, i.e. to know how to use the word in different situations and contexts; and finally, (5) availability, which is related to how to use the word productively. In addition to this, the aspects of the categorisation mainly focus on meaning and usage of words, whereas aspects like pronunciation and spelling are excluded.

This framework was developed and elaborated on by Richards (1976) who proposed eight assumptions in reference to vocabulary knowledge (as discussed in Section 2.2.1). As seen, vocabulary knowledge is related to different aspects. These aspects are frequency of words, word collocation,

word association, limitation of use, syntactic pattern, derivation, semantic features and polysemy. When comparing Richards's assumptions (1976) with Cronbach's (1942) behaviours, it is easy to realise that Richards's framework is fairly comprehensive because it includes various dimensions of vocabulary knowledge. However, as it is clear, Richards's (1976) assumptions also overlook two important aspects of vocabulary knowledge, which are spelling and pronunciation.

The present study included the dimensional approach in the definition of the term *word*. As seen, Nation (2001) also proposes some dimensions of vocabulary knowledge, and he includes two new aspects of vocabulary knowledge: receptive and productive aspects. Added to this, Nation's (2001) dimensions include two essential aspects: the *spoken form* and the *written form*. Also, different types of associations are explained clearly in his framework of vocabulary knowledge: "meronymy (the whole-part relationship, e.g., *house-kitchen*), troponymy (something is done in a particular manner, e.g., *march*, *strut*, *traipse* and *amble*) and entailment (engaging in one action involves engaging in the other, e.g., *snore* entails *sleep*)" (Nation, 2001, p. 54). Thus, according to these three main points, Nation's (2001) dimensions are more comprehensive and logical in comparison with the previous two specific dimensions of vocabulary knowledge: Cronbach's (1942) behaviours (and Richards's (1976) assumptions. As Schmitt (2010) proposes, Nation's (2001) framework of vocabulary knowledge has been used widely among researchers. Therefore, when considering all of these three dimensions, it is clearly shown that they complement each other. Thus, as Fan (2015, p. 20) argues, it is better to

“integrate the frameworks of Richards (1976) and Nation (2001) in conceptualizing the depth of vocabulary knowledge”.

One of the assessment tools that assesses the depth of vocabulary knowledge according to the dimensional approach is the Word Associates Test (WAT), which was developed and revised several times by Read (1993, 1998). The most recent version of this test is designed to assess two dimensions related to the depth of vocabulary knowledge. The first dimension is known as word meaning, and the second one is word collocation. The format of the WAT presents eight options for each target word, as shown below. These eight options are divided into two groups; thus there are four options in each group. All the target words that are used in the test are academic adjectives that are high-frequency words.

sudden

<i>beautiful quick surprising thirsty</i>	<i>change doctor noise school</i>
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To complete the above task, learners should select four words that are related to the target word *sudden*. The selected four words should be from both of the two boxes, which means that (a) two words are selected from each box, or (b) one word is selected from one box and three words from the other. The words in the left box are there to help explain the target word – sudden means *quick* and *surprising* – whereas the words in the right box can collocate with the target word – *sudden* can collocate with the words *change* and *noise*.

The format of this WAT has been taken into account by various researchers to assess the depth of vocabulary knowledge in terms of different levels of language proficiency. For example, it was used in Dutch universities to assess

the depth of advanced learners' vocabulary knowledge (Greidanus & Nienhuis, 2001). It was also used in the Netherlands to assess the depth of vocabulary knowledge of Dutch elementary school students (Schoonen & Verhallen, 2008). Plus, it was also used in Canada to assess the depth of vocabulary knowledge of ESL university students (Qian, 1999, 2002). The reliability of the WAT has been reported to be 0.93 (Read, 1998), 0.91 (Qian, 1999) and 0.88 (Qian, 2002).

Among all of these reliability studies, the WAT has many problems. One of these is that learners can select the words randomly or by using the guessing technique which reflects badly on the interpretation of the scores (Schmitt, 2010). Moreover, the target words that are used in the test depend entirely on adjectives, while other parts of speech, such as nouns and adverbs, were not taken into consideration. Also, as Fan (2015, p. 26) argues, the test “only explores three types of associations, while more associations could be involved in the test”. However, despite all the previous issues, the WAT is still known as one of the “widely adopted tests” that has been developed to assess the depth of vocabulary knowledge.

2.4.2.2. The Developmental Approach

The developmental approach requires that learners fulfil a number of stages in the process of developing vocabulary knowledge, which is not easy at first glance. Dale (1965, p. 898) proposes a four-stage model for evaluating vocabulary knowledge in the L1, as shown below:

1. *I never saw it before.*
2. *I've heard of it, but I don't know what it means.*
3. *I recognize it in context – it has something to do with ...*

4. I know it.

This four-stage model represents a systematic model of the generally progressive process of acquiring a word, which has been widely used in L1 vocabulary. However, it is clear that Dale's (1965) model of knowing a word is not comprehensive because all of the stages depend on the receptive knowledge of knowing a word, which means that the model overlooks the other aspect of vocabulary knowledge: the productive vocabulary knowledge.

To deal with this issue of lacking the productive aspect of vocabulary knowledge, Paribakht and Wesche (1993) developed Dale's (1965) framework into a five-category elicitation scale of vocabulary knowledge in the L2 acquisition field, known as the Vocabulary Knowledge Scale (VKS), as shown below:

- 1. I don't remember having seen this word before.*
- 2. I have seen this word before, but I don't know what it means.*
- 3. I have seen this word before, and I think it means_____.*
- 4. I know this word. It means_____ (synonym or translation).*
- 5. I can use this word in a sentence: _____. (write a sentence)*

Paribakht and Wesche's framework (1993), unlike Dale's (1965), incorporated both receptive and productive knowledge. As can be seen, the first four dimensions (points 1 to 4 above) are all related to the receptive knowledge of vocabulary, whereas the fifth dimension is related to the productive aspect of vocabulary knowledge. In comparison with Dale's scale (1965) of vocabulary knowledge, Paribakht and Wesche's scale (1993) assesses the productive side of knowing a word, which makes it more complete and comprehensive. The

last dimension of Paribakht and Wesche's scale (1993) depends on the production of sentences, which requires the learners to produce sentences by using some intentional words.

Furthermore, in order to use the VKS tool, a scoring scale was provided by Paribakht and Wesche (1993) to help those who are interested in scoring the performance of learners, which makes it a more reliable and valid method to use to measure the depth of vocabulary knowledge. Moreover, reliability (0.89 and 0.82) and validity ($r = 0.48$) have been supported by Paribakht and Wesche (1993), through "test-retest research, concurrent validity analysis, and an analysis of the correlation between the way the students rated themselves and the way their responses were scored", as Fan (2015, p. 24) noted. Also, to support this point, it is reported that the VKS of Paribakht and Wesche (1993) has "proved to be a workable measure and seems to be sensitive to increases in vocabulary knowledge that result from reading activities" (Read, 2000, p. 135). In addition, the VKS has been widely used by researchers to assess the quality of word knowledge (Joe, 1998; Vidal, 2003).

Another model was proposed by Schmitt and Zimmerman (2002) of the VKS. They reduced the number of dimensions to four, but unlike Paribakht and Wesche (1993), they included both receptive and productive knowledge of vocabulary. The main point of Schmitt and Zimmerman (2002) proposing this revised model of VKS was to overcome issues of the previous related scales, as shown below:

1. *I don't know the word.*
2. *I have heard or seen the word before, but am not sure of the meaning.*

3. *I understand the word when I hear or see it in a sentence, but I don't know how to use it in my own speaking or writing.*
4. *I know this word and can use it in my own speaking and writing.*

Schmitt and Zimmerman's (2002) scale seems to be more organised and clearer, starting with the stage of not knowing the word, and ending with the stage of knowing the word through using it in speaking and writing. However, Schmitt (2010) argues that it might be more systematic if the fourth stage is formed as using the word either in speaking or writing because learners tend to have a tendency for using the word correctly in the two modes of communication, or in one rather than the other.

In comparison with the previous three attempts at describing the stages of L2 vocabulary development, there is another one that contributes to the description of dimensions of knowing a word which was developed by Henriksen (1999). He characterises the development of lexical competence and the features of vocabulary knowledge in a precise way. Henriksen (1999) proposes an approach that describes the lexical competence, known as Henriksen's Three-Dimension Approach, and it includes the following dimensions of lexical competence:

1. *partial to precise knowledge dimension.*
2. *depth of knowledge dimension.*
3. *receptive to productive use ability dimension.*

To make it clear, the first dimension of Henriksen's approach (1999) implies the idea of lexical development, that is, a change should be correlated to the learner's knowledge of vocabulary, from partial to precise. The depth of

knowledge dimension requires learners to understand and comprehend the complex nature of words according to their different aspects of knowledge. Correlated to Meara (1996b), learners develop their depth of vocabulary by linking words through a network, or, more clearly, by building networks between words. The third dimension of Henriksen's approach (1999), "receptive to productive use ability", refers to the ability to use a number of receptive words productively by learners in terms of the development of lexical knowledge. To illustrate, Henriksen's three-dimension approach is formed by avoiding the issue of staging the lexical development process. However, as Fan (2015, p. 22) notes, "these three continuums seem to overlap with each other". The first dimension overlaps with the second one: "partial to precise knowledge" is difficult to distinguish from "depth of knowledge".

2.5. Summary

The preceding sections represent the first part of Chapter Two, which is the theoretical overview. The main topics discussed were the theoretical frameworks of vocabulary knowledge (Richards (1976) and Nation (2001)), the convention between receptive and productive vocabularies, and the size and depth of vocabulary knowledge. Finally, the approach adopted in the current study was stated, which is the dimensional approach.

2.6. Literature Review

2.6.1. Introduction

Recent studies over the last few decades have shown that vocabulary knowledge plays a great role in vocabulary teaching and learning (Scheepers, 2018). Accordingly, three major themes were developed in relation to this topic: (1) vocabulary knowledge assessment, (2) growth of vocabulary

knowledge, and (3) vocabulary knowledge assessment versus language skills. In order to explain these themes, the titles, authors, populations, instruments and main results of each study are previewed and summarised in relation to the present study.

2.6.1.1. Vocabulary Knowledge Assessment

To begin with, Shin, Chon and Kim (2011) conducted a study to administer an assessment of high school learners' vocabulary sizes in Korea. A total of 402 grade-11 high school learners took part in the study, of which 201 were male and 201 were female. Two instruments were used to assess their vocabulary size. A bilingual form of Nation's (2010) VST was used to assess receptive vocabulary size, and Laufer and Nation's (1999) VLT was used to assess productive vocabulary size. The researchers assessed the learners' size of vocabulary according to the first and tenth 1,000 word bands. The results of the study showed that the participants' receptive vocabulary size was as large as 6,000 words, and their productive vocabulary size was around 2,400 words. Overall, the study suggests developing the national textbooks of English by revising the National Curriculum's word list, and the researchers recommended that teachers should minimise the gap between the receptive and productive vocabulary sizes for the most frequent words including in the native-speaker corpora. In addition, a recommendation was also raised to design tests to promote the use of productive skills.

Later, Canga Alonso (2013) investigated 92 EFL students' receptive vocabulary knowledge and its pedagogical implications for understanding written and spoken discourse in English in a secondary school located in the north of Spain. These participants were divided into 49 girls and 43 boys. One instrument was used in the study to measure the participants' receptive

vocabulary knowledge, specifically the second version of the 2,000 word frequency list of the VLT (Schmitt, Schmitt & Clapham, 2001). The results of the test found that the receptive vocabulary knowledge of the girls and boys are slightly different but both are low. The mean score of the girls' receptive knowledge was below 900 words, whereas the boys' mean score was above 1,000 words. Thus, these results demonstrated that most of the participants could have problems in understanding written and spoken discourse in English. Based on these results, the study suggested conducting more studies on learners' size of L2 vocabulary knowledge to guide the teaching of unknown words in lessons. In addition, teachers should find out and analyse the type of vocabulary included in learners' textbooks in order to improve their competency.

