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# **A Study of Acquiring L2 Vocabulary Through Using Word Part Strategy**

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## **Abstract**

Vocabulary learning strategy plays an important role in vocabulary acquisition; one of the major vocabulary strategies is word part strategy. The purpose of this study is to investigate whether word part strategy can help students to understand words and facilitate vocabulary acquisition. Ten teacher trainee students from a university in Sweden participated in the study. All were given a vocabulary pre-test, a lecture about word-formation rules, two vocabulary tests and a questionnaire. The results show that word part strategy is helpful in understanding words and facilitating vocabulary acquisition. The strategy is especially useful for those students who have a good knowledge of affixes. In addition, the choice of affixes also affects the application of word part strategy. In order to master word part strategy, more time is needed to learn the meaning of affixes and to practise how to re-express the meaning of words with the aid of the meaning of the word parts. The results of the study show that there are great differences between individual results, which, in turn, leads to a questioning of the efficiency of word part strategy. The present study is a starting point for further research on the connection between students' level of English and the effectiveness of word part strategy as a teaching method.

**Key Words:** word part strategy; vocabulary acquisition; affix knowledge

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## 1. Introduction

Since the initiation of research into second language acquisition (SLA) in the 1960s, scholars have specialised in particular areas, such as learner errors, vocabulary acquisition, learner strategies etc. (Ellis, 1994, pp. 1-3). The role of lexical units has been stressed as an aspect of vocabulary acquisition, and several approaches have been proposed that “view vocabulary and lexical units as central in learning and teaching” (Richards & Rodgers, 2001, p. 132). This is because words as the smallest unit of meaning are a pre-requisite for language learning and linguistic communication.

Two separate studies have been carried out to measure the size of English vocabulary; *Webster’s Third International Dictionary* (1963), for example, has a vocabulary of around 54,000 word families<sup>1</sup>, which is a huge goal for second language learners to achieve (Nation & Waring, 1997, p. 7) and an impossible task for teachers to fulfil in school. Therefore, it is important for second language learners to acquire useful vocabulary learning strategies to reduce the “learning burden” as well as to learn new words by themselves.

An efficient way of lightening the “burden” according to Nation (2001) is through learning word parts, i.e., affixes and stems of new words (p. 46). Bauer and Nation (1993) also state that “once the base word or even a derived word is known, the recognition of other members of the family requires little or no extra effort” (p. 253). Thus, acquiring knowledge of word-formation rules is a useful learning strategy for second language learners when acquiring new words.

### 1.1 Aim

This study aims to investigate the efficiency of learning vocabulary with the aid of the word part strategy. The study focuses on the area of derivation rules and examines to what extent the learning strategy of using word-formation rules can help students to understand new words and facilitate vocabulary acquisition. The factors that affect the effectiveness of mastering word part strategy are also discussed in the study.

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<sup>1</sup> A word family is defined as “a base word with its inflections and derivatives” (Schmitt & McCarthy, 1997, p. 331). It is a unit to count words. For example, “happy” “happiness” “unhappiness” “happily” can be counted as one word.

## ***1.2 Material and Method***

The study consists of a pre-test, a lecture about word-formation rules, two vocabulary tests and a questionnaire. Sixteen college students originally agreed to take part, but four of them failed to complete the research despite repeated reminders. Therefore, only twelve students participated in the tests, lecture and questionnaire. Among these twelve students, two of them did not perform earnestly, and their negative attitudes towards the tests made them write invalid answers (one wrote almost nothing and the other copied the given meaning of the roots in Test A). Therefore, their results of the test were excluded and only ten subjects' results were analyzed. More details about the subjects, materials and the method are provided below.

### **1.2.1 Subjects**

The participants in this study are first-year university students in Sweden. They all major in teacher education in Sweden and have learned English as a second language for at least fifteen years. There are no formal test results to show the students' English level, but they have all passed examinations of each module of their university course and they have all fulfilled the entrance requirements for the course.

