

**Morphological Awareness and Its Relationship to  
Vocabulary Knowledge and Morphological Complexity  
among Omani EFL University Students**

Badriya Al Farsi

The University of Queensland

Supervisor: Dr. Michael Harrington

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## **STATEMENT OF AUTHORSHIP**

I declare that this thesis does not contain material which has been accepted for the award of any other degree or diploma in any university, nor does it contain material previously published or written by any other person, except where due reference is made in the text of the thesis.

Badriya Al Farsi

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## ABSTRACT

This study examines the relationship between morphological awareness and vocabulary size in Omani EFL learners. Morphological awareness refers to the learners' knowledge of morphemes and morphemic structure, allowing them to reflect and manipulate morphological structure of words (Carlisle, 1995; Carlisle & Stone, 2003), and has been shown to be an important predictor of L1 vocabulary. However, its relationship to vocabulary development in the L2 has to date received only limited attention. The main research question in the present study concerns whether greater morphological awareness will correlate with larger vocabulary size in the L2 learners studied.

Morphological awareness was measured using the Morphological Awareness Test adapted from McBride-Change *et al.* (2005); the test assessed both analytic and synthetic aspects of morphological knowledge. Analytic refers to breaking down complex words into smaller meanings and synthetic involves reassembling smaller meanings to make up new words. Vocabulary size was measured using a modified version of the Vocabulary Levels Test (Nation, 2001). The test was modified so that there were complex words and simple words, the complex versus simplex contrast allowing a means to assess the effect of morphological knowledge on vocabulary development.

Participants in the study were 54 Omani EFL learners enrolled in an English Intensive Program at the *Ibri College of Applied Sciences*, Oman. All the participants completed both tests. Descriptive statistics, reliability measures and correlation coefficients were calculated and reported. The results indicate that, the students' overall morphological awareness and vocabulary size were limited, and that a

relationship between the two constructs could not be established, owing to the appearance of floor effect in test scores and task difficulty.

Although no statistical relationship was established between morphological awareness and vocabulary in this study, it is premature to discount the potential importance of morphological awareness in the L2 vocabulary development, particularly for the type of learner examined in this study. Several limitations in the research method and instruments used in the study are discussed and a replication of the present study is recommended.

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# Chapter 1

## Introduction

Vocabulary knowledge is one of the language skills crucial for fluent language use (Nation, 1993). Vocabulary size is an indicator of how well the second language (L2) learners can perform academic language skills such as, reading, listening, and writing (Bear, Invernizzi, Templeton and Johnston, 2008; Treiman & Casar, 1996). According to Nation (1993), knowledge of around 3,000 word families is the threshold needed for tapping other language skills. Without this threshold, learners encounter problems understanding the language they are exposed to (Alderson and Banerjee, 2002). Ellis (1997) argues that vocabulary knowledge is a predictor of learners' discourse comprehension, which allows grammatical rules to be patterned in the learners' mind. Having inadequate vocabulary hampers learners' reading comprehension in a way that makes it more likely the learners will face difficulties in the path of academic achievement.

As such, vocabulary learning and teaching is a central activity in the L2 classroom. One way in which vocabulary learning can be fostered is through the use of learning strategies. These strategies are consciously or unconsciously learned techniques for processing information in order to enhance learning, comprehension and retention (O'Malley and Chamot, 1990). One potential vocabulary learning strategy is the use of morphological awareness to learn novel vocabulary.

Morphological awareness is defined as the ability to use the knowledge of word formation rules and the pairings between sounds and meanings (Kuo & Anderson, 2006). With morphological awareness, learners are able to learn morphemes and morphemic boundaries by disassembling complex words into meaningful parts (e.g. *childhoods* = *child* + *-hood* + *-s*), learning the meanings of roots, affixes (*child*= baby,

*-hood*= the state of being, *-s*= to indicate plural nouns), and reassembling the meaningful parts into new meanings (*motherhood, fatherhood, brotherhood*). The practice of this dissembling- reassembling method is called *morphological analysis*.

There is increasing interest in morphological awareness as a crucial dimension of vocabulary knowledge, especially in reading. In the first place, morphemes have semantic, phonological and syntactic properties (e.g. *-s* in the verb *rides* indicates that the action doer is only one person who does the action in the present time) (Singson, Mahony and Mann, 2000) that express the role of a given word in the reading context. For another thing, words are organized in the mental lexicon according to their phonological properties with morphological knowledge as a framework for storing words (Sandra, 1994). Moreover, morphological awareness makes the learner more aware of the writing system. With the morphological knowledge, learners can perceive spelling and phonological irregularities (e.g. *sign- signature*) (Kuo and Anderson, 2006). The relationship between morphological awareness and reading may be reciprocal or directional (Chung and Hu, 2007, Kuo and Anderson, 2006). In the case the relationship being reciprocal, both reading and morphological awareness can contribute to the development of one another. In directional term, morphological awareness leads to reading proficiency, but not the other way around.

Studies show that language learners encounter complex words at early stages of their learning. For instance, Nagy & Anderson (1984) demonstrate that 60% of newly encountered words by children are morphologically- transparent complex words. Learners are found to be able to use their morphological knowledge to uncover the meaning of newly encountered words (Gordon, 1989; Carlisle and Stone, 2003). The fact that late- elementary graders encounter many derived words in their reading

has motivated researchers to explore further the role of morphological awareness in vocabulary growth.

The task of learning new words as they are encountered is tremendous. Students encounter up to 100,000 different words during their academic readings at college level (Graves, 2004). Those 100,000 words include academic words. As learners make the transition from learning English for basic communication to learning academic English, they need to learn the academic words critical to vocabulary development and, therefore, learning success. In order to develop the needed vocabulary knowledge, learners should be exposed to various extensive readings, be taught individual words explicitly, and taught strategies to unlock word meaning, and have their word consciousness raised (according to Graves', 2004, components of vocabulary instruction). The concern of the present study is the third component: vocabulary- learning strategies, particularly those related to morphological awareness and the resulting morphological analysis (the realization of morphological awareness).

Despite the recognized potential of morphological awareness for vocabulary leaning, little research to date has focused on morphological awareness and its relationship to vocabulary size (Singson, Mahony, Mann, 2000; Carlisle and Fleming, 2003). The nexus between morphological awareness and vocabulary size must be empirically established before proposing that morphological awareness be incorporated in the vocabulary learning strategies taught in the EAP classroom.

Although morphological analysis is not the only strategy teachable to enhance learners' vocabulary size, it is a potential learning strategy that seems particularly useful for the learners when attempting to tackle the meanings of new words.

The aim of the present study is to assess morphological awareness as a learning strategy for promoting learners' vocabulary size. It will first examine earlier research that has looked at the role of morphological awareness in vocabulary development. Of particular interest will be the relationship between morphological awareness and vocabulary size, as well as how it relates to the learners' ability to deal with morphological complex words. The study will then investigate the relationship between English as foreign language learners' morphological awareness and their vocabulary size. It will assess the relationship between their vocabulary size and overall morphological awareness and in particular their ability to deal with morphologically complex words in the L2 learning. The results are expected to provide insightful evidence of how to improve vocabulary instruction at college level.

Two key aspects of morphological awareness will be studied: analytic and synthetic word formation. Analytic words formation refers to breaking words down into its meaningful components. In contrast, synthetic word formation refers to bringing the smallest pieces (morphemes) together to form words (Arnoff and Fudeman, 2005). Based on the body of literature on morphological awareness and vocabulary learning, the study aims to answer the following questions:

1. To what extent are students aware of analytic and synthetic word formation rules?
2. How does this awareness relate to vocabulary size?
3. Does morphological awareness discriminate between the students' performance on complex word and simple words?

The research was undertaken at *Ibri College of Applied Sciences*, Oman, that offers undergraduate education in IT, International Business Management, Communication and Design. English is the medium of instruction and the learning

materials used in the classes are designed for English native speakers. Before undertaking the bachelor program, all students undertake a one- year English foundation program. The main goal of this program is to provide the students with English language skills necessary to fulfil college- level courses. The foundation courses consist of listening, reading, speaking and writing courses. All of these courses have embedded vocabulary-focus instruction in which vocabulary learning is addressed in the context of the four basic language skills.

The thesis is organized as follows. In the next chapter, the conceptual framework of the study is presented and a review of pertinent literature is introduced. The linguistic nature of morphology and lexical access is briefly sketched. The importance of morphological awareness in developing learners' vocabulary threshold is also addressed. This is followed by a short summary of cross- linguistic variation in morphological awareness and the implications this might have for L2 vocabulary learning. Finally, the role of explicit instruction in developing morphological analysis skills is briefly discussed. Chapter 3 describes the study. First research questions are presented. Information on participants, research instruments, data collection are articulated, and the data analysis are described in details. Chapter 4 presents the data obtained from the research instruments (two tests). Chapter 5 provides an interpretation and discussion taking into account the research previously discussed in the literature review. Chapter 6 summarizes the study, discussing teaching implications, limitations of the study and recommendations for further research.

## Chapter 2

### Literature Review

#### 2.1 MORPHOLOGY AND LEXICON

##### 2.1.1 Morphology and Morphemes

*Morphology* refers to the study of forms. Linguistics *morphology* refers to the study of words, their internal structure and the mental process that are involved in word formation (Arnoff and Fudeman, 2005, O’Grady, Cuzman, 1997). It is ‘... the study of the hierarchical and relational aspects of words and the operation on lexical items according to word formation rules to produce other lexical items’ (Leong and Parkinson, 1995, p. 237).

Traditionally, a word can be divided into the minimal linguistic units that bear meanings or grammatical functions (i.e. *morphemes*). In line with the traditional definition, Coates (1999) identifies four criteria of what it takes to be a morpheme. A morpheme should have a meaning or function, recur in other words with a related meaning (e.g. *un-* in *unbelievable* and *unhappy*), and be involved in a pattern of interchange (e.g. *-est* in *longest* can be substituted with another morpheme such as, *-er*).

Morphemes can be classified as free or bound. Simply, *free morphemes* are those that can exist in their own (e.g. *book* in *notebooks*), whereas *bound morphemes* cannot (e.g. *-s* in *notebooks*) (Coates, 1999). The word *reestablishments* can be broken into four morphemes: *re-*, *establish*, *-ment*, *-s*. *Establish* is called the *root*. The root is the core of a word to which other morphological units are attached. *Establish* can also be a *stem* (i.e. a base morpheme to which other elements are



attached). A stem can be simple (*establish*) or complex (*establishment*). *Re-* and *-ment* and *-s* are called *affixes*. Affixes can appear in the forms of:

- prefixes (e.g. *re-*): bound morphemes that are attached in front of a stem.
- suffixes (e.g. *-s*): bound morphemes that are attached at the end of a stem.
- circumfixes: bound morphemes that are attached simultaneously before and after the stem (not applicable to English language).
- infixes: bound morphemes that are attached in the middle of a stem (not in English).

Morphemes are further categorized into *lexical morphemes* (e.g. *-full*, *-ness*, etc) or *grammatical morphemes* (e.g. *-ed*, *-s*). Grammatical morphemes are part of *inflectional morphology* that underlies the processes involved in building grammatical word forms. Words that contain inflection are called *inflected words* (e.g. *larger*, *willing*, *biggest*, *bottles*, etc) Lexical morphemes are part of *derivational morphology* that is concerned with the processes involved in building lexical word forms (Coates, 1999). Derivational morphemes are of two types: class 1 and 2. Class 1 morphemes trigger changes to the base and/ or changes to stress assignment (e.g. *-ity* in *sanity*, *-ive* in *productive*) while class 2 morphemes do not (e.g. *-ness* in *promptness*, *-less* in *hairless*) (O'Grady, Cuzman, 1997). Words that contain derivation are called *derivatives* or *derived words* (e.g. *dehumanize*, *unsatisfactory*, etc).

The study of morphology has been approached by two complementary approaches: analytic and synthetic (see Arnoff and Fudeman, 2005). These approaches reflect two dimensions of learners' morphological knowledge of word formation. The analytic approach is concerned with morpheme identification or breaking words down into its meaningful components. For example, *notebooks* can be recognized as *note-book-s*. Learners can segment different meaningful chunks that

constitute a word (Mc-Bride-Chang *et al.*, 2005). The synthetic approach, on the other hand, is concerned with productivity of morphological structure or bringing the smallest pieces (morphemes) together to form words. It is assumed that learners know what the pieces are in order to be able to construct new meaning into words (Arnoff and Fudeman, 2005, Mc-Bride-Chang *et al.*, 2005). Therefore, analysis is subsequent to synthesis, or synthesis presupposes analysis.

The question of whether morphemes are discrete units, as structuralists believe, distinguishes structuralists' and connectionists' views in morphology. From connectionists' perspective, morphemes can also be defined as pairings between sound/ phonological representations and meaning/ semantic information (form-meaning correspondence) (Gonnerman, Seidenberg, Anderson, 2007). Below is a very brief summary of how those two approaches differ in their views on morphological information, especially the representation of complex words.