McLean, Hogg and Kramer (2014) conducted a cross-sectional designed study to measure the vocabulary size of 3,449 university students in Japan by a snowball approach. The study used one instrument: Nation and Beglar's (2007) VST based on the first 8,000 word families of the British National Corpus. Two main results were shown by the study. First, the average score of the participants' vocabulary size was 3,715.20 word families. Second, there was a lack of consistent knowledge of the most frequent 2,000 word families occurring in the British National Corpus. Therefore, the researchers of the study suggested to focus on teaching high-frequency English words.

Following this, Yunus, Mohamed and Waelateh (2016) conducted a descriptive study to investigate receptive vocabulary knowledge. The participants of this study were 166 students divided into two groups: 80 of these were English-major students from the University of Sultan Zainal Abidin in Malaysia, and 86 were English-major students from Prince Songkla

University in Thailand. The researchers of the study used Nation and Beglar's (2007) VST and found that the participants from the University of Sultan Zainal Abidin had a higher score (44.64%) compared with participants from the Prince Songkla University (20.92%). This variation of scores goes back to the fact that the learners from the University of Sultan Zainal Abidin were exposed early to formal English education. Thus, the study recommended providing a special vocabulary course and equipping English lectures with advanced vocabulary at the two universities.

In addition, Bardakçi (2016) carried out a study to demonstrate the effect of size and depth of vocabulary knowledge on vocabulary profiles of EFL learners. A total of 159 EFL learners at a university in Turkey took part in the study. The participants were aged between 19 and 23, and were divided into 84 EFL learners and 75 native speakers. The study started by comparing learners' essays with those by native speakers in terms of vocabulary profile through an online database. Then, the size and depth of vocabulary knowledge were measured by using two instruments: the VLT (version 2) (Schmitt, Schmitt & Clapham, 2001) and the Depth of Vocabulary Knowledge Test (Qian & Schedl, 2004). When comparing vocabulary profiles, the study found that EFL learners depend on the most frequent 1,000 words in the English language, and no difference was found in using the academic words between the two groups. In addition, the study also found that EFL learners' size and depth of vocabulary knowledge were closely correlated, and they have a significant effect on L2 vocabulary profiles of the EFL learners. Moreover, when size and depth dimensions were compared, the depth of vocabulary knowledge was revealed to be a significant indicator within vocabulary profiles. The researcher of the study recommended conducting more studies

on vocabulary profile, that is, because it enables us to cover EFL learners' lexical needs and improve our understanding of the L2 lexicon.

Later on, AbManan, Azizan, Fatima and Mohd (2017) conducted a study to determine the levels of the receptive and productive vocabulary knowledge during the first year of university studying in Malaysia. A total of 156 diploma-level students from the faculty of Architecture, Planning and Surveying at a public university took part. Of these participants, 68 were male and 88 were female, and they were all aged between 18 and 20 years old. The instruments used in the study were Nation's (1990) VLT (version 1), which measures the receptive vocabulary, and Laufer and Nation's (1995b) Lexical Frequency Profile, which measures the productive vocabulary. Thus, it was found that the vast majority of the participants had on average a 2,000- to 3,000-word receptive vocabulary and around a 2,000-word productive vocabulary. The participants knew around 3,652 word families, but more than 50% of them did not achieve the 5,000 word level. In addition, the participants had more average of receptive vocabulary than productive vocabulary. These findings led the researchers of the study to state that the vast majority of the learners were not ready for university learning, and the researchers recommended that the university should develop an English language program that focuses on vocabulary development and grammar. This has a positive influence in dealing with learners' challenges of tertiary education.

In addition, Daaboul and Nimehchisalem (2017) conducted a study to investigate the vocabulary knowledge of 100 EFL learners in Syria by measuring their vocabulary size. The study included only one instrument: Nation's (2006) VST. After collecting the data, and by using descriptive statistics, the results showed that the Syrian university learners' overall

vocabulary size was moderate. Moreover, the scores of the learners across the fourteenth 1000-word list varied from Moderate to High. These results led to the recommendation to expand the vocabulary knowledge of the EFL undergraduates in Syria by training and instruction on the vocabulary-raising awareness. This could be done by explaining the reasons why learners need to acquire a large vocabulary, and also by explaining the role of vocabulary in language learning.

Likewise, Ebrahimi (2017) conducted a study to assess the productive depth of vocabulary knowledge of English words based on Nation's (2001) framework of Form, Meaning and Use at the 1,000-word frequency level. The participants of the study were 46 EFL learners from two universities in Iran. A number of tests were administered to the participants: a VLT version 1 (Schmitt, Schmitt & Clapham, 2001), a Productive Levels Test (Llach & Espinosa, 2014), a Word Parts Test, a Synonym and Antonym Test, a Superordination and Subordination Test, a Collocation Test, and a Form and Meaning Test. Accordingly, the study revealed that the performance of the participants in the connection of form-meaning and superordination and subordination was strong, whereas their performance in terms of collocation knowledge was weaker. Moreover, the study also showed that the participants' performance of the association of synonymy and antonymy, and word parts was lower. Thus, the findings indicated, as a whole, that in Iran EFL learners' knowledge of productive vocabulary achieved the 1,000 level; however, their form and meaning vocabulary knowledge was not extensive but limited. Therefore, the study recommended taking different productive aspects of vocabulary knowledge into consideration. That is, instructors should expose EFL learners

to different teaching methods or learning activities to enhance learners' knowledge of word parts, associations and collocations.

Mungkonwong and Wudthayagorn (2017) conducted a study to assess the vocabulary size in universities in Thailand and examine its relationship with years of study. A total of 484 undergraduates from different universities across Thailand participated in the study. The researchers used a bilingual English-Thai version of the VST, adapted from the English version of Nation and Beglar (2007). The results of the study found that the freshmen had around 4,272 word families, which is higher than the requirement (3,000 word families) of Thailand's Basic Education Curriculum (Ministry of Education, 2001). In addition, the findings showed that the two variables, vocabulary size and years of study, were significantly correlated. At the end, the researchers concluded the study by encouraging teachers to assist their learners in acquiring more vocabulary. Added to this, it was suggested that researchers who are interested in vocabulary acquisition have to investigate ways to increase the size of vocabulary.

Then, Sudarman and Chinokul (2018) conducted a study to assess the vocabulary knowledge of EFL learners in Indonesia by investigating their mean vocabulary size and mastery level. A total of 33 first-year EFL university learners majoring in English took part in the study. To obtain findings, the VLT (Schmitt, Schmitt & Clapham, 2001) was used. The results showed that learners only knew 1,273 word families. Moreover, the study found that the participants did not master the 2,000- and 3,000-word levels, nor the academic word level. Therefore, because of their very low mastery level, intensive research on vocabulary learning and strategies was required.

In addition, Ortega (2018) measured the vocabulary size of students of English in Iceland and explored their use of English inside and outside the academic environment. The participants of the study were 41 EFL learners at a primary education school, of whom 18 were female and 23 were male. Three instruments were used in the study: two surveys that examined the students' use of English and Milton's (2009) X-Lex Test, which measures the first 5,000 most frequent word families of English. The findings showed that the participants' vocabulary size was insufficient to tackle their texts in secondary education, and their mean average vocabulary size was around 3,500 word families. Moreover, the surveys showed that learners had no use of productive vocabulary; they only used English in receptive activities like listening to music, watching media and reading books. Thus, the researcher concluded the study by focusing on the importance of vocabulary teaching in compulsory education, which could be through using developed vocabulary teaching approaches and materials.

Similarly, Fleckenstein (2018) conducted a study that aimed to examine the receptive and productive levels of vocabulary knowledge in Iceland. The participants of the study were 75 tenth-grade EFL learners who were in their final year of compulsory schooling; 35 students were girls and 40 were boys. Their receptive and productive vocabularies were examined by Laufer and Nation's (1999) VLT (version 1) and a Productive Vocabulary Level Test (version A). In addition, students were asked to produce written samples to be analysed by lexical vocabulary profile assessment software. Besides these instruments, the participants' attitudes and activities which might influence their English language were examined through using a background questionnaire. By the end of compulsory education, the findings revealed a

strong relationship between the receptive and productive vocabularies knowledge, and no difference between the vocabulary knowledge of males and females. In addition, most of the participants had acquired a sufficient high frequency receptive vocabulary, and many of them had acquired a significant mid-frequency vocabulary. Moreover, when participants' receptive and productive vocabularies were compared, the latter was found to be much lower than the former. The study also found that the participants spent around 43 hours per week in extramural English activities. Based on these results, the study raised a recommendation to focus on productive vocabulary by stimulating EFL learners in Iceland to use their receptive vocabulary. Besides, it was suggested that future research is needed on the difficulties of L2 acquisition.

Haris (2018) conducted a study to examine the vocabulary size of EFL learners in Malaysia. The participants of the study were 109 students who were enrolled on the Cambridge International General Certificate of Secondary Education L2 examination. The participants' vocabulary size was examined through using the VLT (Schmitt, Schmitt & Clapham, 2001), which consists of five different categories of word levels: the 2,000, 3,000, 5,000, 10,000 and the academic word levels. The findings indicated that the vast majority of participants had mastered three word levels out of five: the 2,000, 3,000 and academic word levels. More specifically, 99.1% of the participants had achieved the 2,000 word level, 86.2% had achieved the 3,000 word level, 41.3% had achieved the 5,000 word level, 76.1% had achieved the academic word level and 3.7% had achieved the 10,000 word level. Based on these findings, the study recommended that EFL students' size of vocabulary has to be widened and improved to help them learn English. This could be done by

measuring students' vocabulary size at the beginning of each teaching semester to help establish exactly which approach should be applied to increase the students' vocabulary.

Recently, McLean, Matsuo, Kramer and Cornwell (2019) conducted a study to investigate vocabulary loss during the summer vacation through investigating L2 receptive vocabulary in Japan. In addition, the study also investigated whether there is a relationship between L2 receptive vocabulary and time spent studying vocabulary through a vocabulary learning application called Memrise, the number of words read through Xreading and experience travelling abroad. Two rounds of tests including a meaning-recall test and a meaning-recognition test were administered to 103 EFL first-year university students in Japan. Interestingly, the findings showed no loss in participants' size of receptive vocabulary after the summer vacation, but a slight increase in meaning-recognition scores was found. Moreover, no relationships were shown between the L2 receptive vocabulary and the time spent on learning vocabulary through the Memrise application, the words read through Xreading or the experience of travelling abroad. These interesting results support the idea of Schmitt (2010) that receptive vocabulary knowledge cannot be lost easily, compared with productive vocabulary knowledge. The researchers of the study recommended measuring productive vocabulary knowledge in relation to time experiments or collocational knowledge.

To summarise the above studies, the size of vocabulary knowledge can be measured by assessing two aspects of vocabulary: the receptive and productive vocabularies. However, it can be said that most of the recent studies have demonstrated that researchers have a tendency to only assess the receptive vocabulary size (Alonso, 2013; McLean, Hogg & Kramer, 2014;

Yunus, Mohamed & Waelateh, 2016; Daaboul & Nimehchisalem, 2017; Mungkonwong & Wudthayagorn, 2017; Sudarman & Chinokul, 2018; Ortega, 2018; Haris, 2018; McLean, Matsuo, Kramer & Cornwell, 2019). Nevertheless, these studies have shown positive implications for improving EFL learners' vocabulary knowledge, some of which are related to pedagogical recommendations. When comparing the implications of Alonso (2013) with McLean, Hogg and Kramer (2014), for instance, a major instruction can be seen: teaching English has to be organised by starting with an assessment of vocabulary size to identify the learners' vocabulary level and what exactly they need to be taught. That is, if learners of English know a significant number of the first 1,000 word families list of the British National Corpus, for example, teachers might aim to teach the second 1,000 word families list. Moreover, as Mungkonwong and Wudthayagorn (2017) demonstrated, when the learners' size of vocabulary seems to be higher than the curriculum requirement, teachers are encouraged to carry out descriptive studies on their strategies of vocabulary learning. Thus, by generalising the results of these kinds of studies, other institutions across the world might improve their English teaching program or curriculum.