### **1.2.2 Target affixes**

The affixes taught in the lecture were ten affixes selected from Levels 4 to 7 in Bauer and Nation's (1993) list of affixes. Five prefixes and five suffixes were chosen according to the regularity (how much the written or spoken form of the root or affix changes because of affixation) and frequency (the number of words in which affix occurs) of the affixes; they were: *-ation*, *-ize*, *-ous*, *-ance*, *-ant*, *in-*, *anti-*, *sub-*, *re-* and *de-*. These affixes are all derivational affixes. The inflectional affixes were excluded because the study aims to investigate whether the knowledge of affixes can help students to understand the meaning of a particular word, while inflectional affixes<sup>2</sup> do not change word classes and also do not change meaning of words. Except for the frequently used suffixes *re-* and *de-*, which are from the Levels 6 and 7 in Bauer and Nation's affix list, all the other eight affixes are regular affixes from Level 4 and 5 in the list.

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<sup>2</sup> The inflectional affixes include “-s (plural), -ed, -ing, -s (3<sup>rd</sup> person singular), -s (possessive), -er (comparative), -est (superlative), -est (superlative)” (Nation, 2001, p. 263).

This is because affixes that are not regular can be confusing and cause problems (of which more in Section 2.4).

### **1.2.3 Target words**

Since the level of the subjects' competence in English varies, advanced English words were chosen as the target words. The target words in this investigation were twenty advanced English words; every two words shared the same affix. The reason for choosing advanced English words is that most advanced words are unknown to all the students. In this way, the results of the investigation can show whether word part strategy can help students work out new words and facilitate vocabulary acquisition. In order to ensure that the target words were unfamiliar to the students, a pre-test was taken ten days before the lecture. This is because Hulstijn (2003) claims that the investigation will be influenced by the pre-test if the pre-test is not conducted at least one week before the research (p. 351).

### **1.2.4 Pre-test**

The form of the pre-test was created by Nation (2001, p. 416). It modified Nation's format in that four target words were chosen among six choices (see Appendix 1) (three target words were chosen among six choices in Nation's test). There were sixty words in the test, and forty (every four words shared the same affix) were tested; the other twenty words were excluded in order to make the test more difficult.

### **1.2.5 Brief lecture about word-formation rules**

The lecture about word part strategy and basic word-formation knowledge was given ten days after the pre-test because students needed to acquire basic knowledge about word-formation as well as the meaning of affixes in order to understand how to apply word part strategy when exploring word meaning. The meanings of the ten selected affixes were taught in the lecture and common words using these affixes were analyzed with the aid of word part strategy (see Appendix 2). All the subjects were present and were thus given the same information.

### **1.2.6 Tests**

Two vocabulary tests were given after the lecture (see Appendix 3). There were twenty unknown words in Test A, and the meaning of the roots was given. The subjects were required to use word-

formation rules and knowledge of affixes to explain the meaning of the words in English to see if they could use the meaning of each part to define the words. The subjects were required to hand in Test A and were then given Test B. The twenty words to be tested in Test B were the same ones in Test A. The subjects were asked to match the correct meaning of twenty words from forty choices, which had been divided into four groups (ten words in each group). There was a balance between the numbers of nouns and verbs (or adjectives) in each group. Words that can be easily confused were also put into the same group. The test was similar to the pre-test, which modified Nation's format in that five target words were chosen among ten choices. Therefore, there were altogether forty words in the test but only twenty words were tested; the other twenty words were excluded in order to make the test more difficult. In this way, it is possible to test whether the subjects learn the new words after using word part strategy to work out the meaning of the words in Test A. The aim of the two tests was to investigate whether students can use word part strategy to work out the meaning of a word using affixes and whether the word part strategy facilitates vocabulary learning.