Complex words, from the perspective of structuralism, are represented in memory as distinct morphemes that are used in processing (Feldman, 1995). Those morphemes are morphologically related, but discrete. Structuralism views complex words like this: {un {{help} {ful}}}. That is to say, the meaning of complex words is predictable from the meaning of its morphemic units (constituents).

To the contrary, complex words in connectionism consist of non-discrete morphemes. Learning complex words are viable through the interface between semantic and phonological properties of the words. Phonological and semantic properties of particular words facilitate learners' responses to the target words whether the pairs are morphologically complex or not (e.g. *ponder-pond* facilitates the processing of *territory-territ*). The semantic and phonological similarities of pairs

of words are graded across words (low related pairs, moderate related pairs, high related pairs) (Gonnerman *et al.*, 2007).

Although the issue of representation is not resolved, the current study assumes that morphological knowledge is represented in discrete terms; the present study does not seek to explore the difference between the two approaches.

### 2.1.2 The Analyzability of Complex Words

The following is a brief review of the representation of morphological information in the lexicon, and how the effect of morphological structure on lexical access provides evidence for the fact that learners analyze unfamiliar complex words into morphemic units.

#### 2.1.2.1 A Brief Summary of the Approaches to How Morphological Information is Represented in the Lexicon

How newly encountered words and nonwords are processed (i.e. productivity in morphology) is well documented. Accessing words in the mental lexicon to recover their meanings is influenced by specific factors: word class, word frequency and formation rules (Leong and Parkinson, 1995). Various models have been proposed to account for how morphological units are encoded and decoded (see Chialant & Caramazza, 1995).

The whole- word hypothesis is one of the lexical access models. This hypothesis posits that a previously- encountered word whether simple or complex is encoded in the mental lexicon as a whole (e.g. *helped* is represented in the lexicon as a whole word). That is to say, there are no differences between the processing of complex and simple words (Chialant and Caramazza, 1995).

Another model is the fully decomposed representation. It postulates that morphemic units of roots or stems (in another version) and affixes are independently represented in the lexicon; complex words are represented in a fully decomposed format. Stimulus is parsed prior to the lexical access (Chialant and Caramazza, 1995).

A third model is augmented addressed morphology (AAA model) that posits that orthographic surface information guides the processing of stimulus. Known words are accessed as a whole, whereas unfamiliar words are fully decomposed. The whole- words access is faster than the fully decomposed access. AAA model is supported by Katz's *et al.* (1991) series of experiments on English past regular verbs and Serbo- Croatian future tense. The results indicate that identifying *-ed* as part of the stem suggests that words are recognized as a whole, and then decomposing access occurs.

A fourth model is the computational model. This model proposed by Schreuder and Baayen (1995), views lexical processing as an end to computing meaning from the morphological constituents. This model entails three stages of the parsing process. The first stage is segmentation where learners identify the whole-word and its bound morphemes (affixes, bound stem). Then, the learners check out whether their segmentation belongs to subcategorization/ syntactic roles to the affixes (Licensing). In the third stage, the learners compute and process the syntactic and semantic information of the complex words.

The premise that guides all of the above models is that morphological structure affects how complex word are accessed and processed. It is beyond the scope of the current thesis to explore those lexical access modals. This conclusion of the analyzability of complex words has implications for teaching morphological units as part of the vocabulary instruction. In addition, empirical findings show that lexical

access of words is influenced by the some factors as they appear in the following section.

#### 2.1.2.2 Evidence for the Effect of Morphological Structure on Lexical Access Studied

There are three main factors that affect lexical access processes and that provide evidence for the effect of morphological structure in accessing complex words. Below is an account of those factors.

The first factor is word frequency that refers to how frequently a word occurs in language. Word frequency can be further classified to include root or *stem frequency* (i.e. the frequency of the root in a word such *establish* in *establishment*), and *surface frequency* (i.e. the frequency of a word as a whole inclusive of derivation and inflection) (Rastle and Davis, 2003). Studies reveal that high frequent words are accessed faster than low frequent words. Katz *et al.*, (1991) demonstrate that lexical access of inflected words depends on root frequency of these words. The researchers investigate the effect of root/ stem frequency as opposed to the surface frequency (the total frequency) or word recognition using 100 regular verbs (present tense, past participle and present participle). They report that the frequency of the stems, whether in the present or the past forms, predicts word recognition better than the total frequency. As such, the effect of root frequency on word recognition substantiates that morphemic units are independently represented in the lexicon.

A second factor is morphological priming that refers to a target word being preceded by another stimulus (i.e. prime), which facilitates or inhibits the recognition of the target word (Underwood and Batt, 1996). Studies show that morphologically unrelated, but homographic primes inhibit the recognition of the target words while

morphologically related words facilitate recognition. This suggests that morphological unit representations do exist in the lexicon. For example, Murrell and Morton (1974) studied the effect of orthographic similarity and phonologic similarity on word recognition. The results show that morphologically related primes (*bored*) facilitate lexical decision of the target words (*boring*), and that phonologically related primes (*bored*) does not have a facilitative effect on the target word (*born*). These findings are taken as evidence of a morphemic representation level of in the lexicon.

A third factor is non- word structure that refers to a string of letters that looks like a real word (i.e. a legal word such as, *ROLT*) or an unreal word (i.e. an illegal word such as *GSTERA*) that are not part of the words of the language in question (Underwood and Batt, 1996). Caramazza's *et al.* (1988) experiments display that the participants' reaction time to reject non-words that contained actual roots and affixes (e.g. Italian: *cant-evi*) was longer than their reaction time to reject non-words that contained either pseudo- root (*cant-ovi*) or pseudo- suffix (*canz-evi*). These results have been interpreted as evidence for the morphemic unit access.

The lexical access models along with the factors that affect lexical access suggest that morphological structure of complex words are represented in the mental lexicon, and used to retrieve the meaning of morphologically complex words. Therefore, these models and factors implicate that L2 morphemic units should be introduced to L2 learners as part of the language lessons.

To reiterate, morphology is concerned with word forms and word formation rules. Morphological structures are represented in the mental lexicon as suggested by various lexical access models and as evidenced from word frequency, morphological priming and non- word structure studies. Morphology can be approached from either

a structuralists' view or connectionists' views. For the purpose of the current study, the traditional structuralists' view of morphology is assumed.

## 2.2 MORPHOLOGICAL AWARENESS AND VOCABULARY KNOWLEDGE

The role of morphology in vocabulary knowledge is well documented. Many studies show the beneficiary affect of utilizing morphological information (i.e. morphological awareness) in determining word meaning (e.g. Raymond, Matti, Maria, 2000), and therefore in maximizing vocabulary threshold (Sandra, 1994; Wysocki and Jenkins, 1987). Below is a discussion on the nature of morphological awareness followed by a discussion of the morphological awareness and its relationship to vocabulary growth.

Morphological awareness refers to the learners' knowledge of morphemes and morphemic structure, allowing them to reflect and manipulate morphological structure of words (Carlisle, 1995; Carlisle & Stone, 2003). Awareness of inflectional forms is gained earlier than awareness of derivational forms (Carlisle and Stone, 2003). The construct of morphological awareness has been extended to entail other subcomponents (orthographic, semantic aspects) (Kuo and Anderson, 2006).

It should be noted that many people confuse morphology acquisition and morphological awareness. While the concept of morphological awareness implies learners' use of metacognitive strategies of reflecting and manipulating word formation rules to derive the meaning of new words in the absence of communicative context, the concept *morphology acquisition* does not necessarily entail metacognitive strategies. Morphology acquisition means the cognitive abilities to use and comprehend morphological structure in natural speech (Kuo and Anderson,

2006). In this sense, morphological awareness falls under the umbrella of morphology acquisition.

Morphological awareness delineated in this study hinges upon learners' knowledge of morphemes that enables them to recover the meaning of new complex words by means of morpheme identification or decomposition (i.e. analysis), and to recombine morphemes to construct new meaning by means of morphological structure (i.e. synthesis).

Morphological awareness is contrasted with phonological awareness. The latter refers to the phonological sensitivity to syllable segmentation, rhyming and phoneme segmentation (Carroll *et al.*, 2003). Some researchers have explored the nexus between morphological awareness and reading comprehension and vocabulary knowledge independently of phonological awareness (e.g. Carlisle, 2000; Fowler and Liberman, 1995; Mahony *et al.*, 2000 ), whereas others compared the effect of morphological awareness with the effect of phonological awareness on promoting reading skills and proficiency after controlling for short- term memory and vocabulary (McBride- Chang, 2005; Singson *et al.*, 2000) and for verbal and non-verbal intelligence (Deacon & Kirby, 2004). In the present study, morphological awareness is addressed independently of phonological awareness; however, this study does not propose that phonological awareness is completely detached from morphological awareness.

### 2.2.1 Morphological Awareness and Its Relationship to Language Skills

A considerable number of studies have accentuated that morphological awareness is a predictor of some language skills such as, understanding the spelling system (Fowler and Liberman, 1995; Bear, Invernizzi, Templeton, & Johnston, 2004;



Treiman & Casar, 1996) and vocabulary growth, single word reading and reading comprehension (see Carlisle, 1995; Fowler & Liberman, 1995; Qian, 2002; Tyler & Nagy, 1990). Much to the interest of this study is the correlation between morphological awareness and vocabulary growth and reading. The knowledge of morphological units contributes to vocabulary growth that helps developing reading proficiency. The subsequent sections provide an account of the role of morphological awareness in vocabulary knowledge.

### 2.2.2 Vocabulary Size and Exposure to Derived Words

Vocabulary size refers to the number of words of which some aspect of meaning is known to the learners. Vocabulary size is contrasted to vocabulary depth that refers to how well a word is known. The current study capitalizes on vocabulary size rather than vocabulary depth.

The amount of children's exposure to derivatives (see *section 2.1.1* for definitions of derivatives and derivation) is considerable. Nagy, Osborn, Winsor and O'Flahavan (1994) estimates that 4,000 words out of 10,000 words encountered by fifth graders in US are derived from frequent words. In the same vein, 13,000 out of 30,000 words encountered by high school students are derivatives (Biemiller, 2004). Yet, the estimation of vocabulary size varies from one study to another according to the criteria for defining a word, source of word pool, and word sampling. For instance, D'Anna & Zechmeister's (1991) study indicates that the vocabulary size of college students were 1,700 words as the researchers define a word as *lemmas*, or dictionary main entry and, therefore, the derived words are not considered as part of the vocabulary size.

Those estimations are consistent with Anglin's (1993) study of vocabulary knowledge growth among first and fifth graders. She and other researchers (e.g. see Carlisle, 1995; Singson, Mahony and Mann, 2000: experiment 1) report that the growth of derivatives increases three times compared to the growth of root words among the children. This can be ascribed to the increasing awareness of internal structure of words as readings become more sophisticated. Nagy and Scott (1990) conducted a study of students' word schemas on seventh and tenth graders and undergraduate students. All are asked to rate the plausibility of 96 definitions on a four-point scale (1: implausible- 4: plausible); the items' word classes, definitions and sentences that illustrate word usage were presented. The results show that there is increasing sensitivity to semantic regularities (i.e. morphological units that share same semantic meaning) among the students. The results also highlight that the undergraduates developed specific information about the types of meaning associated with English verbs (i.e. morphological awareness).

The tremendous amount of exposure to complex words underlines the importance of morphological awareness in promoting vocabulary size, and substantiates morphological awareness intervention as part of vocabulary instruction. Morphological awareness intervention can equip L1 children and L2 learners with some strategies for tackling the meaning of new words. Although Kuo and Anderson (2006) suggest that vocabulary size is one of the variables to be controlled when assessing morphological awareness, the current study seeks to examine the relationship between those two factors.

### 2.2.3 Vocabulary Growth

Vocabulary growth among beginner learners of a language mirrors their ability to use morphological analysis. It has been demonstrated that morphological awareness and vocabulary growth are correlated (Nagy & Anderson, 1984; Singson, Mahony, and Mann, 2000; Sternberg, 1987; White, Power & White, 1989; Wysocki & Jenkins 1987). Sandra (1994) points out that morphology can play an important role in developing polymorphemic vocabulary and in retaining their meaning. Learners' vocabulary rapid growth is greatly attributed to their ability to apply word formation rules (Wysocki & Jenkins, 1987). Learners who understand the meaning of *adapt* are likely to understand *adaptive*, *adaptable* and *adaptation* by means of morpheme identification and morpheme synthesis.

A number of studies show that learners are able to use their knowledge of morphological units (affixes, roots) to extract meaning of complex words they encounter. As evidenced in the following studies, these complex words are parsed into smaller, more understandable units of meanings.

Gordon (1989) and Carlisle and Stone (2003) found that high stem frequency auditory primes facilitate children's lexical decision of low- frequency suffixed words, which manifests that learners deal with complex words analytically. Proficient readers apply analytic rules to low frequency complex words, especially when the stem frequency is high (Katz, Rexer, Lukatela, 1991).

Wysocki and Jenkins (1987) investigated whether fourth, sixth and eighth graders use morphological analysis to arrive to the meaning of complex words. Students are given a training session of a set words two weeks prior to the test. They are tested on some words related and unrelated to the words in the training session. The researchers found that the students perform better in the related words, and that

learners understand new meanings by morphological generalization of those words sharing the roots.