Concerning the studies of the sizes of receptive and productive vocabularies, it can be said that all of the researchers found that the learners' receptive vocabulary size was larger than that of the productive vocabulary (AbManan, Azizan, Fatima & Mohd, 2017). This goes along with Meara's assumption (2009, p. 30) that "receptive vocabulary would generally be larger than productive vocabulary." In fact, the studies which investigated the receptive and productive combination of vocabulary knowledge made recommendations that would increase EFL learners' productive vocabulary. Shin, Chon, and

Kim (2011) highlighted the need to reduce the gap between the sizes of receptive and productive vocabularies, which can be achieved by Fleckenstein's (2018) suggestion of stimulating EFL learners to use their receptive vocabulary productively. In addition, the gap between these two aspects of vocabulary size reveals the levels of teaching in receptive and productive vocabularies. Where there is a large gap, learners can increase their productive vocabulary size by encouraging teachers to expose them to productive activities and exercises.

Overall, Ebrahimi (2017) demonstrated that these kinds of studies might make a broad investigation into the depth of vocabulary knowledge. A great part of his study was specific to word parts, semantic associations, collocations and form-meaning connections. This indicates that the assessment of vocabulary knowledge can be related to various aspects of language, not only to the number of word families known.

2.6.1.2. Growth of Vocabulary Knowledge

To begin with, Webb and Chang (2012) conducted a study aimed at measuring the vocabulary knowledge of 166 EFL learners over a five-year period at a high school in Taiwan. The study used a bilingual version of the VLT (Nation, 1983, 1990; Schmitt, Schmitt & Clapham, 2001) in which the scores of the test were investigated according to the instruction of English language that participants received. After measuring the participants' vocabulary knowledge, the study found that one group of the participants had only learned as few as 18 words, whereas another group had learned as many as 430 words in one year. In addition, the study also found that 47% of the participants had mastered the 1,000 word level and 16% had mastered the 2,000 word level. Therefore, the study emphasised that a great improvement is needed to the

vocabulary learning program at the institution and four suggestions should be considered: (1) to “determine the vocabulary to be learned during the program”, (2) to “set vocabulary goals for each year and for the full learning period”, (3) “to outline a plan that is practical, can be easily followed by teachers and applied to different courses”, and (4) to “raise awareness of key aspects of the plan to teachers and students”.

Then, Hajiyeva (2015) explored and evaluated the growth of the receptive and the productive vocabularies knowledge after a year of instruction at the Faculty of Pedagogy in a university in Azerbaijan. A total of 159 EFL English-majors took part in the study, their English language proficiency ranged from pre-intermediate to intermediate. The participants were tested at the beginning of both the first and the second years. The participants were exposed to two instruments: the VLT and the Productive Vocabulary Levels Test. The study found that, interestingly, the learners’ size of receptive vocabulary had not increased, whereas the size of their productive vocabulary had grown significantly. The reason behind the lack of receptive vocabulary growth is related to the deficiency of appropriate course materials. Thus, the study showed that the participants lacked the vocabulary that meet their academic needs. Therefore, the researcher recommended to inform teachers to take the appropriate steps of language proficiency teaching.

Later, Alfatle (2016) conducted a cross-sectional study in Iraq to investigate the growth of vocabulary knowledge over four years of university instruction, and to evaluate the effect of language learning and practice variables on the participants’ lexical growth. A total of 120 EFL learners participated in the study, with 30 learners representing each study year. Two tests were used in the study: the Self-Rated Vocabulary Test was used to measure learners’ size

of vocabulary, and Read's Word Associates Test (1993, 2004) was used to measure learners' depth of vocabulary knowledge. After a multivariate analysis, the results showed a significant growth in vocabulary across every year of study. In addition, the results showed that the average growth of vocabulary was between 800 and 1,000 words. At the end of the study, the researcher provided several pedagogical suggestions for curriculum development and materials selection. These suggestions were to encourage EFL learners to use English-English dictionaries, to expose them to word-focused activities, to urge the learners to read more and to practice many language-learning activities outside the classroom.

In addition to this, Lahtikallio (2016) assessed EFL learners' growth of receptive vocabulary size and depth in Finland. The participants of the study were 130 EFL learners, of which 59 of were ninth-graders aged 15 to 16, and 71 were second-year pupils in upper secondary school aged 17 to 18. The data of the study were collected through using two instruments: the X-Lex test was used to assess the size of the vocabulary, and the WAT was used to assess the depth of vocabulary knowledge. Accordingly, the study showed four main results. One, the second-year pupils of the upper secondary school knew an average of around 530 words more than the ninth-graders. Two, the ninth-graders' scores ranged from 1,750 to 4,900 words, whereas the second-year pupils' scores varied between 2,000 and 5,000 words. Three, the pace of learning new words between the two groups varied; the ninth-graders' pace was slightly faster than the other group (8.7 against 7.3 words per hour of EFL tuition, respectively). Four, the second-year pupils had more synonym and collocation knowledge. Thus, the researcher concluded that the significance of word tests in dealing with vocabulary knowledge should be underlined in

teacher training. In addition, the researcher argued that if word tests were used in investigating the learners' knowledge of vocabulary, and if word tests became a natural part of learning and teaching, a degree of anxiety among teachers and pupils would be prevented.

Based on these previewed four studies, it can be said that the growth of vocabulary knowledge can be generally investigated by conducting a longitudinal descriptive study. Hajiyeveva (2015), for instance, carried out a study to investigate the growth of receptive and productive vocabularies knowledge of 159 EFL learners over a year of university instruction in Azerbaijan. This was done, first, by assessing the participants' vocabulary at the beginning of both the first and second years of study, and then by comparing the results from these two assessments. In contrast, Lahtikallio (2016) investigated the growth of vocabulary by carrying out a study that assessed receptive vocabulary size and depth of two different groups: comprehensive school ninth-graders and second-year pupils in upper secondary school. The studies showed that researchers were able to assess the growth of vocabulary knowledge over a period of time: it can be a year, two years, or more. Distinctively, institutions of English teaching can go further by comparing their learners' growth of vocabulary size and depth among each other. Thus, there are significant implications for improving the knowledge of EFL learners.

2.6.1.3. Vocabulary Knowledge Assessment vs. Language Skills

To begin with, Al-Homoud and Alsalloum (2012) conducted a study to explore the effects of extensive reading on the size and depth of vocabulary knowledge and reading speed in the Kingdom of Saudi Arabia. A total of 127 female EFL learners took part in the study. Two instruments were used to

obtain the findings: the VLT and the WAT. After exposing the participants to two different reading approaches (intensive and extensive) for eight weeks, their relative gains were compared with each other. The results showed that both reading groups had similar gains in relation to the 2,000, 3,000 and the academic word list. In addition, the extensive reading group scores in the WAT were significantly higher and their reading speed was faster than the intensive reading group. Thus, the researchers concluded by stating that extensive reading is more effective than intensive reading in improving learners' size and depth of vocabulary knowledge and their reading speed.

Later on, Teng (2016) assessed the roles of the size and depth of vocabulary knowledge in relation to academic listening comprehension in China. A total of 88 second-year students of English took part in the study: 20 males and 68 females. Three instruments were used in the study: the VST (Nation and Beglar, 2007), the WAT (Read, 2004), and an IELTS listening comprehension test. The findings of the study revealed that both the size and depth of vocabulary knowledge were significantly correlated with academic listening comprehension; however, the correlation of vocabulary depth was much higher than the vocabulary size. In addition, the findings showed that the depth of vocabulary knowledge was a strong predictor for the level of listening comprehension. Thus, the study recommended expanding EFL learners' vocabulary size to improve their listening comprehension, and much more research is needed related to the role of vocabulary size in listening comprehension.

Dabbagh (2016) conducted a study to investigate the predictive role of size and depth of vocabulary knowledge in relation to L2 learners' listening comprehension in Iran. A total of 73 intermediate undergraduate EFL learners

participated in the study. Three instruments were used: the WAT, the VLT, and the IELTS listening sub-test. The results of the study demonstrated that the depth of vocabulary knowledge can significantly predict L2 listening comprehension, in contrast to the size of vocabulary knowledge. In addition, the study revealed that only the 3,000 word frequency level of vocabulary size could predict the variance in the listening comprehension test scores. Moreover, the study found that there was a significant contribution of vocabulary depth towards vocabulary size. Based on these findings, a number of pedagogical implications were raised. The researchers recommended that teachers of EFL learners should focus on vocabulary aspects that might confuse L2 learners, such as collocation, synonymy and polysemy, in addition to raising awareness of word association.

Furthermore, Uchihara and Saitob (2016) investigated the relationship of L2 learners' productive vocabulary knowledge and multiple dimensions of spontaneous speech production in Japan. A total of 39 first-year EFL students participated in the study: 21 were female and 18 were male. The study used a series of picture descriptions tasks to assess the participants' spontaneous speech in terms of comprehensibility (ease of understanding), accentedness (linguistic nativelikeness), and fluency (speech rate). When the findings were analysed, the results showed that there was a significant correlation between productive vocabulary scores and L2 fluency; however, there was no significant correlation between comprehensibility and accentedness. With reference to these findings, the study highlighted that the development of productive vocabulary knowledge might have a vital role in the improvement of L2 oral proficiency. The researchers concluded the study by suggesting a future research direction on the relationship between vocabulary knowledge

and speaking proficiency. They also recommended investigating these two constructs separately to gain a deeper insight into this type of relationship. Furthermore, the researchers raised a number of factors that should be taken into account when investigating vocabulary knowledge and speaking proficiency: L1 cognate, speed of lexical retrieval, abstractness sense relations, richness and sophistication, and multi-word units.

Recently, Karakoç and Köse (2017) carried out a study to clarify the incremental and multi-dimensional nature of L2 vocabulary development along with its relation to reading and writing performances in Turkey. A total of 175 EFL university students on an intensive language program took part in the study. A number of instruments were used: the 2,000 word level Receptive Vocabulary Knowledge Test (Schmitt, Schmitt & Clapham, 2001), the 2,000 word level Productive Vocabulary Knowledge Test (Laufer & Nation, 1999), the students' lexical frequency profile, their reading and writing scores in a module test, and their overall scores in a proficiency exam. The study had three major findings. First, the participants' receptive vocabulary size ($M = 87.18$) was larger than that of their productive vocabulary ($M = 45.14$). Second, there was a significant relationship between vocabulary knowledge and language performance of reading and writing skills. Third, students' essays and lexical levels were significantly related to each other. Thus, the researchers suggested raising the vocabulary awareness of the students in their language learning process by teaching them low frequency words, and encouraging them to acquire high frequency words. Moreover, the researchers recommended conducting a longitudinal study to obtain more results of the incremental nature of vocabulary knowledge. In addition, the researchers encourage investigation of the listening and speaking skills in relation to

vocabulary knowledge. Added to this, the researchers suggested developing different kinds of vocabulary tests.