### **1.2.7 Questionnaire**

The questionnaire (see Appendix 4) was presented to the subjects after the tests had been marked and the answers had been given (the day right after the tests). The questionnaire consisted of eleven questions. The first three questions explored some basic information about and their attitudes to vocabulary learning strategy. From question four to seven, their reactions towards the tests were investigated. Questions eight to ten dealt with their attitudes to the word part strategy. The eleventh question consisted of two parts with fourteen questions and aimed to measure the students' affix knowledge. Questions in two parts were designed according to Nation's two categories of using word part strategy (see Section 2.4); the forms of the questions were borrowed from Nation (pp. 275-276). The first part of the eleventh question contained four questions to test whether the students could recognize different parts of words; the second part contained ten questions to test whether the students knew the meaning of the ten affixes (those had been taught in the lecture).

### **1.2.8 Scoring**

The answers to the questions in Test A were all open. The first ten questions were about prefixes. Given that the five prefixes in the test all change word class (of which more later), where the

students wrote down the right word class of the word, the answer was counted as right. As for the last ten questions, if the meaning of the word the students wrote down was similar to the dictionary meaning of the word, the answer was marked as right. Grammatical mistakes were excluded in the scoring process.

## **2. Theoretical Background**

This section is divided into seven sub-sections. General information about learning strategies and vocabulary learning strategies is given at the very beginning as an introduction to the following sections. The importance of learning vocabulary strategy is also mentioned in the second section to emphasize the necessity of the present study. Detailed information about word part strategy is discussed in the fourth section and word-formation as well as affix knowledge are introduced in the fifth and sixth sections. Finally, some previous research on affixes is introduced and the differences between previous studies and the present study are also mentioned.

### ***2.1 An Introduction to Learning Strategies***

Studies in language strategies began in earnest in the 1970s because teachers began to pay more attention to the connection between learners' performances and their acquisition of language (Schmitt, 1997, p. 199). Critics have carried out a significant number of studies discussing different learner strategies (Ellis, 1985; Wenden & Rubin, 1987), identifying characteristics of learning strategies as well as describing various frameworks for classifying learning strategies (Wenden & Rubin, 1987; Wenden, 1991; Brown, 1994; Ellis, 1994), and also investigating how to be a successful language learner (Wenden & Rubin; Brown).

Ellis (1994) defines the general term "learning strategies" as how learners acquire, accumulate and automate L2 knowledge and rules (p. 712). There are two major kinds of strategies that contribute directly to language learning: metacognitive and cognitive strategies (Rubin, 1987, p. 23). Metacognitive strategies involve "planning learning, monitoring the process of learning, and evaluating how successful a particular strategy is" (Ellis, 1994, p. 714). That is to say, students may choose what they want to learn and how to learn language, and this is a process of self-management. Cognitive strategies are "mental steps or operations that learners use to *process* both linguistic and sociolinguistic content" (Wenden, 1991, p. 19, author's italic). Rubin



identified six general cognitive learning strategies, namely clarification/verification, guessing /inductive inferencing, deductive reasoning, practice, memorization and monitoring (pp. 23-24).

In the process of identifying and classifying learning strategies, there is a growing interest in the area of vocabulary learning strategies, since metacognitive and cognitive learning strategies are applicable to vocabulary learning as well. Vocabulary learning is also a process of planning, monitoring learning and evaluating strategies. In addition, some cognitive learning strategies are specially applicable to vocabulary learning (Schmitt, 1997, p. 200). The learning strategy of guessing/inductive inferencing can be applied to the vocabulary learning strategy of guessing words from context, and the strategy of deductive reasoning has similarities with the vocabulary learning strategy of analyzing word parts.

## ***2.2 The Importance of Vocabulary Learning Strategies***

It is widely accepted that one must acquire a significant portion of the lexicon in order to master English as a second language. Some second language acquisition researchers also argue that “a solid vocabulary is necessary in every stage of language learning” (Laufer, 1997, p. 140). Vocabulary and lexis are thus regarded as central in both language learning and teaching (Lewis, 1993; Laufer, 1997; Richards & Rodgers, 2001). However, researchers have noticed that it is impossible for students to learn all the vocabulary they need in school (Nation & Waring, 1997; Sökmen, 1997).