Similarly, Carlisle (2000) examined the relationship between third and fifth graders' awareness of morphological structure and defining meanings of complex words, and the relationship between morphological awareness and reading and comprehension. He administered tests of complex word reading, morphological structure and complex word meanings. The results indicate that morphological awareness, for both grades, is correlated with the ability to define complex words, and that some aspects of morphological awareness are associated with reading comprehension. However, the fifth graders outperform the third graders as they have more years of exposure to complex words. Poor readers, on the other hand, have been found to be less sensitive to morphological relations that facilitate lexical decision, and less efficient in processing derivative words (Leong & Parkinson, 1995).

Since students are confront a very large amount of complex words in their academic reading and since complex words are analyzable into smaller meanings, it makes sense that morphological awareness is used as a strategy for unlocking meaning of newly encountered words. Besides, morphological awareness is related to various language skills (spelling, vocabulary, and reading). Below is an elaboration on the relationship between morphological awareness and vocabulary knowledge and reading proficiency.

#### 2.2.4 Morphological Awareness and Reading Proficiency

Morphological awareness has been studied in tandem with reading abilities in general and vocabulary knowledge in particular. Below are some examples of those

studies that examine how morphological awareness boost vocabulary knowledge and reading abilities accordingly.

Ku & Anderson (2003) studied whether morphological awareness plays a significant role in vocabulary acquisition and reading proficiency among second, fourth and sixth American and Chinese graders of English and Chinese languages. Researcher administered a reading comprehension test along with a set of tests. These tests consist of a morpheme recognition test, a morpheme interpretation test and a pseudoword judgment test. The results confirm the previous studies that morphological awareness is developed gradually throughout the students' language experience, and that morphological awareness is indispensable for English and Chinese vocabulary acquisition and reading proficiency.

White, Power and White's (1989) results of experiment 1 of the characteristics of affixed words is in accord with the previous studies. The results support the conclusion that morphological analysis is sufficient to understand affixed words that are semantically transparent (i.e. the meaning of the whole words can be derived from the meaning of its morphological units).

Deacon and Kirby's (2004) four- year longitudinal study also shows that there is a positive relationship between morphological awareness and reading comprehension for the second, fourth and sixth graders. They compared the effect of inflection awareness and phonological awareness on reading development (e.g. pseudoword reading, reading comprehension and single word reading) after controlling variables of verbal and non- verbal intelligence and prior reading ability. The study demonstrates that morphological awareness contributes to reading development even after three years of the study and after controlling for phonological awareness.

The area of morphological awareness poses the questions of what is the link between vocabulary knowledge, reading proficiency and morphological awareness. Morphological processing is one of the determinants of lexical access at word- level (vocabulary knowledge) that contribute to text- level understanding (reading comprehension). Leong's (1999) study of morphological processing among dyslexic students shows that students with reading disabilities lack rapid and accurate processing of phonological and morphological processing at word level, which contribute to the observed reading disabilities. The results underpins that dyslexic students might have difficulty with implicit transformation rules (i.e. word formation rules of analysis and synthesis as mentioned in *section 2.1*). Therefore, the researcher recommends explicit instruction of transformation rules, word formation rules and morphological structure.

In short, morphological awareness contributes to vocabulary growth and reading proficiency. The relationship between morphological awareness and vocabulary knowledge and reading abilities can be best understood in the light of the lexical access at word level and sentential level.

#### 2.2.5 Morphological Awareness as a Word Comprehension Strategy

Reading strategies enable learners to better understand the novel words they encounter in reading. With reading strategies, learners are consciously aware with the reading approaches they deploy (e.g. morphological analysis and contextual analysis), and the alternative strategies the others deploy to tackle a reading task. Introducing reading strategies to learners help them to understand the nature of reading task and its demand. Among those reading strategies is a vocabulary- related strategies that are undeniably essential to understanding reading tasks. One of the vocabulary- related

strategies that is central to the current study is morphological analysis (i.e. assembling and reassembling morphemes).

Some researchers recommend raising students' morphological awareness to boost vocabulary knowledge and reading abilities. Carlisle (1995) emphasizes that morpheme identification can be seen as a problem-solving strategy that can be used to understand a large number of derived words. Therefore, morphological awareness is crucial for developing children's independent, vocabulary learning strategies (Baumann *et al.*, 2003; Tyler & Nagy, 1990; White, Power & White, 1989). This in turn helps promote the development of reading proficiency (Nagy, Berninger, Abbott, 2006, Cunningham and Stanovich, 1997). For example, Cunningham and Stanovich's (1997) longitudinal study reveals that rapid acquisition of vocabulary of first graders predicted their reading comprehension 10 years later. Similarly, Chall, Jacob and Baldwin (1990) demonstrate that third graders with poor vocabulary size have poor reading comprehension at later schooling stages. Nagy's *et al.*, (2003) results reveal that morphological awareness of at-risk readers at second and fourth grades can be seen as a remedy for inefficient reading comprehension.

To sum up, studies show that applying morphological analysis as a one of the strategies to uncover the meaning of new words is potential for promoting learners' vocabulary knowledge and reading abilities. The following section introduces one of the important factors that may affect the learners' L2 morphological awareness, namely cross-linguistic variation.

### 2.3 Morphological Awareness: Cross- Linguistic Variation

Morphological awareness is a skill that may vary across typologically distinct languages. The L1 and L2 may differ in lexical access processes. It has been shown

that L2 morphological awareness is constrained by learners' experience of L1 processing (Koda, 2000). Koda (2000) investigated how L1 morphological processing of Chinese affected L2 morphological awareness of English. It is noted that some of L2 morphological units are less salient for L2 learners (e.g. the separability of English morphemic units in complex words are not salient for beginner Arab learners of English). The results support the view that the variation in L1 morphology determines how L2 learners process some aspects of morphological units of L2. Bindman (2004) arrives at a similar conclusion that there was a cross-linguistic effect of morphological awareness on reading and spelling by children learning to write and read in English and Hebrew (one of the Semitic languages).

As English and Arabic (the L1 for the participants of the present study) are typologically different, a discussion on the differences between the morphology of English and Arabic is necessary.

As *concatenative* language, English attaches affixes to the beginning or the end of free stems (Saiegh-Haddad & Geva, 2007). With affixation, the stem can retain its phonological and orthographical properties, or undergoes phonological changes, orthographical changes, or both. Therefore, English is considered to possess morphologically transparent structure. On the other hand, word formation in Arabic language, a non- concatenative language, involves superimposing vowels in the consonantal pattern—root- and- pattern morphology/ CVCV language (Aronoff & Fudeman, 2005). The root and the word- pattern in Arabic are always bound morphemes (Saiegh-Haddad & Geva, 2007). Therefore, Arabic has morphologically opaque structures. These differences between Arabic and English might hinder Arab learners of English from readily analyzing and comprehending complex English words.



Furthermore, English graphemes are not linearly mapped into phonemes; one grapheme can represent more than phonemes (e.g. *c* can be /k/ or/s/). Arabic orthography, on the other hand, is presented with diacritics (that represent phonological information) or without diacritics. The former, graphemes are mapped into phonemes directly and, therefore, morphological structure is not used to recover words meaning as the case of without- diacritics orthography (Arab beginners of English tend to spell English words by just writing consonant leaving vowels—transfer of Arabic orthography). Saiegh-Haddad and Geva (2007) demonstrate that Arabic morphological awareness does not intervene with English morphological awareness, but predicates English word reading. The researchers attributed the results to the fact that morphological awareness in Arabic helps the learners to go beyond phonological and orthographical representations and to use syntactic and semantic cues to access the meaning of complex words.

Despite the facilitative effect of Arabic morphology demonstrated by the study of Saiegh-Haddad and Geva (2007), and due to the aforementioned differences in English and Arabic morphology, it is expected that Arab beginners of English might confront some difficulties figuring out English morphological structure. As such, explicit instruction that helps the learners reflect and manipulate English morphological structure may play an important role in raising Arab learners' morphological awareness of English.

#### 2.4 Explicit Instruction on Morphological Units

Explicit instruction on morphological units may enable learners to unlock the meaning of complex words, and this is maybe an important vocabulary learning strategy. Skills in morphological analysis give learners the sense of words and their

meanings and contribute to the development of vocabulary knowledge and in turn reading proficiency. A number of studies have investigated the effectiveness of morphological analysis on deriving word meaning and the effectiveness of the methods undertaken to teach morphological units.

There are a number of studies that show that explicit instruction on affixes and roots help the elementary graders to unlock the meaning of newly encountered words (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003; Baumann *et al.*, 2002). Baumann *et al.* (2003) investigated the impact of instruction on morphological and contextual analysis (MC) vs. textbook vocabulary instruction (TV) on fifth graders' abilities to decipher meaning of unfamiliar words. The instruction was part of social studies lessons. The results indicate that the MC students outperformed the TV students in inferring meaning of unfamiliar, complex words. Early instruction on morphological units is advised by some researchers such as Anglin (1993) and Biemiller (2004). Similarly, Morin (2003) studied the impact of derivational morphology instruction on developing receptive and productive vocabulary knowledge in the case of Spanish beginner learners at college level. Morin compared the performance of a control group and an experimental group in the first semester and the second semester. Three tests were administered: vocabulary knowledge test, productive knowledge test and receptive knowledge test. The results indicate that morphological instruction is a benefit in productive and receptive vocabulary knowledge, especially for second semester learners. Morphological instruction also helps in learning new unfamiliar words, and therefore, increasing vocabulary size. Leong (1999) recommends early explicit instruction of transformation rules, word formation rules and morphological structure. Morphological analysis instruction proved to be effective.

There are number of methods for the instruction of morphological analysis. For example, disassembling and reassembling words is one of the MC methods in which learners are trained on how to chunk meaningful parts of complex words and use those parts to create new words (Edwards, Font, Baumann, & Boland, 2004). Another method is direct instruction with posters (Graves, 2004). This method is more suitable for children learners where stems and highlighted affixes are presented on posters along with pictures. The method of affixes removal and replacement can used to introduce morphological analysis to adult learners. Disassembling and reassembling words is concerned with dissecting complex words into small meaningful units, finding the meaning of stem and affixes, and finally reassembling the meaningful parts to come up with new complex words. In this sense, morphemic analysis instruction can make the learners to independently learn new vocabulary and to take the charge of their own vocabulary development—autonomy.

Overall, research showed that teaching morphological units explicitly is effective in deriving the learners to unlock complex word meaning. Teaching morphological information can be done with various ways such as, morphological analysis and posters of affixes and related word pictures. Teachers should utilize the methods that better suit the students' level and needs. Before deciding whether the learners need an explicit morphological analysis to boost their vocabulary size, the learners' morphological awareness and their vocabulary size should be investigated. The next chapter describes the present study, participants, research instruments, procedure and data analysis.

## **Chapter 3**

### **The Study**

#### 3.1 Introduction

Morphological awareness plays a significant role in L1 vocabulary development. L1 morphological awareness is developed gradually (Anglin, 1993; Ku and Anderson, 2003) and is important in understanding derived and inflected words (White, Power and White, 1989). Understanding and manipulating the internal structure of words is correlated with L1 vocabulary growth (Anglin, 1993; Nagy and Scott, 1990).

Most of the previous studies deal with L1 morphological awareness and its relationship to vocabulary growth and reading development; little attention is given to L2 morphological awareness. The present study focuses on L2 morphological awareness and vocabulary knowledge. The study correlates measures of English morphological awareness with those of English vocabulary size to assess if, and to what extent, the factors are related. Also of interest is whether levels of English morphological awareness can serve to distinguish between test performance on morphologically complex words and morphologically simple words. By comparing performance on morphologically simple vs. complex words, we are better able to isolate the effect of morphological awareness on vocabulary development. These data have the potential to provide a better understanding of the nature of the link between morphological awareness and vocabulary knowledge.

#### 3.2 Research Questions

The study attempts to address the aspects of morphological awareness as demonstrated by Omani EFL learners, and the correlation

between morphological awareness and vocabulary size and morphological complexity. The study will investigate the following questions:

1. To what extent are students aware of analytic and synthetic word formation rules?
2. How does this awareness related to vocabulary size?
3. Does morphological awareness discriminate between the students' performance on complex word and simple words?

### 3.3 Participants

The participants of the study are first- semester students attending a two-semester- intensive EFL program at Ibri College of Applied Sciences, Oman. Ibri College is one of the governmental colleges of applied sciences in Oman that offers Bachelor degrees in Design, Communication, IT, and International Business Management. All the students in this college are required to enrol in a two semester English Foundation to develop skills in English reading, writing, speaking and listening needed to help them to succeed in their subsequent academic studies. The socio-economic status of the students of this college is generally of the Omani middle class.