Tan and Goh (2017) investigated the relationship between vocabulary size and reading comprehension performance in a private university college in Malaysia. This involved 53 second-year students taking a Diploma in Mass Communication taking part in the study, of which 12 were male and 41 were female. Two instruments were used in the study: the VST and an academic module of the IELTS Reading Test. The study found that the participants' vocabulary size was around 6,000 word families, which is insufficient for adequate reading comprehension. In addition, no linear relationship was found between the size of vocabulary and the performance of reading comprehension, nor was there an observation of vocabulary size being related to adequate reading comprehension. These findings were obtained from one tertiary institution and therefore the researchers recommended conducting more research on vocabulary size in relation to reading comprehension in other tertiary institutions among different majors.

More recently, Pathan, Ismail and Soomro (2019) conducted a pre/post study to investigate the relationship between learners' receptive vocabulary growth and their reading development in Pakistan. A total of 123 first-year postgraduate university students took part in the study. To obtain the findings, two instruments were used: Nation and Beglar's (2007) standardised VST and a reading comprehension test (TOEFL). The data of the study were collected from the participants at the beginning and the end of the students' English course. Accordingly, the study found that, significantly, the average vocabulary size of the participants at the beginning of their English course was 3,500 words and at the end it was 4,090 words. Moreover, there was a

significant change between the mean scores of the pre-test and the post-test: the participants' mean score at the beginning of the English course was 35.0 and at the end it was 40.8. In addition, the study found that the learners' vocabulary size and reading ability were both correlated. Therefore, the study raised a number of recommendations. Teachers should incorporate many types of vocabulary-building strategies into EFL teaching, as well as needing to devote the appropriate time towards increasing the vocabulary of their EFL learners. With regard to future studies, in order to get a deeper understanding of the relationship between vocabulary knowledge and reading comprehension, researchers should conduct studies over a period of one year or more. Added to this, researchers should study the relationship between these two variables by carrying out longitudinal mixed method studies.

In addition, Migdadi, Yunus and Daradkeh (2019) conducted a study to examine the relationship between text-based vocabulary knowledge and listening comprehension in Saudi Arabia. It also involved finding the basic components of vocabulary knowledge (size and depth) in listening comprehension. To obtain findings, 40 preparatory-year Saudi University students participated in the study. Three instruments were used: size and depth of vocabulary knowledge tests, and a listening comprehension test. The study showed that the size and depth of vocabulary knowledge have a strong relationship with listening comprehension: size = 0.73, depth = 0.59. These two aspects of vocabulary knowledge can explain 54% of the variance in listening comprehension. In addition to these results, the study found that the basic component in listening comprehension is the vocabulary size. Thus, the researchers concluded the study by encouraging teachers of English language

to focus on learners' size of vocabulary to obtain successful outcomes in listening comprehension.

According to the previewed studies, it can be said that vocabulary knowledge assessment has a vital role in dealing with different language skills. Investigating such relationships gives valuable insight in developing EFL learners' L2. The previous studies have revealed that all the language skills, i.e. listening, reading, writing and speaking, can be developed by the assessment of vocabulary knowledge, albeit the latter one has not been investigated widely. The relationship between vocabulary knowledge and reading comprehension, for instance, has been investigated by Tan and Goh (2017) who demonstrated that the participants of the study had failed to achieve the proper size of vocabulary for proficient reading comprehension. Although their participants' size of vocabulary was around 6,000 words, a proficient reading comprehension goes far beyond this size of vocabulary. This goes along with Nation's assumption (2001) that a vocabulary size of 12,000 words can cover 95% of a written text.

In addition, a useful implication of this relationship is shown in Al-Homoud and Alsalloum's (2012) study. When they explored the difference between intensive and extensive reading in relation to vocabulary knowledge assessment, the study revealed that both of these reading techniques were effective; however, extensive reading was more effective in improving the depth of vocabulary knowledge and reading speed. The researchers of this study encouraged teachers and EFL learners to use the extensive reading technique to improve learners' size and depth of vocabulary.

Furthermore, the relationship between vocabulary knowledge and listening comprehension, which was investigated by Dabbagh (2016) and Teng (2016),

showed that both the size and depth of vocabulary knowledge were correlated to listening comprehension; however, the depth of vocabulary knowledge indicated a higher correlation. Therefore, this finding has important implications in developing learners' listening comprehension: teachers and language instructors should take various aspects of deep word knowledge into consideration, e.g. lexical relations.

2.7. Summary and Conclusion

The study of this research is about measuring the size and depth of vocabulary knowledge, which are two of the most recent topics in the L2 acquisition field. This present chapter has described the theoretical frameworks of the study, that is, Nation's (1976) and Richards's (2001) frameworks of vocabulary knowledge which complete each other. After describing the frameworks of the study, the size and depth of vocabulary knowledge were defined to differentiate their meaning, measurement tools and instruments. As shown, the size of vocabulary knowledge is known as the number of words that the learners know, whereas the depth of vocabulary knowledge is known as how well the learners know a word. Moreover, the chapter has illustrated some tools for measuring the size of vocabulary knowledge, i.e. the VLT, the EVST and the VST. Added to this, the two approaches that are related to the depth of vocabulary knowledge were defined: the dimensional approach and the developmental approach.

It is anticipated that this research will show significant improvement in both the size of vocabulary and the depth of vocabulary knowledge for EFL learners at the University of Bahrain regarding general language proficiency. Also, it is expected that there will be a great enhancement in the organisation

of mental lexical networking for the L2 learners. This is likely to be clearly visible at the end of the study when the Intermediate and the Advanced levels are compared with each other.

CHAPTER THREE

Methods and Procedures

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3.0. Introduction

This chapter presents and discusses in detail the methodology used in the study. It includes a detailed description of the population and the sample chosen. In addition, it describes the research tools (data collection and analysis tools) and the rationale for the choice of these tools.

3.1. Methodology

Measuring the size and depth of vocabulary knowledge requires dealing with scores. Scores enable the researcher to come up with valuable recommendations by analysing statistical findings. Therefore, this research was conducted using a quantitative methodology.

3.2. Population and Sample

The population of this study was University of Bahrain English-major students at various proficiency levels. A selection of 120 L2 learners of English were chosen from the Department of English Language and Literature in the College of Arts. These participants, both males and females, were selected randomly based on their language proficiency level. They were then divided into two groups in terms of their proficiency level. As shown in Table 2, Group One consists of 60 first-year intermediate students, aged between 18 and 19: 42 females and 18 males. Group Two consists of 60 fourth-year advanced students, aged between 20 and 21: 45 females and 15 males. All participants in the study had started to learn English by the age of 6 or 7

(Rixon, 2013), which generally refers to grade 1. The proficiency levels of the two groups were represented by two English courses provided by the university: participants at the intermediate level were enrolled on the ENGL130 course (3 sections were involved), whereas participants at the advanced level were enrolled on the ENGL450 course (3 sections were involved).

Table 2: Participants of the study

Group	Language level	Number	Frequency	Valid percent
Group 1	Intermediate	60	Female: 42	35%
			Male: 18	15%
Group 2	Advanced	60	Female: 45	37.5%
			Male: 15	12.5%
Total		120	120	100%

3.3. Research Tools

This study uses three different tools to assess three aspects of vocabulary knowledge: receptive vocabulary, productive vocabulary and vocabulary depth. Each aspect has its own measurement tool. The first tool is the EVST, used to measure receptive vocabulary knowledge (Meara and Jones, 1990). The second tool is the Word Association Task, also known as Lex30, used to measure the productive vocabulary knowledge (Fitzpatrick and Meara, 2004). The third tool of this research is the Collex Test, used to investigate the depth of vocabulary knowledge (Gyllstad, 2007).

3.3.1. The Eurocentres Vocabulary Size Test (EVST)

The EVST was developed by Meara and Jones (1990) to measure learners' receptive vocabulary knowledge size based on Thorndike and Lorge's (1944) most frequent 10,000 words of English. This test includes 300 words divided into five blocks. Each block represents 1,000 frequent words: "the first block contains a sample of items from the first 1,000 most frequent words in English; the second block is a representative sample from the second 1,000 most frequent words in English; and so on" (Meara, 1990, p. 3). Each block contains 60 words, although not all of them are real English words. These 60 words are divided into 40 real words and 20 non-words (refer to Appendix 1 for a full version of the test). In order to complete this test, the test-takers need to mark the words that are familiar to them, and leave the words that they do not know.

Historically, the format of the EVST was derived from one of the simple formats used to measure the size of receptive vocabulary knowledge, and it first appeared in dealing with the field of L1 studies (Sims, 1929; Tilley, 1936; Zimmerman, Broder, Shaughnessy & Underwood, 1977). The format of this test is known as the 'checklist' which includes a list of words with the requirement for test-takers to mark the familiar words. However, later on, researchers realised that the result of this test could be affected by the overestimation of knowledge factor. Therefore, Anderson and Freebody (1983) found that the list of words of this EVST lacked pseudo-words (non-words) to maintain accurate results. Thus, they developed the test by adding 20 pseudo-words besides the real words. These pseudo-words help to provide an accurate knowledge estimation of real words. Later on, Meara and Buxton (1987) used this developed EVST in the L2 field as a first attempt to check its

workability. The test was then developed further by separating the words into 40 real words and 20 pseudo-words in each of the five levels, and a computer-based format was also provided (Meara & Jones, 1988, 1990).

A reliability test was run using the Statistical Package of the Social Science (SPSS), as can be seen in Table 3: the Cronbach's alpha is .887, which indicates a highly reliable test.

Table 3: EVST reliability

Cronbach's alpha	Cronbach's alpha based on standardised items	N. of items
.887	.763	6

3.3.2. The Word Association Task (Lex30)

In addition to the EVST, which is used to measure the size of receptive vocabulary knowledge, the study also measures the size of the productive vocabulary knowledge by an instrument known as the Word Association Task, or Lex30, which was designed by Meara and Fitzpatrick (2000). Lex30 contains a list of 30 stimulus words. To fulfil this task, test-takers need to produce a range of one to four responses, or associations, to these stimuli (Appendix 2 contains a full version of Lex30). The following example shows one of the stimulus words, *animal*, with its possible associations of *elephant*, *tiger*, *farm* and *wild*.

animal: elephant – tiger – farm – wild

As Meara (2009) argued, all the stimulus words provided in Lex30 were chosen in accordance with a number of criteria. The first criterion is that all of the 30 stimulus words are highly frequent; they were chosen from the first

1,000 word list by Nation (1984). Nation's (1984) 1,000 word list comprises low-level words and learners are expected to identify and recognise them. The reason behind choosing these words is to make this task flexible so that it can be used with a variant ranges of proficiency levels. The second criterion for choosing these words is that they do not elicit a single response, or association, like the word *black* and *dog*. To put it simply, words that may lead to a very narrow range of associations are not used in Lex30, whereas Meara and Fitzpatrick (2000) selected words that generate a wide range of associations. The third criterion is that each item on the stimulus words list naturally leads to associations that are not common words, and by avoiding the usage of common words that are given by native speakers of English, learners who would like to measure their productive vocabulary size have the opportunity to generate a wide range of associations.

When Lex30 was developed, it was criticised for not having a clear vision of validity and reliability (Baba, 2002). However, in 2004, Fitzpatrick and Meara proved that Lex30 is valid and reliable through conducting a test-retest study and two concurrent measures of validity. One of these two measures was using native speakers' data and the other was using two parallel tests: the productive version of the VLT (Laufer & Nation, 1995a) and a translation task that requires learners to translate contexts from Chinese to English, as Table 4 illustrates.