As mentioned in the introduction, there are at least 54,000 word families in English. Second language learners do not necessarily need to acquire such an amount of vocabulary, however, there is a learning task students need to achieve. Teachers of English as a second language are interested in the vocabulary size of native English speakers because it can provide an indication of how many words second language learners need to learn (Nation & Waring, p. 7). A university graduate English native speaker, as Nation and Waring claim, has a vocabulary of around 20,000 word families (p. 7), which is still a huge goal for second language learners to achieve. It is thus important to train students or encourage students to become independent learners and acquire vocabulary on their own.

Nation and Waring suggest that second language learners need to develop vocabulary acquisition strategies to comprehend and learn low frequency words by themselves after having a vocabulary of 3,000 or so high frequency words (p. 11). An important step, as Sökmen claims, is to acquire some useful vocabulary learning strategies and “recognize one’s own style of learning” (p. 256). There are many vocabulary strategies (see Section 2.3) students can apply; one of the major vocabulary strategies is word part strategy. The importance of word part strategy is introduced at the end of Section 2.3; the advantages of this strategy are discussed in Section 2.4.

### ***2. 3 An Introduction to Vocabulary Learning Strategies***

Vocabulary learning strategies are a part of general learning strategies in second language acquisition. Though there is great interest in studying vocabulary learning strategies in the process of identifying language strategies, “few individual vocabulary strategies have been researched in any depth” (Schmitt, 1997, p. 200). Schmitt (1997) adapted the definition of learning strategy from Rubin (1987) and tried to make a definition of vocabulary learning strategies. Schmitt (1997) claims that learning is “the process by which information is obtained, stored, retrieved and used ...Therefore vocabulary learning strategies could be any which affect this broadly defined process” (p. 203). Different from Schmitt’s broad definition, Nation (2001) claims that a strategy should have the following features:

1. involve choice, that is, there are several strategies to choose from
2. be complex, that is, there are several steps to learn
3. require knowledge and benefit from training
4. increase the efficiency of vocabulary learning and vocabulary use (p. 217).

There are numerous vocabulary learning strategies that possess the features cited above. Nation develops a general classification of vocabulary learning strategies (pp. 218-222). The first one is planning vocabulary learning, which includes choosing words, choosing the aspect of word knowledge, choosing strategies as well as planning repetition. The second vocabulary learning strategy is exploring sources. It involves the strategies of finding information about words, i.e. analysing the word, using context, consulting a reference source and using parallels with other languages. The third vocabulary learning strategy is establishing vocabulary knowledge, which

includes ways of remembering and using knowledge. Three major categories involved in the processes are noticing, retrieving and generating.

Schmitt (1997) also developed a taxonomy of vocabulary learning strategies, which is organised “according to both the Oxford system and the Discovery/Consolidation distinction” (pp. 206-207). The list contains fifty-eight different vocabulary learning strategies. The strategies are first divided into two major classes: “strategies for the discovery of a new word’s meaning” and “strategies for consolidating a word once it has been encountered” (p. 207). Then these fifty-eight strategies are further divided into five groups, namely determination strategies (DET), social strategies (SOC), memory strategies (MEM), cognitive strategies (COG) and metacognitive strategies (MET) (pp. 208-217). Since the aim of this study is to investigate the learning strategies that can help language learners to understand words, the first class of vocabulary learning strategies needs to be further discussed.

There are two groups of vocabulary learning strategies that are used for understanding the meaning of a new word, namely determination strategies and social strategies (Schmitt, 1997, pp. 208-211). Social strategies are the ways of asking other people to work out the meaning of words. While determination strategies involve four options that can facilitate vocabulary learning, namely guessing from the structural knowledge of the language, from L1 cognate, from context and using reference materials. The strategies of guessing from structural knowledge consist of analysing part of speech and analysing affixes and roots. The strategies of using reference materials include using bilingual or monolingual dictionary and using word lists or flash cards. Nation (2001) also agrees with Schmitt’s category of determination strategies, and he discusses three word study strategies in detail together, i.e. using word parts, dictionaries and word cards because these three strategies “are all intentional approaches to vocabulary learning and fit within the strand of language focused learning” (p. 263).