The participants in the present study are 54 students. The mean age of participants is 18.09 ( $SD = 0.29$ ). The first language of all participants is Arabic. Twenty nine of the participants are girls while twenty five are boys. All of the participants had just finished high school in one of the Omani governmental schools, and are at the end of their first semester of the EFL program. Students are distributed in English language classes according to their proficiency level at high school; the students in this EFL program are not tracked so that the more proficient learners can

help the less proficient. EFL students in this college take classes of English in reading, writing, speaking and listening. They are exposed to English for 6 hours per day. The teachers are eclectic in the teaching methods they use (direct methods, indirect methods, teaching by doing, etc). The students sit for different types of summative and informative assessments to indicate how well they have performed throughout the semester. At the end of the second semester, participants need to pass an IELTS- like test as a final examination. The participants of the study were recruited voluntarily from different classes. They are tested just before the first semester's final examination.

### 3.4 Research Instruments

To answer the present study's questions of morphological awareness and its relationship to vocabulary size and word complexity, two widely used tests are adapted to the purposes of the study: Morphological Awareness Test with its subtests (analysis and synthesis) and Vocabulary Level Test.

#### 3.4.1 Morphological Awareness Test

The Morphological awareness test is adapted from McBride- Change *et al.* (2005), and is used to test students' ability to reflect and manipulate morphemic units in English. This test is of interest to the researcher as it encompasses both the analytical and synthetic aspects of word formation rules. Some of items of the test are created by the researcher, and others are taken from McBride- Chang's *et al.* (2005) test. The test is divided in two sections: Morpheme Identification and Morphological Structure. See *Appendix 3* for Morphological Awareness Test.

### 3.4.1.1 Morphemes Identification Test (Analytic Aspects)

The Morpheme Identification Test measures students' ability to analyze and break down complex words into smaller meanings. It is comprised of 14 test items. These items diverge from the items used in original Morpheme Identification Test to better suit the students' age and level. In the original morpheme identification test as devised by McBride- Chang and her colleagues, each item includes two orally-labelled pictures that are presented simultaneously. The children are then given a word or phrase containing the target morpheme, and are asked to select the most appropriate picture that matches the word/ phrase.

In this study, the participants are given a set of complex words out of context, and are asked to segment them into as many smaller meanings as they can identify in each word. The words are decontextualized to control for the possible effect of context in guessing the meanings of words. The morphemes are neutral in the sense that they neither cause phonological and orthographical change nor stress assignment changes in the stem. As Kuo and Anderson (2006) propose, empirical studies should include neutral suffixation (i.e. suffixes that does not alter phonological or orthographical properties of the stem when being applied). Non- neutral suffixation rules are not frequently applied, and are acquired at later stages. Poor readers are also slower in acquiring non- neutral suffixation. Except for three morphological awareness test items, the present study controls for this factor; neutral suffixation are only used to rule out the possibility that the students cannot recognize the bases owing to this factor.

One of the items (*demotivation*) is removed from the analysis as 99 % of the students were not able to segment it so the test is left with 13 items. Excluding *demotivation*, there are 3 inflectional affixes, 13 derivational affixes, 17 stems in total.

The total score of Morpheme Identification Test is 33, representing the maximum number of possible morphemes in the test item.

The students are then asked to give the meanings, be it in Arabic or English, of the morphemes they could identify. Below are the instructions (presented both in Arabic and English) and one sample item of the Morpheme Identification Test. It is worth noting that the instructions are followed directly with an example to illustrate to the participants what they should do with each item. Below are the test instruction and an answered example of a test item in English.

*Please segment the following words into meaningful chunks, and state the meanings of those chunks.*

|  |
|--|
| e.g. <b>Childhoods</b> : <i>child</i> : little human being, - <i>hood</i> : the state of being, -s: to indicate plural |
|--|

Test instruction is translated into Arabic and explained ahead during the test orientation. Students are asked to write the meanings of the *chunks* either in Arabic or English or both according to their preference.

#### 3.4.1.2 Morphological Structure Test (Synthetic Aspect)

The Morphological Structure Test measures students' morphological productivity, which is the ability to synthesize morphemes to create new meanings. The test consists of 14 items. Some of the items are created by the researcher. The items have 9 inflectional affixes, 3 derivational affixes and 23 stems. All of items are embedded in a sentence frame so as to examine whether the participants can derive different forms of the base word rapidly and accurately when being primed with that base form in sentence context have. That is to say, this test examines the students'



knowledge of lexical structure and the relations among words and within words and their constituents. Again, all of the items contain neutral morphemes.

The participants are presented with a frame sentence that contains the usage of the target morpheme, and then ask to complete another sentence. It is expected that the participants use the frame sentence to complete the next sentence. Each morpheme in a test item receives one point. The total points of the morphological structure test are 35 points, representing the maximum number of possible morphemes the student could give as a response to the test items. Below are the instruction (presented both in Arabic and English) and one sample item.

*Using only one word, come up with names for the objects or actions that are described below. See the example.*

|  |
|--|
| Ahmed lived longer than Ali. Ahmed outlived Ali.<br>James performed better than Juliet in the reading test. James..... Juliet. |
|--|

### 3.4.2 Vocabulary Level Test (VLT) - Version A

In addition to the Morphological Awareness Test, the Vocabulary Level Test (VLT) is adapted from Nation (1990). It is widely used to measure vocabulary size based on word frequency. The VLT test is designed to measure learners' receptive vocabulary size that can be considered as an indicator of the coverage of vocabulary in a text. The original test consists of five sections (the 2,000, 3,000, 5,000 and 10,000- word levels) alongside a section of academic vocabulary. Each level includes ten items; each item compromise 6 words on the left side with 3 meanings on the right. The 2,000- word level provides 80% to 95% coverage of the text; the 3,000-

word level provides 4.3% coverage. The frequency and the coverage of the words drop down as levels go up.

The students are asked to match the three meanings in each item with the words. The first level contains the most frequent words; the second level contains the second most frequent words, and so forth. See *Appendix 4* for the VLT.

In the present study, the only modification that the researcher does was having half of the items (five items) complex words and the other half simple words at each level, except for the Academic Word Level (AWL). The modification is done in order to allow the researcher to examine the relationship between morphological awareness and students' performance in simple vs. complex words. Complex words are created by adding some morphemes to test items. For example, the researcher added the suffix – *ment* to the word *improve* in the 2,000 word level. The list of simple and complex words can be found in *Appendix 5*.

Here are the test instruction (provided both in Arabic and English) and examples of test items.

*This is a vocabulary test. You must choose the right word to go with each meaning.*

*Write the number of that word next to its meaning. Here is an example.*

|   |
|---|
| <p>1. business<br/>2. clock _____ part of a house .<br/>3. horse _____ animal with four legs<br/>4. pencil _____ something used for writing<br/>5. shoe<br/>6. wall</p> <p>You answer it in the following way.</p> <p>1. business<br/>2. clock           <u>6</u> part of a house<br/>3. horse           <u>3</u> animal with four legs<br/>4. pencil           <u>4</u> something used for writing<br/>5. shoe<br/>6. wall</p> |
|---|

### 3.5 Procedure

Permission to carry out the research was first obtained from the Department of Postgraduate Studies, the Ministry of Higher Education, Oman, the dean of Ibri College and then the head department of English Language who asked the teachers of English language at the English Intensive Program to ask first- semester students to participate in the study. The teachers, on their parts, informed the students about the study and asked for their consent and clarified that their participation would not affect their academic grades. The project received ethical clearance from the University of Queensland Behavioural & Social Sciences Ethical Review Committee (BSSERC).

Student consent was then obtained. The students who agreed to join the project were grouped in a large lecture theatre to conduct the study. The session lasted for 2 hours. The researcher introduced herself and the nature of the study in Arabic. The researcher asked the students to read the study information letter for about 10 minutes. The information letter was presented in both Arabic and English; any queries about the tests, research and results were answered after reading the letter. First, the Morphological Awareness Test with its two parts of analysis and synthesis was administered. After being done with the test, the students were asked to answer the Vocabulary Level Test. The students were asked to answer the tests on their own pace. Finally, the research material packets were collected in an envelope.

### 3.6 Data Analysis

As the data collected in this study is quantitative, descriptive statistics and correlation are reported. Mean and standard deviation are used to summarize the results of the Morpheme Identification Test, the Morphological Structure Test, and the Vocabulary Level Test. Skewed distribution in both of the variables

(morphological awareness and vocabulary size) is detected, and this is taken into account in statistical analysis. Brown (1988) states, ‘... skewedness tends to depress correlation coefficient’ (p. 146). Skewedness indicates that Spearman’s rho is a better measure of the strength and direction of the association.

To answer Question 1 concerning the degree of the students’ morphological knowledge, Spearman’s rho is run on the data obtained from the Morpheme Identification Test and the Morphological Structure Test. The direction and the strength of the relationship between students’ scores on the analytic aspects and synthetic aspects are sought. The alpha level is set at .05.

Answering Question 2 concerning the relationship of vocabulary size and morphological awareness is also assessed by calculating Spearman’s rho on overall morphological awareness and vocabulary size as measured by the VLT. A one- tail  $p$  value is used to report the significance as the researcher assumes if there is a relationship between morphological awareness and vocabulary knowledge, it would be positive.

To answer Question 3 of whether the morphological awareness differentiates between learners’ performance on complex versus simple words, Spearman’s rho with one tail significance is reported.

## Chapter 4

### Results

#### 4.1 Results for Question 1

The first research question concerns the students' morphological awareness of analytic and synthetic word formation rules. The Morphological Awareness Test is administered, and descriptive statistics and correlation coefficient are reported to answer this question.

##### 4.1.1 Results of the Morphological Awareness Test

The Morphological Awareness Test is divided in two sub-tests: the Morpheme Identification Test (analysis section) and the Morphological Structure Test (synthesis section). The total score for the former is 33 points and the latter 35 points.

It is important to first check the reliability to the Morphological Awareness Test before summarizing the results of the test. As this test is of large- scale data, Cronbach's alpha is used to elicit consistent and reliable response. The reliability of total test items (27 items) inclusive of both subtests is .91, which indicates that the test as a whole is reliable. Cronbach's alpha is also calculated for both subtests separately. The analysis section is reliable at .87 and the synthesis section is reliable at .93. Overall, the students' scores in the Morphological Awareness Test are reliable.

Below are the means, standard deviations, ranges and Spearman's rho for the students' scores in the Morpheme Identification section and Morphological Structure section of the Morphological Awareness Test as taken by the Omani EFL learners (N= 54). Examining the means of both sections of the test, the average score of the Morpheme Identification section (the analytic aspect of morphological awareness) is the highest among the students ( $M= 24.27$ ,  $SD= 6.48$ ) compared to the synthetic

aspect of morphological awareness ( $M= 18.68$ ,  $SD= 11.14$ ). The students score better in the Morpheme Identification Test (73.54%) than they do in the Morphological Structure Test (53.37%). For the Morpheme Identification Test, the highest score is 33 while the lowest is 8. For the Morphological Structure Test, the scores are ranging from 0- 32; the scores of eight students exhibit a floor effect in this section.

The overall mean score of the Morphological Awareness Test is 42.11 out of 68 with a considerable dispersion among the results ( $SD= 11.68$ ), which indicates that the students have intermediate awareness of word formation rules.

To gain more insight on the students' morphological knowledge and how the students deal with complex words, the knowledge of inflectional, derivational affixes and stems are sought. To reiterate, the total number of morphemes are 3 inflectional and 13 derivational and 17 stems in the analysis section and 9 inflectional, 3 derivational and 23 stems in the synthesis section. Table 1 reports the average percentage of the students' scores (standard deviation) in the test items' inflection, derivation and stems.

**Table 1 The Average Percentage of the Students' Scores (Standard Deviation) in Inflectional Affixes, Derivational Affixes and Stems of Both Analysis and Synthesis Sections of Morphological Awareness Test.**

|                     | Inflection | Derivation    | Stem          |
|---------------------|------------|---------------|---------------|
| Analytic Aspects*   | 63% (1.12) | 59.15% (3.45) | 87.11% (2.90) |
| Synthetic Aspects** | 50% (2.75) | 46.33% (1.01) | 57.56% (7.61) |

\* Number of morphemes: 3 inflectional, 13 derivational, 17 stem

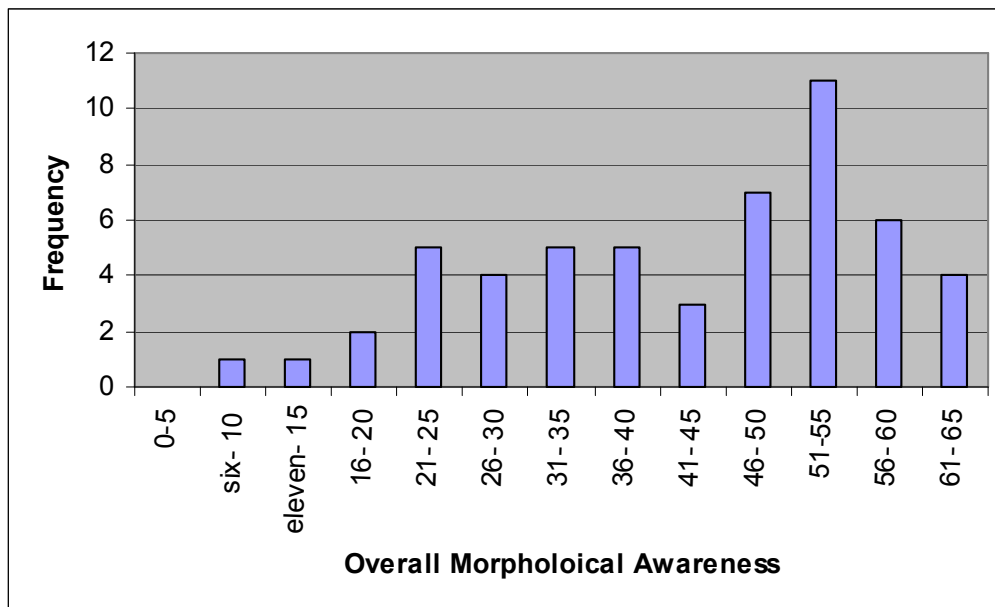
\*\* Number of morphemes: 9 inflectional, 3 derivational, 23 stem

Students score better in the Inflectional affixes in both the analysis section (63%,  $SD= 1.12$ ) and the synthesis section (50%,  $SD= 2.75$ ) than they do with the

Derivational affixes (59.15%,  $SD= 3.45$  in the analysis section, 46.33%,  $SD= 1.10$  in the synthesis section). Given that, the students' ultimate performance is found on the stems (87.11%,  $SD= 2.90$  in the analysis section, 57.65%,  $SD= 7.61$  in synthesis section).