Table 4: Reliability and validity of Lex30 (Fitzpatrick and Meara, 2004, p. 46-55)

#	Study	N	Main details
1	Reliability S.	16 L2 users of English	Lex30 has a high degree of reliability: - $0.866 (p < .01)$
2	Validity S. (N.1): (Native speakers' norms)	46 NS & 46 NNS	Native speakers produced a high rate of low-frequency words.
3	Validity S. (N.2): (Parallel tests)	55 EFL learners	A high correlation between the translation test, the VLT and Lex30: - Lex30 & Productive Levels Test: $0.504 (p < .01)$ - Lex30 & Translation Test: $0.651 (p < .01)$ - Productive Levels Test & Translation Test: $0.843 (p < .01)$

NS: native speakers; NNS: non-native speakers

The reliability test-retest study consisted of 16 L2 users of English who were from different L1 backgrounds with different levels of language proficiency: lower intermediate to advanced. Participants completed the task twice, with a three-day gap in between. After collecting and analysing the data, this study proved that Lex30 has a high degree of reliability. As Meara (2009, p. 46) stated, “the correlation between the two sets of scores is .866 ($p < .01$)”, which means that the “subjects taking the Lex30 test more than once at a given point in their L2 development will achieve broadly similar scores each time”.

After proving that Lex30 is a reliable task that measures the productive vocabulary size, Fitzpatrick and Meara (2004) then proved that Lex30 is a valid task through two studies. The first study compared the performance of 46 adult L1 speakers of English with 46 non-native speakers. After collecting the data, two points were observed. The first was that the responses of native speakers to the stimulus words differed from those of the non-native speakers, and this was in a way that native speakers produced a high rate of low-

frequency words. The second observed point was that 18 non-native speakers achieved a higher score than the native speakers. Added to that, 6 native speakers reached a higher score compared with the highest scores of the non-native speakers, and this was because of the nature of non-native speakers: they were teachers of English at an Icelandic secondary school.

The second study involved 55 Chinese learners of English, varying from intermediate to advance levels. They translated a set of 60 Chinese words from their L1 to English, the target language, and added to that, they completed the productive version of the VLT. When Fitzpatrick and Meara (2004) analysed the data of this study, they found a high correlation between the tests; most importantly, there was a modest correlation with Lex30.

Although Lex30 has been validated, a reliability test was also run using SPSS. As Table 5 shows, the Cronbach's alpha is .930, which indicates a highly reliable test.

Table 5: Lex30 reliability

Cronbach's alpha	Cronbach's alpha based on standardised items	N. of items
.930	.694	5

3.3.3. The Collex Test

One possible way to deal with the depth of vocabulary knowledge is by assessing learners' collocational knowledge (Gyllstad, 2007). As Milton (2009, p. 149) noted, "depth is generally used to refer to a wide variety of word characteristics, including the shades of meaning a word may carry, its connotations and collocations, the phrases and patterns of use it is likely to be found in, and the associations the word creates in the mind of the user."

Moreover, most collocational studies in the literature concentrate on the content words (Gyllstad, 2005, 2007), whereas delexical verbs, which are verbs used with nouns as their objects to indicate simply that someone performs an action, are difficult to identify as collocations, even by advanced learners of English: i.e. *have*, *take*, *make*, *give*, *go* and *do* (Altenberg & Granger, 2001; Nesselhauf, 2004).

Thus, Gyllstad (2007) developed an instrument to assess the depth of vocabulary knowledge by evaluating the collocational knowledge. This instrument is known as the Collex Test. The presented research adapted the fifth version of the Collex Test to measure learners' depth of vocabulary knowledge (Appendix 3A contains the full version of the test). Collex 5 includes a set of 40 collocations and each set has three options. Learners in this test have to select the most real collocation out of the three options, as shown below:

<i>do a visit</i>	<i>hit a visit</i>	<i>pay a visit</i>
-------------------	--------------------	--------------------

In addition, as Gyllstad (2007, p. 163) noted, two main points are specified with regard to Collex 5. The first point is that “only verb + NP items were used, which means that adjective + NP items were discarded” from the other versions. The second point is that “in terms of item-total correlation and item facility values, new items were created by adding a second distractor to each item”, which means that the previous version of Collex 5 only had two options and that one of these should be selected, as shown below:

<i>solve a problem</i>	<i>break a problem</i>
------------------------	------------------------

To add more, the high-frequency words used in Collex 5 were chosen carefully through the JACET 8000, which is “a radically new word list designed for all English learners in Japan. This list is based on two kinds of corpora: the British National Corpus (BNC) and JACET 8000 sub-corpus” (Ishikawa, Uemura, Kaneda, Shimizu, Sugimori & Tono, 2003). As Gyllstad (2007, p. 164) proposed, “a total of 112 different words (72 verbs and 40 nouns) were used, and 88 per cent of these words came from the 1-3K bands.” Furthermore, as Gyllstad (Idem) argued, Collex 5 includes some lower-frequency words and the reason behind this is “to make the distractors plausible” (Appendix 3B contains the word frequencies of the test).

In terms of reliability, literature has shown that all the Collex versions were reliable tests, as Table 6 demonstrates.

Table 6: Collex Test reliability (Gyllstad, 2007, p. 154; Meara, 2010, p. 234)

Test version	Reliability
Collex 1	.54
Collex 2	.82
Collex 3	.84
Collex 4	.91
Collex 5	.89

3.4. Data Collection Procedures

The study took place in March during the second semester of the academic year 2018/2019. The process of collecting the data started by asking the participants of the two groups to complete three tests. Confidentiality, privacy and the right of withdrawal were explained to them. The first test was Meara

and Jones's (1990) EVST, which was used to measure the receptive vocabulary. The second test was Meara and Fitzpatrick's (2000) Word Association Task (Lex30) which was used to measure the productive vocabulary. The third test was Gyllstad's (2007) Collex Test, which was used to investigate the depth of vocabulary.

Among all three tests, only Lex30 had to be completed within a limited time to evaluate the variation of responses between the Intermediate and the Advanced groups. Therefore, participants were given 18 minutes to finish it. The EVST and the Collex Test were not time-limited; however, the participants were asked to finish within 30 minutes to avoid taking long time.

3.5. Scoring and Statistical Tools Used

The criteria for scoring the three tests are totally different. First of all, as already discussed in this chapter, Meara and Jones's (1990) EVST contains 300 words divided into 5 levels, with each level containing 40 real words and 20 pseudo-words. Therefore, this test has four possible marks, i.e. *Hit*, *False Alarm*, *Miss* and *Correct Rejection*. The maximum score for each block is out of 60 marks, as shown below:

- *Hit: ticking a real word: one mark*
- *False alarm: ticking a pseudo-word: no mark*
- *Miss: not ticking a real word: no mark*
- *Correct Rejection: not ticking a pseudo-word: one mark*

Second, there are a number of steps to score the responses to Meara and Fitzpatrick's (2000) Word Association Task (Lex30) which is a list of 30 stimulus words that require learners to produce a range of one to four

responses or associations (discussed in Section 3.3.2.). The first step is to discard the stimulus words. For example, in the following example, the word *animal* should be discarded, and the words *elephant*, *tiger*, *farm* and *wild* should be analysed.

- *animal: elephant – tiger – farm – wild*

After discarding the stimulus words, the responses are typed into a machine-readable file. Responses with inflectional suffixes (plural forms, past tenses, past participle aspects, comparatives, superlatives, etc.) and frequent regular derivational affixes (-er, -less, -ness, -able, -ly, -ish, etc.) are lemmatized and counted as base-forms of words, whereas responses with unusual affixes are be treated as separate words, not lemmatized. At this stage, learners were given their scores out of 120.

After discarding the responses to the stimulus words, the responses are analysed through considering them as a generated text made by each learner. This text is typed into a computer program that analyses texts according to the frequency level of each word. The current study classified words according to the largest available lists of word families, the British National Corpus / Corpus of Contemporary American English (BNC/COCA) word frequency lists (Nation, 2016), by using one of the most popular profiling programs known as Compleat Web VP V.2. The BNC/COCA word frequency lists “consist of 32 word family lists. Twenty-eight of the lists contain word families based on frequency and range data. The four additional lists are (1) an ever-growing list of proper names, (2) a list of marginal words including swear words, exclamations, and letters of the alphabet, (3) a list of transparent compounds, and (4) a list of acronyms” (Nation, 2016, p. 132).

When it comes to the mental lexicon, the word association responses are analysed through Moreno Espinosa's (2009) adaptation of Fitzpatrick's (2006) model of word association. That is, test-takers' responses to the stimulus words in Meara and Fitzpatrick's (2000) Word Association Task (Lex30) are classified into five different categories: Syntagmatic responses, Paradigmatic, Clang, Misunderstanding and Uninterpretable, as shown in Table 7.

Table 7: Definition of word association categories (Moreno Espinosa, 2009, p. 101)

#	Category	Main features
1	Syntagmatic	# Position-based associations that include: - consecutive yx, collocation (e.g. teacher – school) - phrasal xy collocation (e.g. dog – bark) - and different word class collocation (e.g. sun – hot)
2	Paradigmatic	# Meaning-based associations that include: - synonymy (e.g. quick – fast) - antonymy (e.g. silly – intelligent) - hyponymy (e.g. cat – animal) - co-hyponymy (e.g. table – chair) - hypernymy (e.g. fruit – apple) - meronymy (e.g. bedroom – house)
3	Clang	# Form-based associations including: - orthographic (e.g. there – three) - phonological associations (e.g. dog – bog, think – thank) - responses that are simply a repetition of the stimulus word
4	Misunderstanding	# Responses based on: - false cognates - mistaken cues for another English word
5	Uninterpretable	- No clear relationship has been identified between the prompt and the word association response.

x = stimulus word, y = word association

Thirdly, Gyllstad's (2007) Collex test (version 5) is a collocational test, which contains a set of 40 collocations. Each set has three options, of which one is the correct combination of words that represents the real collocation. Scoring

of this test is done by counting the correct choices of the collocations. The maximum mark in this test is 40.

The data were analysed statistically by comparing the mean and by calculating percentages of both the Intermediate and Advanced groups through using SPSS. The responses to the first and the third tests, the EVST and the Collex Test, were analysed through SPSS, whereas the responses to the second test, the Word Association Task (Lex30), were analysed through both a computer program called Vocabprofile and SPSS.

The results for both the EVST and the Word Association Task (Lex30) were used to answer the first question of the study, and the result of the Collex Test was used to answer the second question of the study. After this, a comparison was made between all the previous results to answer the third question of the study. Next, the responses to the Word Association Task (Lex30) were compared in order to answer the fourth and final question of the study.

3.6. Summary

Chapter Three has outlined the methodology used to conduct this research. It started by highlighting the methodology used in the research and the justification for this. After that, it described the population and the sample of the study. Then, it explained the procedure for collecting the data, and concluded by describing the scoring method and statistical tools used to analyse the data.

CHAPTER FOUR

Results and Discussion

CHAPTER FOUR

Results and Discussion

4.0. Introduction

This chapter states and discusses the results of the study. The results are organised to answer each of the research questions separately.

4.1. Findings

The criteria used to assess the results of the three tests is the percentage score, as stated in Table 8.

Table 8: Description of the results

#	Score percentage	Description
1	1–19.9%	VERY LOW
2	20–39.9%	LOW
3	40–59.9%	MODERATE
4	60–79.9%	HIGH
5	80–100%	VERY HIGH

4.2. Question One: What is the effect of general language proficiency on the sizes of receptive and productive vocabularies of learners of English at the University of Bahrain?

To answer this question, both receptive and productive vocabularies of the Intermediate Group and the Advanced Group were assessed by using Meara and Jones's (1990) EVST and Meara and Fitzpatrick's (2000) Word

Association Task (Lex30). After using these two instruments, the responses of the participants provided in the Word Association Task (Lex30) (Meara and Fitzpatrick, 2000) were classified into different lexical categories by using a computer program called Compleat Web VP V.2.

4.2.1. Eurocentres Vocabulary Size Test Results (Receptive V.)

Table 9 demonstrates the findings from using Meara and Jones's (1990) EVST of both the Intermediate and Advanced groups. It illustrates a number of items: the number of participants who took part in the test, and participants' minimum, maximum and mean scores and standard deviations.