Besides developing a taxonomy of vocabulary learning strategies, Schmitt (1997) conducted a survey to investigate trends of Japanese learners’ perceptions of helpfulness about fourteen

strategies. The results show that 83% of college students<sup>3</sup> consider “analysing affixes and roots” as helpful strategies among the top five useful strategies<sup>4</sup> (Schmitt, p. 224). Therefore, when choosing vocabulary learning strategies, cognitive maturity and language proficiency should be taken into consideration (Schmitt, 1997, p. 226). It seems that college students prefer word part strategies to others; the subjects of this study are thus all college students.

Nation and Waring claim that there are three vocabulary learning strategies that need to be spent time on, i.e. guessing words from context, using word parts and mnemonic techniques to remember words, and using word cards (p. 11). Researchers also distinguish three main ways that can increase learners’ vocabulary: through focusing on the word meaning itself, through learning new words in context, and through using word formation rules or other word building devices (Nation, p. 263). In addition, using word part strategy is one of the three major strategies that can facilitate vocabulary acquisition as well as help students become independent vocabulary learners; the other two are guessing from context and using memory techniques (Schmitt, 2000, p. 65). Therefore, word part strategy is an important vocabulary learning strategy that can help increase learners’ vocabulary as well as enable learners to become independent. Hence, word part strategy deserves the attention of both teachers and learners.

## ***2.4 Word Part Strategy***

Most of the English content words can change their form by adding affixes, i.e. prefixes, suffixes and roots, which constitute word parts (Nation, p. 263). The study of word families in a corpus shows that “word parts are a very common and important aspect of English vocabulary” (Nation, p. 266), but whether language users see words as consisting of parts or as unanalyzed wholes is still a matter for discussion.

Aitchison (2003) claims that in the mental lexicon, derivational affixes are attached to the roots from the beginning but inflectional suffixes are added later (p. 136). However, there is evidence that many “lower frequency, regularly formed, semantically transparent suffixed words” and

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<sup>3</sup> Only 52% of Junior High School students, 63% of High School students and 79% of adults consider “analysing affixes and roots” as helpful strategies.

<sup>4</sup> Another four strategies are: connecting word with synonyms and antonyms, guessing from textual context, asking the teacher to use new words in a sentence, and parts of speech.

some other complex words are rebuilt each time they are used (Nation, p. 269). In addition, language users can split up or disassemble words by using a back-up store (words analysed according to their morphemes) and then use a lexical tool-kit (word formation rules) to create new words (Aitchison, pp. 135-136). The ability to split up words, as Aitchison claims, can enable learners to comprehend the new words and to facilitate memory by linking up words containing similar morphemes as well (p. 186). Word part strategy can thus help learners in learning new words by disassembling words into morphemes and then relating them to known words or affixes.

According to Nation, word part strategy consists of two steps:

1. Break the unknown word into parts. This step requires learners to be able to recognise prefixes and suffixes when they occur in words.
2. Relate the meaning of the word parts to the meaning of the word. This step requires the learners to know the meanings of the common word parts. This step also requires the learners to be able to re-express the dictionary definition of a word to include the meaning of its prefix, and if possible its stem and suffix. (p. 278)

The first step requires the basic knowledge of using word part strategy, which is the ability to split up new words. For example, the word *unbelievable* consists of three parts, i.e. *un-*, *believe*, and *-able*. Before using the strategy, learners must recognize the word parts. The second step involves the advanced knowledge of using the strategy, because learners not only need to know the meanings of each part, but must also have the ability to re-express the meaning of the new word by using affix knowledge and then connect the meaning of the word parts with the dictionary meaning of the whole word to facilitate understanding.