Looking at Figure 1 and comparing means and standard deviations, a negatively skewed distribution of morphological awareness is spotted. There is room for only little over one standard deviation of 13.94 above the mean ( $M= 42.11$ ).

**Figure 1 Negatively Skewed Distribution of Overall Morphological Awareness**



#### 4.2 Results of Question 2- Part I

Before addressing Question 2, the students' vocabulary size is first reported. Towards this end, the Vocabulary Level Test (VLT) is used. The VLT consists of five word levels (the 2,000 word level, the 3,000 word level, the 5,000 word level, the 10,000 word level and the Academic Word Level).

#### 4.2.1 Results of the Vocabulary Level Test

When summarizing the results of the VLT, it is important to report the reliability of the total items of the VLT. As this test is of binary-type and large-scale data, Cronbach's alpha is used to assess consistency of the students' performance. The reliability of total items of the test (150 items) is 0.87. Cronbach's alpha is also calculated for the subparts of the test. For example, omitting the 2,000 word level from the test resulted in reliability of .87, omitting the 3,000 word level or the 5,000 word level resulted in reliability of .80, omitting the 10,000 word level resulted in reliability of .89 and finally omitting the Academic Word Level resulted in reliability of .79. The values of Cronbach's alpha of the total test items and each level of the test indicate high reliability of the students' test scores.

**Table 2 The Mean, Standard Deviation and Range of Students' Scores for Each Level of Vocabulary Level Test (Each Level Is out of 30) Taken by Omani EFL Learners in Ibri College of Applied Sciences (N= 54)**

| <b>Vocabulary Level Test</b> | <b>M</b> | <b>SD</b> | <b>Range</b> |
|------------------------------|----------|-----------|--------------|
| 2,000 Word Level             | 17.33    | 5.73      | 7-29         |
| 3,000 Word Level             | 9.65     | 7.27      | 0-29         |
| 5,000 Word Level             | 7.17     | 6.00      | 0- 20        |
| 10,000 Word Level            | 3.52     | 2.89      | 0- 12        |
| Academic Word Level          | 8.96     | 7.27      | 0- 30        |

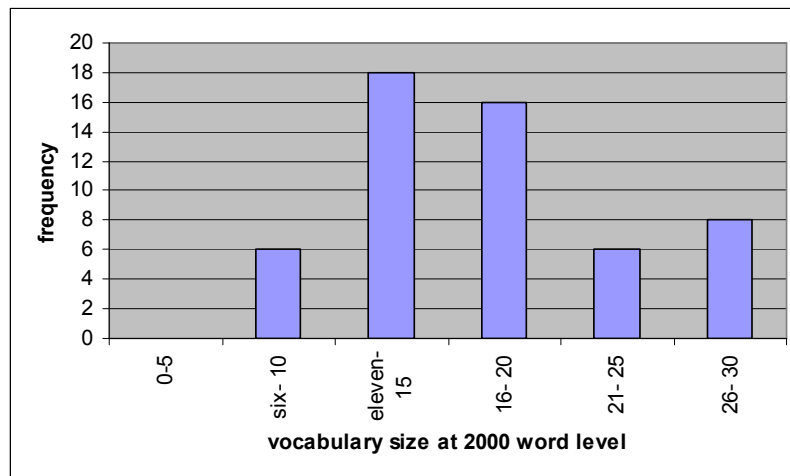
Table 2 shows the descriptive statistics of the students' scores in each level of the VLT (each level is out of 30). Looking at the mean scores at each level suggests that students' vocabulary size falls within the 2,000 word level. As word levels go up, the students' scores decrease. Compared to the other word levels of the test, the students score relatively high at the 2,000 word level with less dispersion among the results in that level ( $M= 17.33$ ,  $SD= 5.73$ ). The highest score in that level is 29, whereas the lowest score is 7. The students' average score at the 3,000 word level is



9.65 with a dispersion of 7.27, and with scores ranging from 0- 29. At the Academic Word Level, the students score relatively low ( $M= 8.96$ ) considering the substantial dispersion of 7.27.

Again, as with the distribution of morphological awareness, skewedness is spotted for the distribution of vocabulary size at the 2,000 word level (students' vocabulary size falls within this level).

**Figure 2 Positively Skewed Distribution of Vocabulary Size.**



#### 4.3 Results of Question 2- Par II

Question 2 examines if there is a relationship between the students' vocabulary size and morphological awareness. Spearman's rho correlation coefficient is used to assess the strength and direction of association between the two measures.

##### 4.3.1 Results of Morphological Awareness Test and Its relationship to Vocabulary Level Test

Table 3 reports the correlation coefficient of the students' morphological awareness and their vocabulary size at each level. The correlations of each analytic and synthetic aspects of morphological awareness and each word level are also calculated to gain a better understanding of the relationship between vocabulary size

and morphological awareness. As the data are of skewed distribution, Spearman's rho is used. A one- tail  $p$  values are used to report the significance as the present researcher assumed that the relationship between morphological awareness and vocabulary size would be positive.

**Table 3 Spearman's Rho ( $p$  Value)\* for the Variables of Vocabulary Size, Overall Morphological Awareness, Analytic and Synthetic Aspects.**

|                     | Overall<br>Morphological<br>Awareness | Analytic<br>Aspect | Synthetic<br>Aspect |
|---------------------|---------------------------------------|--------------------|---------------------|
| 2000 word level     | .13 (.17)                             | .23 (.04)*         | .08 (.26)           |
| 3000 word level     | .04 (.37)                             | -.02 (.42)         | -.01 (.46)          |
| 5000 word level     | -.02 (.42)                            | -.11 (.19)         | -.03 (.41)          |
| 10000 word level    | -.13 (.15)                            | -.30 (.01)*        | -.10 (.22)          |
| Academic word level | .58 (.33)                             | .04 (.37)          | -.02 (.42)          |

\* Significant at the .05 level (one- tail).

Generally, the correlation between morphological awareness and vocabulary size at each level is weak and not significant at .05 level (one- tail), except for the relationship between the Morpheme Identification and the 2,000 word level and the 10,000 word level (however, the 10,000 word level is not a reliable indicator of students' word level in this study as can be seen in the results of Questions 2- Part I). There is a small, but significant relationship between morphological awareness and vocabulary size at the 2,000 word level ( $r = .23$ ,  $p$  (one- tail)  $< .05$ ) when considering the analytic aspects of morphological awareness (i.e. morpheme identification) alone. On the other hand, there is a negligible relationship between vocabulary size at the 2,000 word level and overall morphological awareness and the synthetic aspects, which can be attributed to the fact that eight students failed to answer the synthetic section (i.e. their raw scores are zero).

Since students' vocabulary size falls within the 2,000 word level (see results for Question 2- Part I), and since no significant relationship between vocabulary size and overall morphological awareness is found at the 2,000 word level, it is feasible to generalize that there is no relationship between students' vocabulary size and overall morphological awareness.

#### 4.4 Results for Question 3

Question 3 examine if the performance on morphological awareness test differentiates between students' performance on simple vs. complex words on the VLT.

##### 4.4.1 Results of the Morphological Awareness Test and Its Relationship to Performance on Simple and Complex Words in the VLT

**Table 4 Descriptive Statistics of the Students' Scores on Simple Words (out of 15) vs. Complex Words (out of 15) for Each Word Level of Vocabulary Level Test.**

| <b>Vocabulary Level Test</b> | <b>M</b> | <b>SD</b> | <b>Range</b> |
|------------------------------|----------|-----------|--------------|
| <b>2,000 word level</b>      |          |           |              |
| Simple words                 | 9.93     | 2.66      | 3- 15        |
| Complex words                | 7.80     | 3.47      | 2- 14        |
| <b>3,000 word level</b>      |          |           |              |
| Simple words                 | 4.26     | 3.51      | 0- 15        |
| Complex words                | 5.24     | 3.99      | 0- 13        |
| <b>5,000 word level</b>      |          |           |              |
| Simple words                 | 3.35     | 2.74      | 0- 10        |
| Complex words                | 4.04     | 3.59      | 0- 13        |
| <b>10,000 word level</b>     |          |           |              |
| Simple words                 | 2.24     | 1.99      | 0- 8         |
| Complex words                | 1.50     | 1.71      | 0- 8         |

Table 4 reports the descriptive statistics of the students' performance on simple vs. complex words of each word level of the VLT. The 2,000 word level is analyzed here as it is more credible representing the students' scores; note that the

students' vocabulary size is within the 2,000 word level. Looking at the average scores and their dispersions, the students perform better with simple words than they do with complex words. The students' ultimate performance is found on simple words at the 2,000 word level (M= 9.93, SD= 2.66) with the scores ranging from 3- 15, while their average score is 7.80 (SD= 3.49) with complex words at the same word level.

**Table 5 Spearman's Rho of Simple vs. Complex Words of Each Vocabulary Level and Overall Morphological Awareness (Analytic and Synthetic Aspects).**

| <b>Vocabulary Level Test</b> | <b>Overall Morphological Awareness</b> | <b>Analytic Aspect</b> | <b>Synthetic Aspect</b> |
|------------------------------|--|------------------------|-------------------------|
| <b>2,000 word level</b>      |  |                        |                         |
| Simple words                 | .21 (.06)                              | .24 (.03)*             | .14 (.14)               |
| Complex words                | .13 (.16)                              | .23 (.04)              | .04 (.37)               |
| <b>3,000 word level</b>      |  |                        |                         |
| Simple                       | -.07 (.29)                             | .01 (.45)              | -.06 (.32)              |
| Complex                      | -.25 (.42)                             | .01 (.45)              | -.02 (.43)              |
| <b>5,000 word level</b>      |  |                        |                         |
| Simple                       | .02 (.43)                              | .06 (.31)              | .05 (.33)               |
| Complex                      | -.12 (.18)                             | -.10 (.22)             | -.17 (.10)              |
| <b>10,000 word level</b>     |  |                        |                         |
| Simple                       | -.18 (.09)                             | -.09 (.25)             | -.10 (.23)              |
| Complex                      | -.32 (.00)*                            | -.09 (.25)             | -.09 (.25)              |

\* Significance at the .05 level (one- tail)

Table 5 displays the relationship between simple vs. complex words and overall morphological awareness. It is worth remembering that the students' vocabulary size is within the 2000 word level. The students' performance on simple words at the 2,000 word level is positively correlated with their performance on the analytic aspects of morphological awareness; this relationship does not persist when considering the overall morphological awareness and its synthetic aspects. However, performance on Morphological Awareness Test does not make a difference on students' performance on complex words of the VLT. Overall, it is evident that the

performance on morphological awareness did not discriminate between the students' performance on simple vs. complex words.

To sum up, the results of the present study show that the students' overall morphological awareness and vocabulary size are limited. The students perform better in the Morpheme Identification Test (analysis) than they do in the Morphological Structure (synthesis). The relationship between the students' morphological awareness and vocabulary size is tenuous. The students' performance on morphological analysis does not play a role in their performance on simple words vs. complex words.

## Chapter 5

### Discussion

#### 5.1 Morphological Awareness

The first question of this study concerns the degree of the students' morphological knowledge and word formation rules (analysis and synthesis). This question is answered on the basis of the students' performance on the Morphological Awareness Test with two subsets of Morpheme Identification (analysis section) and Morphological Structure (synthesis section). The findings demonstrate that the students' overall morphological awareness is somewhat low (66% with a considerable variation among the results- see *section 4.1.1*). This is in comparison to Mc- Bride Change *et al.* (2005) who found that 'morphological awareness were good predictors of vocabulary knowledge' (p. 428) This highlights the students' limited abilities to reflect and manipulate the morphological structure of words.