Table 9: EVST results of the Intermediate and Advanced groups

Group	N	Minimum	Maximum	Mean & percentage	SD
Intermediate	60	82	294	233 (77.67%)	46.89
Advanced	60	212	289	267 (89%)	14.91
Difference in mean score and percentage				34 (11.33%)	

Note: The highest possible score in the test is 300.

As can be seen in Table 9, the mean scores of the Intermediate and the Advanced groups in Meara and Jones's (1990) EVST are slightly different: the overall level of the Intermediate Group is High (77.67% - M = 233), whereas the overall level of the Advanced Group is Very High (89% - M = 267). The high score level of the Advanced students is likely to be the effect of language proficiency. The standard deviation, however, indicates that the Advanced-level students are more homogeneous as a group (SD = 14.91) than the Intermediate-level students (SD = 46.89).

4.2.2. The Word Association Task Results (Productive V.)

Table 10 shows the results of using Meara and Fitzpatrick's (2000) Word Association Task (Lex30) with both the Intermediate Group and the Advanced Group. It contains several items: the number of participants who took part in the test, the minimum and the maximum numbers of responses provided by the participants, participants' means of responses and standard deviations, and the difference between the means of the two groups.

Table 10: Lex30 results of the Intermediate and Advanced groups

Group	N	Minimum	Maximum	Mean & percentage	SD
Intermediate	60	18 (15%)	97 (80.83%)	63.56 (52.91%)	16.28
Advanced	60	43 (35.83%)	120 (100%)	98.60 (81.67%)	19.57
Difference in mean score and percentage				35.0333 (29.19%)	

Note: The highest possible score in the test is 120.

According to Table 10, the mean score of the productive vocabulary that test-takers of the Intermediate Group provided in Meara and Fitzpatrick's (2000) Word Association Task (Lex30) was Moderate (52.91%), whereas the mean score of the Advanced Group was Very High (81.67%). In addition, an independent samples t-test was conducted to compare the numbers of responses by the two groups included in the analysis. The results in Table 10 show that there was a significant difference between the number of responses from the Intermediate Group ($M = 63.5$, $SD = 16.28$) and the Advanced-level students ($M = 98.6$, $SD = 19.57$) (conditions: $t(118) = 10.665$, $p = 0.000$).

Table 11: Independent samples test for number of responses

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
N. of responses	EVA	1.659	.200	10.665	118	.000	35.03333	3.28501
	EVNA			10.665	114.268	.000	35.03333	3.28501

EVA: Equal variances assumed; EVNA: Equal variances not assumed

4.2.3. The Compleat VocabProfile V.2 Results (Productive V.)

The same words used in Meara and Fitzpatrick's (2000) Word Association Task (Lex30) were included in the Compleat VocabProfile V.2 in order to classify them into frequency categories based on the BNC/COCA (Nation, 2016) word frequency lists. The results of the Compleat VocabProfile V.2 are shown in Table 12 and Table 13. First, Table 12 presents a comparison between the mean scores of the Tokens, Types and Word Families provided by both the Intermediate Group and the Advanced Group in Meara and Fitzpatrick's (2000) Word Association Task (Lex30).

Table 12: Mean scores of Tokens, Types and Word Families

Groups	Tokens M.	Types M.	Word Families M.
Intermediate Group	62.05	59.72	57.62
Advanced Group	95.52	89.93	87.73
Difference	33.47 (53.94%)	30.22 (50.58%)	30.12 (52.25%)

The comparison in Table 12 demonstrates that the mean score of the Tokens given by the Intermediate Group is 62.05, whereas the Advanced Group's mean score is 95.52. The mean score of the Types provided by the

Intermediate Group is 59.72 and 80.93 for the Advanced Group. Moreover, the mean score of the Word Families elicited by the Intermediate Group is 57.62, whereas the mean score of the Advanced Group is 87.73. Thus, there was a significant difference between these figures for the Intermediate Group and Advanced Group, as demonstrated in the following table.

Table 13: Independent samples test for number of Tokens, Types and Word Families

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
N. of Tokens	EVA	1.818	.180	10.603	118	.000	33.46667	3.15637
	EVNA			10.603	114.496	.000	33.46667	3.15637
N. of Types	EVA	.461	.498	10.317	118	.000	30.21667	2.92872
	EVNA			10.317	117.066	.000	30.21667	2.92872
N. of Word Families	EVA	.444	.507	10.640	118	.000	30.11667	2.83052
	EVNA			10.640	116.914	.000	30.11667	2.83052

EVA: Equal variances assumed; EVNA: Equal variances not assumed

Table 13 indicates that there was a significant difference in the number of Tokens, Types and Word Families for the Intermediate and Advanced groups (Tokens: $t(118) = 10.603$, $p = 0.000$; Types: $t(118) = 10.317$, $p = 0.000$; and Word Families: $t(118) = 10.640$, $p = 0.000$).

In addition, Table 14 demonstrates the distribution of the participants' words provided in Meara and Fitzpatrick's (2000) Word Association Task (Lex30). These words were profiled according to the BNC/COCA (Nation, 2016) word frequency lists by using Compleat VocabProfile V.2. The table compares the number of words produced by both the Intermediate Group and the Advanced Group in a classification of 25 categories (K1 to K25).

Table 14: Compleat Web VP V.2 classification

Category	Intermediate Group		Advanced Group		Status	
	Responses	Percentage	Responses	Percentage	Increase?	Percentage
K1	2,536	66.49%	3,449	58.3%	+ 913	36%
K2	707	18.54%	1,139	19.25%	+ 432	61.1%
K3	101	2.65%	372	6.29%	+ 271	268.31%
K4	133	3.49%	281	4.75%	+ 148	111.27%
K5	129	3.38%	235	3.97%	+ 106	82.17%
K6	67	1.67%	135	2.28%	+ 68	101.49%
K7	6	0.16%	24	0.41%	+ 18	300%
K8	14	0.37%	28	0.47%	+ 14	100%
K9	5	0.13%	16	0.27%	+ 11	220%
K10	8	0.21%	18	0.3%	+ 10	125%
K11	6	0.16%	11	0.19%	+ 5	83.33%
K12	4	0.1%	4	0.07%	=	0%
K13	3	0.8%	6	0.1%	+ 3	100%
K14	0	0%	0	0%	=	0%
K15	1	0.3%	2	0.03%	+ 1	100%
K16	1	0.3%	2	0.03%	+ 1	100%
K17	0	0%	2	0.03%	+ 2	200%
K18	0	0%	3	0.05%	+ 3	300%
K19	0	0%	0	0%	=	0%
K20	0	0%	1	0.02%	+ 1	100%
K21	1	0.3%	1	0.02%	=	0%
K22	0	0%	1	0.02%	+ 1	100%
K23	0	0%	0	0%	=	0%
K24	0	0%	1	0.02%	+ 1	100%
K25	0	0%	0	0.0%	=	0%
Off-List	92	2.41%	185	3.13%	+92	101.08%
Total	3,814		5,916		+ 2,104	55.11%

According to Table 14, the participants of the Intermediate Group produced 3,814 responses in the Word Association Task (Lex30), whereas the participants of the Advanced Group produced 5,916 responses. The

comparison between the responses of the two groups shown in the table indicates that there is a huge expansion of responses mainly in the first six categories of the BNC/COCA word frequency list: K1 increased by 36% (913 responses), K2 increased by 61.1% (432 response), K3 increased by 268.31% (271 responses), K4 increased by 111.27% (148 responses), K5 increased by 82.17% (106 responses), and K6 increased by 101.49% (68 responses).

4.2.4. Discussion of the Results for Question One

Based on a comparison between the sizes of the receptive and productive vocabularies, several major points were shown. First, the use of the EVST revealed that learners of English at the University of Bahrain have a distinctive receptive vocabulary: the Intermediate Group's mean score of the receptive vocabulary was quite remarkable. Participants' mean score in this group was High (233 = 77.67%), and the Advanced Group's mean score was Very High (267 = 89%). These figures demonstrate that general language proficiency has a positive effect on the development of receptive vocabulary. Second, the use of the Word Association Task (Lex30) supports the fact that general language proficiency plays a significant role in developing learners' size of vocabulary. When comparing the mean scores of the Intermediate and the Advanced groups, the effect of general language proficiency becomes obvious: the mean score of the productive vocabulary increased from Moderate (63.5 = 52.91%) to Very High (98 = 81.67%). Added to this, the classification of words in the Compleat Vocabprofile V.2. indicates that this growth of vocabulary size was expanded among different categories of word frequency.

Overall, the Intermediate and Advanced groups' performance of the vocabulary knowledge supports Meara's (2009) and Milton's (2009)

assumption; that is, a learner's receptive vocabulary is larger than their productive vocabulary. This corroborates AbManan, Azizan, Fatima and Mohd's (2017) study: when they investigated the levels of receptive and productive vocabularies, they found that the former was between 2,000 and 3,000 word families, and the latter was around 2,000 word families. Likewise, Karakoç and Köse (2017) found that their participants' size of receptive vocabulary ($M = 87.18$) was larger than the size of their productive vocabulary ($M = 45.14$).

4.3. Question Two: How does general language proficiency affect the depth of vocabulary knowledge of English learners at the University of Bahrain?

In order to answer Question Two, the depth of vocabulary variation of both the Intermediate and the Advanced groups was investigated by using Gyllstad's (2007) Collex Test.

4.3.1. Collex Test Results

Table 15 shows the findings of using the Collex Test with both the Intermediate Group and the Advanced Group. It illustrates many items, including: the number of the participants who took part in the test, the minimum and the maximum scores achieved by the participants, and the means and standard deviations of the participants' scores.

Table 15: Collex Test results for the Intermediate and Advanced groups

Group	N	Minimum	Maximum	Mean & percentage	SD
Intermediate	60	12 (30%)	37 (92.5%)	21.56 (53.89%)	6.65
Advanced	60	14 (35%)	39 (97.5%)	28.08 (70.19%)	5.85
Difference in mean score and percentage				6.52 (16.30%)	

Note: The highest possible score in the test is 40.

Table 15 shows that the mean score of the Intermediate Group was 21.56 (53.89%) with a standard deviation of 6.65. Also, the mean score of the Advanced Group was 28.08 (70.19%) with a standard deviation of 5.85. The difference of the mean score was Very Low (6.52 = 16.30%).

4.3.2. Discussion of the Results for Question Two

Based on the results of using the Collex Test with both the Intermediate Group and the Advanced Group, it is clear that there was a very low improvement in learners' depth of vocabulary (the difference in mean score: 6.52). The results of the Collex Test have shown that the role of general language proficiency has developed participants' depth of vocabulary from the Moderate level to the High level: as Table 15 shows, the mean score of the participants increased from 21.56 (53.89%) to 28.08 (70.19%).

With reference to the literature, Ebrahimi (2017) investigated depth of vocabulary by using a number of tests, one of which was a productive depth test of collocation. The results of the test showed that learners' knowledge of collocations was considerably low. Furthermore, Bagherzadeh Hosseini and Akbarian (2007) evaluated the relationship between collocational competence and general language proficiency, and found that these two variables are much related to each other.

4.4. Question Three: What is the relationship between receptive and productive vocabularies and the depth of vocabulary knowledge?

In order to answer Question Three, the mean scores of the three instruments used previously in Question One and Question Two were compared to investigate the correlation between the receptive and productive vocabularies and the depth of vocabulary. In other words, answering Question Three required investigating the correlations between the Intermediate Group's and Advanced Group's mean scores in the EVST, the Word Association Task (Lex30) and the Collex Test.