As mentioned in Section 1.2.2, affixes that are not regular can be confusing and cause problems. Laufer (1997) uses the term “deceptive transparency” to describe words that “look as if they are combined of meaningful morphemes” (p. 146). He exemplifies his statement by giving the words *outline*, *discourse* and *falsities*; students in the experiments interpreted “*outline* as *out of line*; *discourse* as *without direction* and *facilities* as *falling cities*” (p. 146). Therefore, morphemes which are not regular and cannot create meanings will cause difficulty in vocabulary learning (Laufer, p. 146). However, if derivational affixes are transparent and behave as expected, then the learners’ ability to break a word into parts, as Laufer claims, can facilitate “the recognition of a

new word and its subsequent production” (p. 146). Schmitt (2000) suggests that Bauer and Nation’s (1993) affix list “can be used as a helpful (but not infallible) guide as to which affixes should be easier and which more difficult to learn” and the most regular affixes should be taught at first (pp. 64-65). Except for the frequently used suffixes *re-* and *de-*, most affixes examined in the study are thus all regular affixes, i.e. *-ation*, *-ize*, *-ous*, *-ance*, *-ant*, *in-*, *anti-*, and *sub-*.

Mastering word part strategy has several advantages. It can, for example, help students learn unfamiliar words by connecting these words to known roots or to known affixes as Nation (2001, p. 264) points out. Schmitt and Zimmerman (2002) also claim that “a known word stem in an unknown derivative can facilitate the recognition of that derivative; for example, knowing *reflect* may well aid recognition of the unknown *reflection*” (p. 148). In addition, the knowledge of affixes and roots can be used as “a way to of checking whether an unfamiliar word has been successfully guessed from context” (Nation, 2001, p. 264). However, the focus in this study is on whether affix knowledge can facilitate learning unfamiliar words and not on word part strategy as a tool to verify guesses made from context.

According to Nation, word part strategy is useful for both high and low frequency words, and it takes time to learn the meaning of affixes and learn how to re-express meanings (p. 280). In addition, learners should know several things to make use of word part strategy (p. 272). Nation divides the use of word parts into two categories, one is receptive use, and the other is productive use (pp. 272-274). For receptive use, learners need to recognize the word parts of a word, and need to know the meaning of each part as well. Moreover, learners need to see the connection between the meanings of word parts and the meaning of the completely new word. As for productive use, learners need to be aware of the changes of the roots or affixes when they are combined to form new words. The changes of the roots or affixes can be pronunciation changes as in *quantity-quantify*, or they can be changes of written forms as in *aggravate-aggravation*. In addition, learners need to know which classes of stems can take certain affixes, for example, *-ful* cannot added to adjectives. In order to check whether students have mastered word building knowledge, Nation suggests several types of tests to measure students’ four aspects of word parts knowledge (pp. 275-278). In this study, only the first two aspects of word building knowledge are

tested in the questionnaire, because only these two aspects of knowledge have been taught in the short lecture on affix knowledge.

## ***2.5 An Introduction to Word-formation***

In order to make use of word part strategy, learners need to have a basic knowledge of prefixes and suffixes as well as word-formation rules. In the following, some basic concepts, such as morpheme, root, stem, base etc. are introduced.