The students in the present study are not able to recognize the morphological structure of complex words. From the perspective of cross-linguistic variation, Arabic morphology might have hindered the students from reading and understanding English complex words. The affixes of Arabic complex words are inseparable from the root (i.e. both affixes and roots are bound morphemes). It is more appropriate to say that Arabic language contains consonantal roots and patterns than saying that Arabic language contains affixes and roots (see *section 2.3*). Splitting Arabic complex words into its meaningful constituents is not sensible, considering the fact that Arabic morphology is of root- and- pattern morphology. Unable to appreciate the separability of bases from affixes, the students encode an unfamiliar English complex word as a whole and, therefore, they could not unlock the meanings of newly encountered

complex words. The Arab learners, especially the beginners, may transfer this opaque morphological structure of Arabic morphology to English morphology, making it more important to explicitly raise college-level Arab students' awareness of English morphological knowledge.

The students perform better with inflectional affixes than derivational affixes, which is consistent with the literature that indicates that the acquisition of inflection is ahead of acquisition of derivation (Carlisle and Stone, 2003). The results also reveal that the students perform better in the analysis section than they do in synthesis section. However, the results also show a floor effect in the synthesis test with eleven students' scoring the minimal score of 0%. This suggests that students are not able to use the parallel sentence and the morphological structure of previously encountered words to produce new words. In addition, synthesis requires more advanced skills than analysis according to Bloom's taxonomy- cognitive domain. The analytic aspect of morphological awareness is subsequent to synthetic aspects (Arnoff and Fudeman, 2005, Mc-Bride-Chang *et al.*, 2005). Taking this fact altogether with the students' linguistic level in the present study can explicate students' lower performance in the synthesizing morphological structure.

Inability to recognize the morphological structure of complex words and the inability to use morphological structure of previously encountered words suggest that there is an urgent need for morphological awareness intervention and explicit teaching of morphological units. For one thing, it is likely that morphological awareness leads to better learning outcomes as it is related to various language skills such as, spelling (Bear, Invernizzi, Templeton Templeton, & Johnston, 2008), vocabulary growth, and reading comprehension (Fowler & Liberman, 1995; Qian, 2002). Moreover, it has been demonstrated that learners are able to use their morphological knowledge to

arrive at the meaning of complex words (Gordon, 1989; Carlisle, 2000; Carlisle and Stone, 2003; Wysocki and Jenkins, 1987).

## 5.2 Vocabulary Size

The second research question of the study concerning the students' vocabulary size and its relationship to morphological awareness is answered using Nation's VLT. Vocabulary size is a measure of the coverage of vocabulary in an average text. The students' vocabulary size in this study is within the 2,000 word level. The average score for overall word levels is not calculated as many students did not answer the items in the three last levels. For instance, 7 students and 12 students obtained a raw score of zero at the 5,000 word level and the 10,000 word level respectively. Therefore, it is more credible to rely on the 2,000 word level as an indicator of students' vocabulary size in this study.

How are the results interpreted? According to Nation (2001), a learner needs to learn a 90% of the vocabulary at the 2,000 word level in order to achieve 80- 95 % coverage of text coverage. It is clear that the student in this study have not reached this level.

After being enrolled for one semester in English Intensive Course, the students' average score in the 2,000 word is 17.33 out of 30. According to Nation's (2001) interpretation of word levels, the students in the present study knew as little vocabularies as half of the vocabulary at the 2,000 word level. Learners with large vocabularies have been found to be proficient readers (Luppescu & Day, 1993). Since the students possessed limited vocabulary knowledge, they were considered inadequate readers or low academic achievers. The present study's students' vocabulary knowledge represents a potential coverage of only 46%- 54% of a text



vocabulary (see *Section 3.2.2*). This coverage, according to Nation, is unsatisfactory as to 80 %- 95% of coverage. The coverage of 95 % of the words in a text is essential for understanding and learning readings (Nation, 1990).

A close look at the Academic Word Level provides tangible evidence for the students' ability to cope with academic readings. Approximately 30 % of words are known by the students at this level. Out of 8% of the word coverage provided by this level (Nation, 1990), the students' percentage accounts for only 2.83% of words in average academic text. As evidenced in Laufer's (1992) study, academic words are critical to understanding and comprehending academic readings at school and university levels. The present study suggests that the students may have difficulties in comprehending college readings. It is important to bear in mind that the students were making a transition from an EFL course to content- based courses in a matter of one semester. Academic words (e.g. *inclination, alternative, modify, exclude, and indicate*) present a challenge to reading academic textbooks that are designed for English native speakers, hampering students' reading comprehension.

These results support an expansion of vocabulary program for this college for two reasons. Firstly, vocabulary knowledge reflects reading comprehension (Snow, Burns and Griffin, 1998) and general academic achievement (Beck, McKeown and Kucan, 2002; Biemiller, 1999). Small vocabulary size is a stumbling block in the path to academic success (Biemiller, 2001). Secondly, the students at the college are faced with a huge amount of readings that contains at least 100,000 different words (Graves, 2004) each semester. The amount of exposure to complex words in academic readings is substantial. Therefore, the students should be equipped with some strategies to unlock the meanings of newly encountered words, and need to be taught individual words.

### 5.3 Morphological Awareness, Vocabulary Size & Word Complexity

The second and third research question addressed by the study is whether correlations exist between morphological awareness and vocabulary size, and between performance on complex words vs. simple words and morphological awareness. It was expected that performance on vocabulary size, as assessed by the VLT, would correlate positively with the performance on morphological awareness and that there would be a relationship between performing on simple vs. complex words and morphological awareness. Generally, the present study reveal that there is no relationship between morphological awareness and vocabulary size, and that morphological knowledge does not discriminate between the students' performance on simple vs. complex words.

However, further analysis indicates that there are statistically significant differences between measures in scores even. It is found that there are a strong positive relationship between vocabulary size at the 2,000 word level and the analytic aspects of morphological awareness, and a positive strong relationship between simple words at the 2,000 word level and the analytic aspects. Regardless of the direction of the relationship, the analytic aspects of morphological awareness are correlated with vocabulary size (cf. the synthetic aspects), which reflects the fact that word formation analysis is subsequent to synthesis aspects (Arnoff and Fudeman, 2005, Mc-Bride-Chang *et al.*, 2005). The direction of the relationship in this case is indicative of the word level difficulty; as the level gets more sophisticated and advanced, the students' performance decreases more (i.e. the direction of the relationship is negative).

The relationships between overall morphological awareness and vocabulary size and between morphological awareness and word complexity (simple vs. complex) could not be established. This is inconsistent with a number of studies (Singson, Mahony, and Mann, 2000; Sternberg, 1987; White, Power & White, 1989; Wysocki & Jenkins 1987); there are several reasons for this.

The floor effect in the scores of the synthetic section of morphological awareness impacted on the relationship between overall morphological awareness and vocabulary size. Twelve students' scores are found at the bottom end of the performance scale (i.e. eight students scored zero; two students scored 3; two students scored 5). Therefore, no relationships are found between morphological awareness and vocabulary size and word complexity. This poor performance on the synthesis section leads to the second factor of task difficulty.

Task difficulty might have contributed to the failure to observe a relationship between morphological awareness and vocabulary size and word complexity. Looking at how the tasks of morphological awareness and word complexity are graded and sequenced gives hints as to why the present study obtained such results. Though affix neutrality was taken in consideration when designing the instruments, the design of the synthesis section seems inappropriate for the students' level. Note that the researcher modified the analysis task of morphological awareness test while she left the synthesis section unmodified. It is unclear the extent to which this affected the results. It is clear that care must be taken in the selection of items in this type of study. Below is a comment on the design of the synthesis section and having complex vs. simple words in the same test of the VLT.

The task of working out answers using frame sentence seemed beyond the ability of many of the students, despite the researcher's explanation and illustration of

the task. The frame sentence might have distracted students' from the main point of the task. An alternative way to explore morphological synthesis with the respect to the students' current level is to use a set of complex words that share some common morphemes along with the meaning of the complex words. The students' task would be to read the words and their meanings, trying to uncover the patterns within those words. Having done that, the students would be given new meanings related to the given set of words, and are asked to construct new words. There should be complex words vs. simple words task separate from vocabulary size as measured by the VLT.

The instruments' design should also be appropriate to the students' language level. McBride- Chang's *et al.* (2005) Morphological Awareness Test is designed for beginners, but this study showed that the test should not be merely adopted, but adapted to suit students' level of language proficiency. The researcher changed the Morpheme Identification Test (the analysis section in the researcher's term), but not the Morphological Structure Test (the synthesis section). The synthesis section of the study might have overestimated the students' explicit morphological awareness. As a result, the item design of the synthesis section should have been modified to match students' level. The question of should synthesis section be presented in isolation or in sentence context should be addressed before designing the task.

To sum up, the three factors of floor effects and task difficulty and item design clarify the present results of failing to find a relationship between morphological awareness and vocabulary size and word complexity.

## Chapter 6

### Summary and Conclusion

#### 6.1 Summary of the Study

The current study examined Omani EFL learners' morphological awareness and vocabulary size. The study is interested in whether morphological awareness and vocabulary size are correlated, and whether performance on morphological awareness discriminates between the students' performance in complex words vs. simple words. To answer the research questions, McBride- Chang's *et al.* (2005) Morphological Awareness Test and Nation's Vocabulary Level Test are adapted and used. The results reveal that the students' displayed low overall morphological awareness of word formation rules: morpheme identification (the analytic aspects) or morphological structure (the synthetic aspects). However, the students performed somewhat better in the analysis section than in the synthesis section. Also, the results show that the students' vocabulary size is within the 2,000 word level. Their vocabulary knowledge is relatively low even at the 2,000 word level, indicating that they will struggle to understand an average text.

The results illustrate that for the learners of this study there is no relationship between morphological awareness and vocabulary size and between morphological awareness and word complexity. The study fails to show any correlations between the constructs due to some factors of floor effects, task difficulty, and instruments item designs.

## 6.2 Pedagogical Implications

There are at least two aspects of the preceding discussion that have direct implications for a vocabulary intervention program.

Considering the relationship between vocabulary instruction and reading abilities (e.g. Snow, Burns and Griffin, 1998) and the relationship between morphological awareness and various language skills (Bear, Invernizzi, Templeton, & Johnston, 2008; Treiman & Casar, 1996), a new outlook of vocabulary instruction should emerge in the college. The study reveals that the students perform poorly in morphological awareness and vocabulary size tests, which indicates that there is an urgent need to include explicit instruction on morphological knowledge and contextual analysis (i.e. inferring meaning from context for these students). Promoting students' morphological awareness should be seen as a metalinguistic tool for word consciousness (i.e. the knowledge and characteristics essential for learners to use words effectively) (Scott and Nagy, 2004). Concurrently, the students are more likely to approximate the meaning from morphological units (Gordon, 1989; Carlisle and Stone, 2003), boosting their vocabulary repertoire.

Teaching affixes would promote students' vocabulary size (e.g. Baumann *et al.*, 2003; White *et al.*, 2002). As such, vocabulary programs should follow the general guidelines provided by Graves (2004) to build the students' vocabulary knowledge (engaging students in extensive reading and multiple exposures to words), teaching individual words (via both direct and indirect vocabulary instruction), teaching word- learning strategies and fostering word consciousness). Promoting students' vocabulary knowledge and morphological knowledge predicates their academic success (Beck, McKeown, and Kucan, 2002) in the sense that they move from learning to read to reading to learn independently. However, learners should be

acquainted with the pitfalls of deriving words from context and from morphological parts so that they can effectively use words.

Part of expanding students' vocabulary, the learners should be introduced to academic words that are crucial for academic success. The Academic Word List (AWL) provided by Coxhead (2000) should be adapted to the students' level and to the vocabulary- teaching and learning strategies. Including academic words in the vocabulary instruction can be productive. The students are most likely to encounter academic words; those words readily contribute to the comprehension.

### 6.3 Study Limitations & Recommendations for Further study

It is important to bear in mind that the present study was a small- scale study, and that statistical power is an issue. Due to limited availability of time, the study also was carried out in only one day. This also affected the students' performance.

However, despite the limited results, it would be interesting to replicate this study after a vocabulary intervention program is introduced. In future tests, the synthesis section in morphological awareness test should be modified to better suit the students in the college (see *Section 5.3*). The task of complex words vs. simple words should be conducted separately from the task of the VLT. It is advisable to administer morphological awareness test in one day and vocabulary level test in another day to minimize cognitive load on the students. It might also be useful for that the present study, with some modifications, to be carried out in the other colleges of applied sciences in Oman to see if there are differences between students' performance in each college.

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## **APPENDIX A**

### **Information Letter (English Version)**

November, 2007

#### **To Omani EFL Students at a College of Applied Sciences**

Dear Colleagues,

I am carrying out a research to explore the morphological awareness of the students of the colleges of applied sciences. I would like to investigate to what extent the students of the college of applied sciences are aware of the analytic and synthetic rules of word formation and how this morphological awareness correlates with vocabulary size and complexity.

As a student enrolled in English Language Intensive Course, you have gained, and are gaining, certain size of English vocabulary knowledge, and have developed some strategies by which you can understand first- time encountered words. Applied sciences administration, Applied Sciences faculties and you must be aware of those strategies in order to help you promoting your vocabulary knowledge size and strategies by which you can deal with newly encountered words. Your response to the research package (Morphological Awareness Test and Vocabulary Level Test) enhances your understanding and the understanding of the administration and faculties of Applied Sciences Collages of how to improve the reading training program in the college.