4.4.1. Correlation Results

Table 16 illustrates the findings of the correlation test between the mean scores of the receptive vocabulary test (Meara and Jones's (1990) EVST), the productive vocabulary test (Meara and Fitzpatrick's (2000) Word Association Task) and the depth of vocabulary test (Gyllstad's (2007) Collex Test).

Table 16: Results of the Pearson correlation between the tests' variation mean scores

Tests		Lex30 Task	EVST	Collex Test
EVST	P. correlation	.984	1	.947
	Sig. (2-tailed)	.115		.209
	N	3	3	3
Lex30 Task	P. correlation	1	.984	.989
	Sig. (2-tailed)		.115	.094
	N	3	3	3
Collex Test	P. correlation	.989	.947	1
	Sig. (2-tailed)	.094	.209	
	N	3	3	3

To illustrate, starting from the first instrument used in the study, the correlation of the EVST with the Word Association Task (Lex30) and the

Collex Test was 0.984 and 0.947, respectively. In addition, the table shows that the correlation of the Word Association Task (Lex30) with the EVST and the Collex Test was 0.984 and 0.989, respectively. Added to this, the correlation of the Collex Test with the Word Association Task (Lex30) and the EVST was 0.989 and 0.947, respectively.

The results indicate that the three mean scores of the tests are positively correlated. In other words, the table demonstrates that the sizes of the receptive and productive vocabularies and the depth of vocabulary are significantly correlated.

4.4.2. Discussion of the Results for Question Three

On the basis of the correlation results shown in Table 16, Question Three can be answered logically by stating that as there are significant correlations between the results of the three tests, then the relationship between the sizes of receptive and productive vocabularies and the depth of vocabulary knowledge is positively correlated. This finding is consistent with a number of studies. For example, Shin, Chon and Kim (2011) demonstrated that, overall, their participants' receptive and productive vocabulary sizes indicated moderate correlations when an investigation was made to provide an assessment of their learners' vocabulary sizes. In addition, a similar finding was also reported in Fleckenstein (2018): a strong positive relationship was revealed when these two aspects of vocabulary knowledge were assessed. Also on the theme of size and depth of vocabulary knowledge, Bardakçi (2016) found that these two dimensions are closely correlated, i.e. these dimensions have significant effects on learners' vocabulary profiles.

4.5. Question Four: What is the relationship between vocabulary size and the nature of lexical networking?

In order to answer Question Four, the Word Association Task (Lex30) responses of the Intermediate Group and the Advanced Group were classified according to Fitzpatrick's (2006) model of analysing word association categories and sub-categories. As mentioned in Chapter Two, five classifications were used in this model: Syntagmatic, Paradigmatic, Clang, Misunderstanding and Uninterpretable associations.

4.5.1. Classification of the Word Associations

Table 17 demonstrates the results of classifying the Intermediate Group's and Advanced Group's responses of the Word Association Task (Lex30). It illustrates many items, including the size of the productive vocabulary and the classification of the responses in accordance with Moreno Espinosa's (2009) adaptation of Fitzpatrick's (2006) model which makes the explanation of the classification more clear.

Table 17: Size and classification of the Word Association Task responses

Groups	N	Size	S	P	C	M	U
Intermediate	60	3,814	1,448	2,023	43	116	184
			(37.97%)	(53.04%)	(1.13%)	(3.04%)	(4.82%)
			M: 24.13	M: 33.71	M: 1.43	M: 3.13	M: 4
Advanced	60	5,916	1,922	3,446	48	108	392
			(32.49%)	(58.25%)	(0.81%)	(1.83%)	(6.63%)
			M: 32.03	M: 57.43	M: 1.54	M: 2.35	M: 7

Note: S: Syntagmatic, P: Paradigmatic, C: Clang, M: Misunderstanding and U: Uninterpretable

On the one hand, as seen in Table 17, the Intermediate Group provided 3,814 responses in the Word Association Task (Lex30). These responses were analysed and classified as follows: 53.04% of the responses were Paradigmatic associations, 37.97% were Syntagmatic associations, 4.82% were Uninterpretable associations, 3.04% were Misunderstanding associations and 1.13% were Clang associations. On the other hand, the Advanced Group provided 5,916 responses: 58.25% were Paradigmatic associations, 32.49% were Syntagmatic associations, 6.63% were Uninterpretable associations, 1.83% were Misunderstanding associations and 0.81% were Clang associations.

4.5.2. Discussion of the Results for Question Four

According to Table 17, the responses of the Intermediate Group and the Advanced Group were similar to each other. Most responses were Paradigmatic, then Syntagmatic, and the least popular responses were Clang; no shifts were identified among all the responses. What is interesting here is that although the effect of general language proficiency affected the sizes of the responses, the classification of the responses did not change among the categories of Moreno Espinosa's (2009) adaptation of Fitzpatrick's (2006) word association model. Therefore, Question Four can be answered by saying that there is no relationship between the size of vocabulary and the nature of lexical networking. However, the figures shown in Table 17 support Meara's (2009, p. 6) assumption that "normal adults produce two main types of association", syntagmatic and paradigmatic, and they "produce more paradigmatic responses than syntagmatic ones." Moreover, these figures are interestingly in line with Moreno Espinosa's (2009) findings when the researcher investigated learners' lexical profiles by using the Word

Association Task (Lex30) (Meara & Fitzpatrick, 2000): the vast majority of responses were syntagmatic, then paradigmatic, and the least were clang.

4.6. Summary

This chapter aimed to answer the research questions of the study by analysing the results of three instruments. First, it stated the findings of Question One by using Meara and Jones's (1990) EVST and Meara and Fitzpatrick's (2000) Word Association Task (Lex30). Then, it stated Question Two by using Gyllstad's (2007) Collex Test. For Question Three and Question Four, the analyses were evaluated by investigating the relationships between their variables. As can be seen, many of the results of this study seem to be comparable with several, although not all, other studies.

CHAPTER FIVE

Conclusion and Recommendations

Chapter Five

Conclusion and Recommendations

5.0. Introduction

This chapter concludes the thesis by summarising the main results of the study, presenting the limitations of the study, and recommending future research in this topic.

5.1. Summary of the Results

The study attempted to answer four research questions related to size and depth of vocabulary knowledge. The first and second research questions aimed at evaluating the effect of general language proficiency on the development of vocabulary size and depth of knowledge of EFL learners at the University of Bahrain. The third research question aimed at investigating the relationship between vocabulary size and depth of knowledge. Finally, the fourth research question aimed at investigating the relationship between the size of vocabulary and the organisation of lexical networking in relation to general language proficiency.

The reported results in Chapter Four indicate that general language proficiency has a prime and positive effect on the two dimensions of vocabulary knowledge of size and depth. According to the findings, the learners' size of receptive vocabulary has changed from High (77.67%) to Very High (89%), and their productive size of vocabulary has changed from Moderate (52.91%) to Very High (81.67%). Added to this, the learners' depth of vocabulary has changed from Moderate (53.89%) to High (70.19%). Besides these two results, the study proved that there was a positive

correlation between vocabulary size and depth of knowledge. However, no relationship was shown between the size of vocabulary and the nature of lexical networking; the order of responses by the participants in the Word Association Task (Lex30) did not change or shift.

5.2. Limitations

Using hardcopies of the instruments was a major limitation in the presented study, in which the researcher transferred all the participants' responses to the tests into software programs in order to find the answers to the research questions. Unfortunately, the computerised Word Association Task (Lex30) used in the study to assess the productive size of vocabulary was, for various reasons, no longer supported by the owner; therefore, the time required for analysing the findings was extended.

5.3. Recommendations

Based on the investigation of vocabulary size and depth of knowledge in the current study, several recommendations are raised in order to develop EFL learners' L2 vocabulary learning competence.

The receptive vocabulary sizes of the Intermediate and Advanced groups were significantly distinctive: the Intermediate Group's mean score was High (77.67%) and the Advanced Group's mean score was Very High (89%). It seems worthwhile to recommend that qualitative studies are carried out to investigate and then generalise the strategies of learning receptive vocabulary utilised by EFL learners at the University of Bahrain. On the basis of the productive vocabulary size, the Intermediate and Advanced groups' mean scores demonstrate the need to focus on teaching more productive vocabulary: the Intermediate Group's mean score was Moderate (52.91%) and the

Advanced Group's mean score was Very High (81.67%). It would also be worthwhile to conduct studies to investigate the mechanism that stimulates EFL learners to use their receptive vocabulary in writing and speaking. Furthermore, the difference between the mean scores of vocabulary depth between the two groups reveals that EFL learners should be exposed to learning more semantic relationships, i.e. word associations and collocations.

Further research could also be conducted to assess the exact size of receptive vocabulary knowledge of the EFL learners at the University of Bahrain by using Nation and Beglar's (2007) VST. When vocabulary knowledge has been assessed, a valuable overview of learners' vocabulary competence can be revealed to the instructors and curriculum designers who are concerned with building and developing English courses. It can be said that English learning courses might be more adequate if an assessment of vocabulary is encompassed at the beginning and the end of these courses. Whether these courses cover the listening, reading, writing or speaking skills of the language, an overview of the vocabulary assessment has considerable outcomes. In addition, assessing the vocabulary knowledge of the EFL learners can also be beneficial when it is compared with other learners' size around the world. The comparison explores major points on the strengths and weaknesses of the vocabulary learning process. Furthermore, it seems worthy to investigate vocabulary knowledge in relation to different gender perspectives, together with the language proficiency levels of EFL learners in Bahrain.

More broadly, greater efforts are needed to build a vocabulary assessment application for the University of Bahrain to be used with the admission's aptitude test and personal interview.

5.4. Conclusion

This chapter aimed at concluding the current thesis. It started by providing a summary of the results found in the study, and then presented the major limitations encountered by the researcher, before finally stating a number of pedagogical and future research recommendations.

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Appendices

Appendix (1)

Task 1 – The Eurocentres Vocabulary Size Test

Hello, the presented paper is a test of receptive vocabulary in English. It is related to a study which investigates the size of vocabulary. Your participation is greatly appreciated. If you want to volunteer to be one of the participants, then please follow.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research study, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized. Your personal information will be kept strictly confidential and will not be sold, reused, rented, loaned or otherwise disclosed.

Choose your gender, age, major, and studying year from the following choices

Gender: Male Female

Age: 18 – 19 20 – 21

Major: English Other:

Studying Year: 1st year 2nd year 3rd year 4th year

Instructions;

- This test includes 5 levels of words. Each group contains 60 words, some of them are real words, and some are pseudo-words (non-words). For each word: if you know what it means, check the box beside the word; if you aren't sure, do not check the box.