You will be first asked to complete Morphological Awareness Test adapted from McBride–Chang et al (2005). After you complete the test, you will be asked to complete a



vocabulary level test, adapted from Nation's (2001) word level test. Please feel free to answer the tests at your own pace.

Your participation in this study is voluntary and at no cost to your academic grades. Your confidentiality and anonymity are assured. Although your research package is code-numbered, you will not be individually identified with your responses. You are encouraged to note your code- number. Please understand that use of these data will be only confined to this study, as authorized by the School of Languages and Comparative Cultural Studies, University of Queensland.

I greatly appreciate your participation in this research. The Morphological Awareness Test will take approximately 8-10 minutes to complete while the Vocabulary Level Test will take around 25- 30 minutes depending your pace. **Please answer all the questions if you agree to participate in the research project.**

I will be glad to answer any questions you have regarding the study.

Thank you for your interest and participation in this study. I genuinely appreciate your time.

Sincerely,

Badriya Al-Farsi

MA student in Applied Linguistics

The School of Languages and Comparative Cultural Studies

University of Queensland

[s4132517@student.uq.edu](mailto:s4132517@student.uq.edu)

## APPENDIX B

### Information Letter (Arabic Version)

نوفمبر 2007

الى الطلبة العمانيين الدارسين للغة الإنجليزية لغير الناطقين بها في إحدى كليات العلوم التطبيقية  
الزملاء الأعزاء:

اقوم باجراء دراسة لمعرفة ماهية الإدراك الصرفي وعلاقته بحجم المفردات وتراكيبها للطلبة العمانيين الدارسين  
للغة الإنجليزية لغير الناطقين بها في إحدى كليات العلوم التطبيقية. اود ان ابحت مدى ادراك الطلبة في كليات  
العلوم التطبيقية للقواعد التحليلية والتجميعية لبناء المفردات وكيف ان هذا الإدراك الصرفي يرتبط بحجم  
المفردات وتراكيبها.

انت كطالب منتسب في برنامج اللغة الانجليزية المكثفة , لقد اکتبست ومازلت تکتسب حجم معين من المفردات  
في اللغة الانجليزية وكذلك طورت بعض الاستراتيجيات لفهم المفردات التي تصادفها لأول مرة. لابد ان تكون  
ادارة كلية العلوم التطبيقية واقسامها وكذلك انت واعيا لهذه الاستراتيجيات حتى تطور من حجم مفرداتك في اللغة  
الانجليزية والاستراتيجيات التي تساعدك على التعامل مع المفردات الجديدة. استجابتك لأدوات البحث( والمتكونة  
من فحص الادراك الصرفي وفحص مستويات المفردات ) يعزز من فهمك وفهم ادارة كليات العلوم التطبيقية  
لكيفية تطوير البرنامج التدريبي للقراءة في الكلية.

سوف يطلب منك أولا الإستجابة لفحص الادراك الصرفي والذي تم تنقيحه من الباحثين ماك برايد- تشانج  
وأخرون (2005). وبعد ذلك سيطلب منك تكملة فحص مستويات المفردات والذي عدل من فحص نيشن  
(2001) لمستويات المفردات. رجاء خذ راحتك اثناء الاستجابة لهذه الفحوصات.

ان مشاركتك لهذه الدراسة امرًا تطوعيا ولا يؤثر على درجاتك الاكاديمية بشكل أو بآخر. ان خصوصية وسرية  
بياناتك مضمونة. بالرغم من ان ادوات البحث تحتوي على اكواد , الباحث لن يقوم بالاشارة الى استجابتك فرديا .

يستحسن ان تقوم بتدوين الكود الخاص بك . رجاء لاحظ ان البيانات التي سيتم جمعها خاصة بهذه الدراسة فقط  
كما هو مفوض من قبل قسم اللغات والدراسات المقارنة للثقافات بجامعة كوينزلاند.

اقدر مشاركتك في هذا البحث. سيستغرق فحص الادراك الصرفي من 8-10 دقائق تقريبا لإكماله بينما سيستغرق  
فحص مستويات المفردات من 25-30 دقيقة اعتمادا على سرعتك في الاستجابة. رجاء قم باكمال جميع  
اسئلة الفحوصات اذا وافقت على الانضمام في هذه الدراسة .

ساكون سعيدة لاجابة اسئلتك حول الدراسة اذا رغبت.

شكرا لاهتمامك وانضمامك في هذه الدراسة . بكل صدق اقدر وقتك الذي اسغرقتة معنا لاجراء هذه الدراسة.

مع احترامي .....

بدرية الفارسي

طالبة ماجستير في علوم اللغة التطبيقية

قسم اللغات والدراسات المقارنة للثقافات

جامعة كوينزلاند

s4132517@student.uq.edu.au

## APPENDIX C

### Morphological Awareness Test

#### A. Analysis (morpheme identification)

Please segment the following words into meaningful chunks, and state the meanings

of those chunks. (قم بتجزئة الكلمات التالية إلى أجزاء مفهومة مع ذكر معاني هذه الأجزاء إذا أمكن)

e.g. **Childhoods:** child: little human being, -hood: the state of being, -s: to indicate plural

**washing machine:**

**freedom:**

**likelihood:**

**harden:**

**demotivation:**

**spaciousness:**

**oxen:**

**partially:**

**productive:**

**babysitting:**

**nationwide:**

**unpredictability:**

**education:**

**eyebrow**

## B. Synthesis (morphological structure)

Using only one word, come up with names for the objects or actions that are described below. See the example. (كون كلمة واحدة فقط لتسمية الأشياء أو الأفعال الموصوفة أدناه. انظر إلى المثال التالي)

A ballpoint pen that is blue in color. We call that **blue ballpoint pen**.

Ahmed **lived longer** than Ali. Ahmed **outlived** Ali.

James **performed better** than Juliet in the reading test. James.....Juliet.

There is a kind of train that runs **under the ground**. We call that an **underground train**. There is another kind of train that **runs over the ground**. What do we call that?

If a researcher **examined** James. James is an **examinee**

If a researcher **interviewed** Ahmed. Ahmed is an .....

If Ali can only see **short distanced** things. He is **short-sighted**.

If James can only see **near things** more clearly than distant ones. He is .....

There is a **passer-by** near your house. Now, there are three of them. So there are

.....

\_\_\_\_\_

Some people wear rings on their **ears**, they are called **earrings**.

Some people wear rings on their **nose**, what should we call that?

Many people wear laces on their **neck** called a **necklace**. Some people wear laces on their **foot**, what should we call that?

**Basketball** is a game where you throw a **ball through a basket**. Tim made up a new game where he throws a **ball into a bucket**. What should he call the game?

Look at John. John is **stotting**. Yesterday he did this. What did he do yesterday?  
Yesterday, he \_\_\_\_\_

This animal is called a **wug**. There are four of them. There are four  
\_\_\_\_\_

James is professional in taking **photographs**. He is a **photographer**.  
Jerry is good at **eavesdropping**. His is an \_\_\_\_\_

Joe knows how to **fleamp**. He is **fleamping** something. He did the same thing

yesterday. What did he do yesterday?

Yesterday he \_\_\_\_\_

This is a **krest**; it's used on letters. This letter has been **krested**. The postman is

\_\_\_\_\_ the letters.

Sometimes the **raindrops** fall from the sky and we call that **raining**. Very rarely, **frogs**

Fall from the sky, we call that \_\_\_\_\_



## APPENDIX D

### Vocabulary Level Test

This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example.

(هذا فحص المفردات. صل الكلمة من العمود الأيمن بما يناسبها من معنى في العمود الأيسر كما في المثال التالي)

1. business
2. clock \_\_\_\_\_ part of a house .
3. horse \_\_\_\_\_ animal with four legs
4. pencil \_\_\_\_\_ something used for writing
5. shoe
6. wall

You answer it in the following way.

1. business
2. clock 6 part of a house
3. horse 3 animal with four legs
4. pencil 4 something used for writing
5. shoe
6. wall

Some words are in the test to make it more difficult. You do not have to find a meaning for these words. In the example above, these words are business, clock, and shoe. If you have no idea about the meaning of a word, do not guess. But if you think you might know the meaning, then you should try to find the answer.

#### Version 1: The 2,000-word level

1. birth
2. dust \_\_\_\_\_ game
3. operation \_\_\_\_\_ winning
4. row \_\_\_\_\_ being born
5. sport
6. victory

1. choices
2. crops \_\_\_\_\_ heat
3. fleshy \_\_\_\_\_ not thin, having abundant meat
4. salaries \_\_\_\_\_ the amounts of money paid regularly for doing a job
5. secrets
6. temperature

1. cap
2. education \_\_\_\_\_ teaching and learning
3. journey \_\_\_\_\_ numbers to measure with
4. parent \_\_\_\_\_ going to afar place
5. scale
6. trick

1. attacking

- 2. charmed \_\_\_\_\_ a place to keep gold and silver
- 3. lacking \_\_\_\_\_ to be affected by magic or attracted by pleasing quality
- 4. pen \_\_\_\_\_ not having something
- 5. shadowed
- 6. treasury

- 1. cream
- 2. factory \_\_\_\_\_ part of milk
- 3. nail \_\_\_\_\_ a lot of money
- 4. pupil \_\_\_\_\_ person who is studying
- 5. sacrifice
- 6. wealth

- 1. adopted
- 2. climbed \_\_\_\_\_ went up
- 3. examined \_\_\_\_\_ looked at closely
- 4. poured \_\_\_\_\_ was on every side
- 5. satisfied
- 6. surrounded

- 1. bake
- 2. connect \_\_\_\_\_ join together
- 3. inquire \_\_\_\_\_ walk without purpose
- 4. limit \_\_\_\_\_ keep within a certain size
- 5. recognize
- 6. wander

- 1. burst
- 2. concerned \_\_\_\_\_ break open
- 3. delivery \_\_\_\_\_ something that enhances value or excellence
- 4. folded \_\_\_\_\_ taking something to someone
- 5. improvement
- 6. urge

- 1. original
- 2. private \_\_\_\_\_ first
- 3. royal \_\_\_\_\_ not public
- 4. slow \_\_\_\_\_ all added together
- 5. sorry
- 6. total

- 1. braver
- 2. electric \_\_\_\_\_ not commonly done
- 3. firmer \_\_\_\_\_ not having food
- 4. hunger \_\_\_\_\_ more courageous
- 5. local
- 6. unusual

### Version 1: The 3,000-word level

1. belt
2. climate \_\_\_\_\_ idea
3. executive \_\_\_\_\_ inner surface of your hand
4. notion \_\_\_\_\_ strip of leather worn around the waist
5. palm
6. victim

1. acid
2. bishop \_\_\_\_\_ noticeably cold
3. chilly \_\_\_\_\_ farm animals
4. oxen \_\_\_\_\_ organizations or frameworks
5. ridge
6. structures

1. bench
2. charity \_\_\_\_\_ long seat
3. jar \_\_\_\_\_ help to the poor
4. mate \_\_\_\_\_ part of a country
5. mirror
6. province

1. boots
2. devices \_\_\_\_\_ army officers
3. lieutenants \_\_\_\_\_ a kind of stones
4. marbles \_\_\_\_\_ tubes through which blood flows
5. phrases
6. veins

1. apartment
2. candle \_\_\_\_\_ a place to live
3. draft \_\_\_\_\_ chance of something happening
4. horror \_\_\_\_\_ first rough form of something written
5. prospect
6. timber

1. betray
2. dispose \_\_\_\_\_ frightening
3. embrace \_\_\_\_\_ said publicly
4. injury \_\_\_\_\_ serious damage
5. proclaimed
6. scary

1. encounter
2. illustrate \_\_\_\_\_ meet
3. inspire \_\_\_\_\_ beg for help
4. plead \_\_\_\_\_ close completely
5. seal
6. shift

1. assistance
2. bother \_\_\_\_\_ help
3. condemn \_\_\_\_\_ device to cut neatly
4. erects \_\_\_\_\_ spins around quickly
5. trimmer
6. whirls

1. annual
2. concealed \_\_\_\_\_ wild
3. definite \_\_\_\_\_ clear and certain
4. mental \_\_\_\_\_ happening once a year
5. previous
6. savage

1. dimmer
2. junior \_\_\_\_\_ strangely
3. magnificently \_\_\_\_\_ wonderfully
4. maternal \_\_\_\_\_ more not clearly lit
5. Oddly
6. wearily

**Version 1: The 5,000-word level**

1. balloon
2. federation \_\_\_\_\_ bucket
3. novelty \_\_\_\_\_ unusual interesting thing
4. pail rubber \_\_\_\_\_ bag that is filled with air
5. veteran
6. ward

1. alcoholic
2. aprons \_\_\_\_\_ stages of development
3. hips \_\_\_\_\_ marked with untidiness or dirtiness
4. lure \_\_\_\_\_ cloths worn in front to protect your clothes
5. messy
6. phases

1. apparatus
2. compliment \_\_\_\_\_ expression of admiration
3. ledge \_\_\_\_\_ set of instruments or machinery
4. revenue \_\_\_\_\_ money received by the government
5. scrap
6. tile

1. bulbs
2. documentary \_\_\_\_\_ female horses
3. legions \_\_\_\_\_ large groups of soldiers or people
4. mares \_\_\_\_\_ contained or certified in wiring
5. pulse
6. tub

1. concrete
2. era \_\_\_\_\_ circular shape
3. fibre \_\_\_\_\_ top of a mountain
4. loop \_\_\_\_\_ a long period of time
5. plank
6. summit

1. blender
2. devised \_\_\_\_\_ mixer
3. hugs \_\_\_\_\_ planned or invented
4. lease \_\_\_\_\_ the actions of holding something tightly in your arms
5. plague
6. rejects

1. abolish
2. drip \_\_\_\_\_ bring to an end by law
- 3 insert \_\_\_\_\_ guess about the future
4. predict \_\_\_\_\_ calm or comfort someone
5. Soothe
6. thrive

1. bleed
2. collapsed \_\_\_\_\_ something or somebody that comes before
3. precedent \_\_\_\_\_ fell down suddenly
4. rejected \_\_\_\_\_ movements with quick steps and jumps
5. skips
6. tease

1. casual
2. desolate \_\_\_\_\_ sweet-smelling
3. fragrant \_\_\_\_\_ only one of its kind
4. radical \_\_\_\_\_ good for your health
5. unique
6. wholesome

1. gloomier
2. gross \_\_\_\_\_ empty space
3. finite \_\_\_\_\_ darker or sadder
4. limp \_\_\_\_\_ with an end
5. slimmer
6. vacancy

**Version 1: The 10,000- word level**

1. antics
2. batch \_\_\_\_\_ foolish behavior
3. connoisseur \_\_\_\_\_ a group of things
4. foreboding \_\_\_\_\_ a person with a good knowledge of art or music
5. haunch
6. scaffold

1. spaciousness
2. lenient \_\_\_\_\_ pretended
3. disheveled \_\_\_\_\_ large, vast, or ample
4. feigned \_\_\_\_\_ untidy, or marked with disorder
5. altruism
6. scaffold

1. causality
2. flurry \_\_\_\_\_ someone killed or injured
3. forth \_\_\_\_\_ being away from other people
4. revelry \_\_\_\_\_ noisy and happy celebration
5. rut
6. seclusion

1. agile
2. vivacious \_\_\_\_\_ easily accomplished
3. facile \_\_\_\_\_ serving to support or reinforce
4. pompous \_\_\_\_\_ lively
5. collateral
6. dubious

1. arsenal
2. barracks \_\_\_\_\_ happiness
3. deacon \_\_\_\_\_ difficult situation
4. felicity \_\_\_\_\_ minister in a church
5. predicament
6. spore

1. quadruped
2. perilous \_\_\_\_\_ criminal, or a person who violates the law
3. collegial \_\_\_\_\_ any animals that walk with four legs
4. malefactor \_\_\_\_\_ full of risk
5. eloquent
6. vicarious

1. blaspheme
2. endorse \_\_\_\_\_ slip or slide
3. nurture \_\_\_\_\_ give care and food to
4. skid \_\_\_\_\_ speak badly about God
5. squint
6. straggle

1. authoritarianism
2. equalitarian \_\_\_\_\_ related to the native language of a country or locality
3. humanitarian \_\_\_\_\_ the state of favoring blind authority
4. outrageous \_\_\_\_\_ violent
5. domesticity
6. vernacularly

1. auxiliary
2. candid \_\_\_\_\_ bad- tempered
3. luscious \_\_\_\_\_ full of self- importance
4. morose \_\_\_\_\_ helping, adding support
5. palled
6. pompous

1. audacious
2. bribed \_\_\_\_\_ capable of being decomposed
3. lackluster \_\_\_\_\_ turned aside from the main subject
4. biogradable \_\_\_\_\_ lacking in brilliance
5. acquaintance
6. digressed

### Version 1: Academic Vocabulary

1. benefit
2. labor \_\_\_\_\_ work
3. percent \_\_\_\_\_ part of 100
4. principle \_\_\_\_\_ general idea used to guide one's actions
5. source
6. survey

1. element
2. fund \_\_\_\_\_ money for a special purpose
3. layer \_\_\_\_\_ skilled way to doing something
4. philosophy \_\_\_\_\_ study of the meaning of life
5. proportion
6. technique

1. consent
2. enforcement \_\_\_\_\_ total
3. investigation \_\_\_\_\_ agreement or permission
4. parameter \_\_\_\_\_ trying to find information about something
5. sum
6. trend

1. decade
2. fee \_\_\_\_\_ 10 years
3. file \_\_\_\_\_ subject of discussion
4. incidence \_\_\_\_\_ money paid for services
5. perspective
6. topic

1. colleague
2. erosion \_\_\_\_\_ action against the law
3. format \_\_\_\_\_ wearing away gradually
4. inclination \_\_\_\_\_ shape or size of something
5. panel
6. violation

1. achieve
2. conceive \_\_\_\_\_ change
3. grant \_\_\_\_\_ connect together
4. link \_\_\_\_\_ finish successfully
5. modify
6. offset

1. convert
2. design \_\_\_\_\_ keep out
3. exclude \_\_\_\_\_ stay alive
4. facilitate \_\_\_\_\_ change from one thing into another
5. indicate
6. survive

1. anticipate
2. compile \_\_\_\_\_ keep out
3. convince \_\_\_\_\_ expect something will happen
4. denote \_\_\_\_\_ produce books and newspaper
5. manipulate
6. publish

1. equivalent
2. financial \_\_\_\_\_ most important
3. forthcoming \_\_\_\_\_ concerning sight
4. primary \_\_\_\_\_ concerning money
5. random
6. visual

1. alternative
2. ambiguous \_\_\_\_\_ last or most important
3. empiric \_\_\_\_\_ something different that can be chosen
4. ethnic \_\_\_\_\_ concerning people from a certain nation
5. mutual
6. ultimate



## APPENDIX E

### Simple words

#### Version 1: The 2,000-word level

1. birth
2. dust \_\_\_\_\_ game
3. operation \_\_\_\_\_ winning
4. row \_\_\_\_\_ being born
5. sport
6. victory
1. cap
2. education \_\_\_\_\_ teaching and learning
3. journey \_\_\_\_\_ numbers to measure with
4. parent \_\_\_\_\_ going to a far place
5. scale
6. trick

1. cream
2. factory \_\_\_\_\_ part of milk
3. nail \_\_\_\_\_ a lot of money
4. pupil \_\_\_\_\_ person who is studying
5. sacrifice
6. wealth

1. original
2. private \_\_\_\_\_ first
3. royal \_\_\_\_\_ not public
4. slow \_\_\_\_\_ all added together
5. sorry
6. total

1. bake
2. connect \_\_\_\_\_ join together
3. inquire \_\_\_\_\_ walk without purpose
4. limit \_\_\_\_\_ keep within a certain size
5. recognize
6. wander

#### Version 1: The 3,000-word level

1. belt
2. climate \_\_\_\_\_ idea
3. executive \_\_\_\_\_ inner surface of your hand
4. notion \_\_\_\_\_ strip of leather worn around the waist
5. palm
6. victim

1. bench
2. charity \_\_\_\_\_ long seat

- |               |       |                                       |
|---------------|-------|---------------------------------------|
| 3. jar        | _____ | help to the poor                      |
| 4. mate       | _____ | part of a country                     |
| 5. mirror     |       |                                       |
| 6. province   |       |                                       |
| 1. apartment  |       |                                       |
| 2. candle     | _____ | a place to live                       |
| 3. draft      | _____ | chance of something happening         |
| 4. horror     | _____ | first rough form of something written |
| 5. prospect   |       |                                       |
| 6. timber     |       |                                       |
| 1. encounter  |       |                                       |
| 2. illustrate | _____ | meet                                  |
| 3. inspire    | _____ | beg for help                          |
| 4. plead      | _____ | close completely                      |
| 5. seal       |       |                                       |
| 6. shift      |       |                                       |
| 1. annual     |       |                                       |
| 2. concealed  | _____ | wild                                  |
| 3. definite   | _____ | clear and certain                     |
| 4. mental     | _____ | happening once a year                 |
| 5. previous   |       |                                       |
| 6. savage     |       |                                       |

**Version 1: The 5,000-word level**

- |                |       |                                  |
|----------------|-------|----------------------------------|
| 1. balloon     |       |                                  |
| 2. federation  | _____ | bucket                           |
| 3. novelty     | _____ | unusual interesting thing        |
| 4. pail rubber | _____ | bag that is filled with air      |
| 5. veteran     |       |                                  |
| 6. ward        |       |                                  |
| 1. apparatus   |       |                                  |
| 2. compliment  | _____ | expression of admiration         |
| 3. ledge       | _____ | set of instruments or machinery  |
| 4. revenue     | _____ | money received by the government |
| 5. scrap       |       |                                  |
| 6. tile        |       |                                  |
| 1. concrete    |       |                                  |
| 2. era         | _____ | circular shape                   |
| 3. fibre       | _____ | top of a mountain                |
| 4. loop        | _____ | a long period of time            |
| 5. plank       |       |                                  |
| 6. summit      |       |                                  |
| 1. abolish     |       |                                  |
| 2. drip        | _____ | bring to an end by law           |
| 3. insert      | _____ | guess about the future           |
| 4. predict     | _____ | calm or comfort someone          |

5. Soothe
6. thrive

1. casual
2. desolate
3. fragrant
4. radical
5. unique
6. wholesome

\_\_\_\_\_ sweet-smelling  
\_\_\_\_\_ only one of its kind  
\_\_\_\_\_ good for your health

**APPENDIX F**  
**Complex Words**

**Version 1: The 2,000-word level**

1. choices
2. crops \_\_\_\_\_ heat
3. fleshy \_\_\_\_\_ not thin, having abundant meat
4. salaries \_\_\_\_\_ the amounts of money paid regularly for doing a job
5. secrets
6. temperature

1. attacking
2. charmed \_\_\_\_\_ a place to keep gold and silver
3. lacking \_\_\_\_\_ to be affected by magic or attracted by pleasing quality
4. pen \_\_\_\_\_ not having something
5. shadowed
6. treasury

1. adopted
2. climbed \_\_\_\_\_ went up
3. examined \_\_\_\_\_ looked at closely
4. poured \_\_\_\_\_ was on every side
5. satisfied
6. surrounded

1. burst
2. concerned \_\_\_\_\_ break open
3. delivery \_\_\_\_\_ something that enhances value or excellence
4. folded \_\_\_\_\_ taking something to someone
5. improvement
6. urge

1. braver
2. electric \_\_\_\_\_ not commonly done
3. firmer \_\_\_\_\_ not having food
4. hunger \_\_\_\_\_ more courageous
5. local
6. unusual

**Version 1: The 3,000-word level**

1. acid
2. bishop \_\_\_\_\_ noticeably cold
3. chilly \_\_\_\_\_ farm animals
4. oxen \_\_\_\_\_ organizations or frameworks
5. ridge
6. structures

1. boots
2. devices \_\_\_\_\_ army officers
3. lieutenants \_\_\_\_\_ a kind of stones
4. marbles \_\_\_\_\_ tubes through which blood flows
5. phrases
6. veins

1. betray
2. dispose \_\_\_\_\_ frightening
3. embrace \_\_\_\_\_ said publicly
4. injury \_\_\_\_\_ serious damage
5. proclaimed
6. scary

1. assistance
2. bother \_\_\_\_\_ help
3. condemn \_\_\_\_\_ device to cut neatly
4. erects \_\_\_\_\_ spins around quickly
5. trimmer
6. whirls

1. dimmer
2. junior \_\_\_\_\_ strangely
3. magnificently \_\_\_\_\_ wonderfully
4. maternal \_\_\_\_\_ more not clearly lit
5. Oddly
6. wearily

**Version 1: The 5,000-word level**

1. alcoholic
2. aprons \_\_\_\_\_ stages of development
3. hips \_\_\_\_\_ marked with untidiness or dirtiness
4. lure \_\_\_\_\_ cloths worn in front to protect your clothes
5. messy
6. phases

1. bulbs
2. documentary \_\_\_\_\_ female horses
3. legions \_\_\_\_\_ large groups of soldiers or people
4. mares \_\_\_\_\_ contained or certified in wiring
5. pulse
6. tub

1. blender
2. devised \_\_\_\_\_ mixer
3. hugs \_\_\_\_\_ planned or invented
4. lease \_\_\_\_\_ the actions of holding something tightly in your arms
5. plague

6. rejects

1. bleed

2. collapsed

3. precedent

4. rejected

5. skips

6. tease

\_\_\_\_\_ something or somebody that comes before

\_\_\_\_\_ fell down suddenly

\_\_\_\_\_ movements with quick steps and jumps

1. gloomier

2. gross

3. finite

4. limp

5. slimmer

6. vacancy

\_\_\_\_\_ empty space

\_\_\_\_\_ darker or sadder

\_\_\_\_\_ with an end