Level 1					
1. obey	2. thirsty	3. nonagrate	4. expect	5. large	6. accident
7. common	8. shine	9. sadly	10. balfour	11. door	12. grow
13. lannery	14. red	15. plate	16. hold	17. love	18. pull
19. enough	20. oxylate	21. degate	22. bath	23. birth	24. gummer
25. christian	26. succeed	27. cantileen	28. warm	29. song	30. tooley
31. ralling	32. free	33. father	34. speed	35. lip	36. controltal
37. lapidoscope	38. path	39. too	40. glandle	41. wake	42. channing
43. dowrick	44. mundy	45. damage	46. book	47. sew	48. dogmatile
49. business	50. troake	51. grey	52. money	53. lauder	54. aistrophe
55. poor	56. system	57. different	58. joke	59. new	60. retrogradient

Level 2					
1. galbin	2. impulse	3. suggest	4. advance	5. peculiar	6. benevolate
7. indicate	8. needle	9. destruction	10. compose	11. ager	12. debt
13. generate	14. fast	15. buttle	16. horobin	17. route	18. undertake
19. descript	20. attach	21. condimented	22. leisure	23. benefit	24. protect
25. seize	26. pauling	27. carry out	28. overend	29. contact	30. vertical
31. population	32. loveridge	33. club	34. rudge	35. investigate	36. sale
37. reservory	38. regulate	39. connery	40. venn	41. tend	42. angle
43. oligation	44. achieve	45. operation	46. historical	47. flame	48. precede
49. misabrogate	50. vickery	51. choice	52. mass	53. spread	54. eckett
55. explore	56. encourage	57. single	58. horozone	59. almanical	60. dissolve

Level 3					
1. adair	2. gumm	3. cliff	4. stream	5. system	6. position
7. law	8. whaley	9. contrivial	10. pocock	11. amuse	12. museum
13. turn over	14. prefer	15. method	16. generous	17. houlit	18. organise
19. normal	20. everywhere	21. knowledge	22. relation	23. whitrow	24. director
25. criminal	26. snell	27. check in	28. useful	29. enter	30. burrow
31. though	32. sale	33. cage	34. limidate	35. handkerchief	36. pernicate
37. sight	38. humeroid	39. pring	40. fountain	41. eldred	42. reward
43. eluctant	44. guess	45. persuade	46. hubbard	47. stace	48. aim
49. detailoring	50. stimulcrate	51. aunt	52. bend	53. deny	54. bastionate
55. shot	56. maker	57. rabbit	58. steady	59. weekly	60. inform

Level 4					
1. sandy	2. suddery	3. military	4. interval	5. overcoat	6. overcome
7. get out of	8. structure	9. typist	10. break off	11. heap	12. majority
13. remedy	14. cure	15. acklon	16. Jarvis	17. plus	18. duffin
19. accuse	20. oestrogeny	21. twose	22. impress	23. provision	24. recenticle
25. staircase	26. feel up to	27. wipe out	28. fluctual	29. cambule	30. ridout
31. kind-hearted	32. border	33. dozen	34. mystery	35. apartment	36. wilding
37. condimented	38. theory	39. leave out	40. puzzle	41. charactal	42. emphasise
43. send in	44. check over	45. wray	46. hapgood	47. tend	48. escrotal
49. grip	50. catch up with	51. cut off	52. urge	53. menstruable	54. batcock
55. vital	56. moffat	57. complicate	58. smack	59. exist	60. semaphrodite

Level 5					
1. lessen	2. oak	3. mosquito	4. litholect	5. quorant	6. proceed
7. interfere	8. put up with	9. algebra	10. scurrilize	11. cottonwool	12. lobby
13. give away	14. trudgeon	15. bodelate	16. tighten	17. shady	18. bance
19. awkward	20. wartime	21. draconite	22. folksong	23. outskirts	24. technology
25. stand in for	26. victory	27. antique	28. chart	29. rot	30. manly
31. compose	32. risk	33. pea	34. tunnel	35. justal	36. call up
37. combustulate	38. democracy	39. opie	40. scudamore	41. homoglyph	42. abrogative
43. react	44. haque	45. nickling	46. bench	47. snack-bar	48. charlett
49. harden	50. scorn	51. equality	52. jewel	53. pass away	54. webbert
55. kiley	56. woolnough	57. hijack	58. baldock	59. farther	60. dose

Thank you for your participation

All the best ..

Appendix (2)

Task 2 – The Word Association Task (Lex30)

Hello, the presented paper is a test of productive vocabulary in English. It is related to a study which investigates size of vocabulary. Your participation is greatly appreciated. If you want to volunteer to be one of the participants, then please follow.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research study, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized. Your personal information will be kept strictly confidential and will not be sold, reused, rented, loaned or otherwise disclosed.

Choose your gender, age, major, and studying year from the following choices

Gender: Male Female

Age: 18 – 19 20 – 21

Major: English Other: _____ Course Code: _____

Studying Year: 1st year 2nd year 3rd year 4th year

Instructions;

- This test includes a list of 30 English words.
- For each word you have to supply four other words that it makes you think of.

➤ Example:

Stimulus word	1 st response	2 nd response	3 rd response	4 th response
animal	<u>elephant</u>	<u>tiger</u>	<u>farm</u>	<u>wild</u>

#	Stimulus words	1 st response	2 nd response	3 rd response	4 th response
1	attack				
2	board				
3	close				
4	cloth				
5	dig				
6	dirty				
7	disease				
8	experience				
9	fruit				
10	furniture				
11	habit				
12	hold				
13	hope				
14	kick				
15	map				
16	obey				
17	pot				
18	potato				
19	real				
20	rest				
21	rice				
22	science				
23	seat				
24	spell				
25	substance				
26	stupid				
27	television				
28	tooth				
29	trade				
30	window				

Thank you for your participation

All the best ..

Appendix 3A

Task 3 – The Collex Test

Hello, the presented paper is a test of depth of vocabulary knowledge in English. It is related to a study which investigates size of vocabulary. Your participation is greatly appreciated. If you want to volunteer to be one of the participants, then please follow.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research study, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized. Your personal information will be kept strictly confidential and will not be sold, reused, rented, loaned or otherwise disclosed.

Please choose your gender, age, major, and studying year from the following choices

Gender: Male Female

Age: 18 – 19 20 – 21

Major: English Other: _____

Studying Year: 1st year 2nd year 3rd year 4th year

Instructions;

- The presented test consists of 40 questions (1-40). Each question contains three word combinations marked a), b), and c). Your task is to choose one of the three word combinations in each item.
- One of the three word combinations in each item is a natural and frequent word combination occurring in the English language, whereas the other two are not. Choose the word combination you think is the most natural and frequently occurring.

➤ **Example:**

#	A	B	C
#	pay a visit	do a visit	make a visit

#	A	B	C
1	do damage	make damage	run damage
2	turn out a fire	put out a fire	set out a fire
3	hold discussions	make discussions	set discussions
4	receive a cold	achieve a cold	catch a cold
5	do a visit	hit a visit	pay a visit
6	strike a pose	lead a pose	hit a pose
7	fell tears	shed tears	raise tears
8	employ one's rights	exercise one's rights	conduct one's rights
9	grab an opportunity	seize an opportunity	catch an opportunity
10	bring charges	run charges	push charges
11	lend a complaint	perform a complaint	lodge a complaint
12	make a conclusion	pull a conclusion	draw a conclusion
13	commit a crime	comply a crime	conduct a crime
14	tell a prayer	say a prayer	speak a prayer
15	give a speech	hold a speech	perform a speech
16	strike a deal	set a deal	step a deal
17	go on a journey	do a journey	pull a journey
18	keep one's breath	house one's breath	hold one's breath
19	direct an orchestra	conduct an orchestra	control an orchestra
20	lose count	drop count	pass count
21	take root	make root	stick root
22	hold one's balance	keep one's balance	last one's balance

23	take one's revenge	make one's revenge	obtain one's revenge
24	keep a diary	run a diary	tend a diary
25	brush shoes	polish shoes	tidy shoes
26	make apologies	do apologies	lay apologies
27	tie one's fist	fix one's fist	clench one's fist
28	strike a fuse	knock a fuse	blow a fuse
29	show heed	pay heed	spread heed
30	make an escape	take an escape	draw an escape
31	lose faith	drop faith	cut faith
32	perform a survey	commit a survey	conduct a survey
33	push a bike	lead a bike	press a bike
34	send judgment	pass judgment	set judgment
35	say one's mind	speak one's mind	talk one's mind
36	spoil the fun	ruin the fun	destroy the fun
37	earn a purpose	win a purpose	serve a purpose
38	make friends	create friends	gain friends
39	make measures	take measures	stick measures
40	speak shop	say shop	talk shop

Thank you for your participation

All the best ..

Appendix (3B)

Word frequencies for COLLEX 5 (Gyllstad, 2007)

JACET 8000 Frequency band	verbs	nouns
1K	achieve, bring, catch, control, create, cut, do, draw, drop, exercise, give, go, hit, hold, house, keep, last, lay, lead, lose, make, pass, pay, press, pull, push, put, raise, receive, run, say, send, serve, set, show, speak, spread, step stick, strike, take, talk, tell tend, turn, win	damage, fire, discussion, cold visit, tear, right, opportunity speech, deal, count, escape mind, purpose, friend, measure, shop
2K	blow, brush, conduct, destroy direct, earn, fix, gain, grab, knock, obtain, perform, tie	charge, conclusion, crime journey, breath, root, balance diary, shoes, faith, survey, fun
3K	lend, ruin, seize, shed, spoil	complaint, prayer, orchestra fist, bike, judgment
4K	commit, comply, employ, polish	pose
5K	lodge, tidy	apologies
6K		revenge, fuse
Off List	clench, fell	heed

الملخص

تعد الحصيللة المعجمية (أي مجموع المفردات) جزءاً أساسياً في سياق تعلم أية لغة ثانية؛ إذ بدونها لا يمكن تنمية المهارات اللغوية (الاستماع، والقراءة، والتحدث، والتعبير). وعليه، فإن هذه الدراسة تبحث مدى حجم الحصيللة المعجمية وعمقها، وارتباطها بمستوى الإلتقان العام لدى دارسي اللغة الإنجليزية كلغة أجنبية. وشملت عينة الدراسة 120 طالباً من جامعة البحرين. وقد اختيرت العينة عشوائياً من طلاب المستويين المتوسط والمتقدم. وتهدف الدراسة بصفة رئيسية إلى الإجابة على أربعة أسئلة: ما هو أثر الإلتقان اللغوي العام على حجم المفردات المُتلقاة والمُنْتَجة لطلاب اللغة الإنجليزية بجامعة البحرين؟ وكيف يؤثر الإلتقان اللغوي العام على عمق الحصيللة المعجمية لطلاب اللغة الإنجليزية بجامعة البحرين؟ وما العلاقة بين المفردات المُتلقاة والمُنْتَجة من جهة، وعمق الحصيللة المعجمية من جهة أخرى؟ وما العلاقة بين حجم المفردات وطبيعة الشبكة المعجمية؟ وقد خضع الطلاب لثلاث مهام معجمية. تمثلت المهمتان الأوليتان في إجرائهم اختبار (Eurocentres Vocabulary Size Test)، لناشره (Paul Meara and Jones) في عام 1990م الذي يهدف إلى قياس حجم المفردات، وتمرين (Task, Lex30 Association Word)، لناشره (Fitzpatrick and Meara) في عام 2000م، الذي يهدف إلى قياس اقتران الكلمات ببعضها البعض. أما المهمة الثالثة فتمثلت في إجراء الطلاب اختبار (Gyllstad's Collex Test) المنشور في 2007م، الهادف إلى استطلاع عمق الحصيللة المعجمية. وقد اعتمدت الدراسة المنهج شبه التجريبي (quasi-experimental approach) باتباع نهج كمي في تحليل البيانات. حيث تم تحليل بيانات الدراسة بعقد مقارنة بين نتائج المجموعتين المتحصلة من المهام الثلاث وذلك باستخدام الإصدار (16.0) من برنامج (SPSS). وقد أسفرت الدراسة عما يلي: أن للإلتقان اللغوي العام أثر إيجابي على حجم المفردات المُتلقاة لدى الطلاب، وأثر معتدل على حجم المفردات المُنتجة لديهم، وأثر منخفض جداً على عمق الحصيللة المعجمية. ولم يتبين وجود علاقة بين حجم المفردات وطبيعة الشبكة المعجمية. واستناداً إلى هذه النتائج، فقد وُضعت بعض التوصيات التربوية وأخرى بشأن الأبحاث المستقبلية.

جامعة البحرين

قسم اللغة الإنجليزية و آدابها

كلية الآداب



حجم الحويلة المعجمية وعمقها لدى الطلاب البحرينيين الدارسين للإنجليزية كلغة أجنبية

أطروحة مقدمة لاستكمال متطلبات الحصول على درجة الماجستير في
الدراسات التطبيقية في اللغة الانجليزية

إعداد

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نوفمبر، 2019