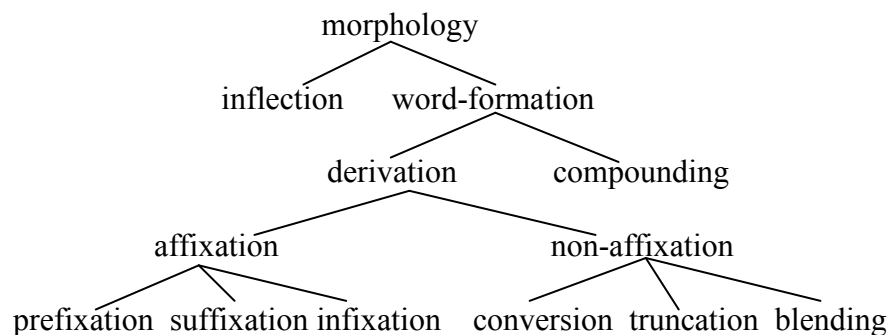
Morpheme “is the smallest unit of meaning in a word” (Carter, 1998, p. 9), for example, the word *unhappy* comprises two morphemes *un* and *happy*. In addition, a morpheme can be divided into two classes; one is called free morphemes, which include *cat*, *invent*, *laugh* etc.; the other is called bound morphemes, which include *un-*, *-s*, *-ing*, *-ed*, and *-ous* etc. (Carter, p. 9). Before discussing word-formation rules, three confusing terms need to be distinguished, i.e. root, stem and base. Root is a form “which is not further analysable, either in terms of derivational or inflectional morphology” (Bauer, 1983, p. 20). In the word form *unbelievable*, for example, the root is *believe*. Base is a wider concept than root; a base is “any form to which affixes of any kind can be added” (Bauer, p. 21). As in the above example, *believe*, *unbelieve* and *believable* are all bases. Therefore, root can refer to “bases that cannot be analyzed further into morphemes” (Plag, 2003, p. 11). The final concept, stem, is only used when dealing with inflectional morphology, and it is the “word-form which remains when all the inflectional affixes have been removed” (Bauer, p. 20). As mentioned in Section 1.2.2, this study focuses on derivational affixes, therefore, the term “stem” is not used in this study. As for the terms “root” and “base,” only “root” is used in this study because it cannot be further analyzed into morphemes.

There are two main branches in morphology, one is inflectional morphology, and the other is word-formation. Word-formation can be further divided into derivation and compounding. Although this study aims to investigate the efficiency of using word-formation rules, the focus is on derivation and not compounds. Derivation is the “morphological process that results in the formation of new lexemes” (Bauer, pp. 26-27). Plag lists seven general characteristics of derivation:

- encodes lexical meaning

- is not syntactically relevant
- can occur inside derivation
- often changes the part of speech
- is often semantically opaque
- is often restricted in its productivity
- is not restricted to suffixation (p. 17)

As Plag suggests, derivation can be classified into affixation and non-affixation, and both affixation and non-affixation can be further divided into another three categories. Their mutual relationships are shown in the tree derivation below (Plag, p. 17):



In this study, only affixation will be investigated. Infixation is excluded since it is not very common, and many morphologists agree that there is no infix in English as well (Plag, p. 101).

## ***2.6 Derivational Affixes***

Derivational affixes in English can be classified according to their type, form and meaning (Hatch & Brown, 1995, p. 271). On the basis of different criteria, Hatch and Brown introduce three types of derivational affixes (p. 271). The first one concerns placement, i.e. prefix (before the root/base) and suffix (after the root/base). The second one concerns the change in word class, e.g., to change verbs to nouns or adjectives, nouns to verbs, and so forth. The third one concerns the semantic meaning of the affixes. Hatch and Brown argue that English prefixes are categorized according to their semantic meaning while suffixes can be classified according to their change in word class (pp. 271-275). All three categories are discussed and investigated in this study: five prefixes and five suffixes were introduced in the lecture; all five prefixes concern semantic meaning, and all five suffixes concern changing word class.



### 2.6.1 Derivational prefixes

According to semantics, derivational prefixes can be divided into following five categories: negatives, attitude, size and degree, space and time, and number (Hatch & Brown, pp. 271-273). The five prefixes that are tested in this study belong to the above three categories, i.e. negatives (e.g., *in-*, *de-*), attitude (e.g., *anti-*), and space and time (e.g., *sub-*, *re-*). Negative prefixes include *un-*, *non-*, *in-*, *a-*, *de-*, *dis-*, *mis-*, *mal-* and *pseudo-*. All of these can be added to adjectives to mean “not” and some of them can be added to nouns as well. The prefix *in-*, which is tested in this study, can be changed into other forms according to different initial letters of words, such as *im-* in *immortal* and *impossible*, *il-* in *illegal*, and *ir-* in *irregular*. *De-*, *dis-*, and *un-* are also called reversible negative prefixes because they “show a reversal of an action or a taking away of a quality” (Hatch & Brown, p. 271). *De-*, which is also tested in this study, means “to remove, take something away” as in *decaffeinated*. In addition, *mis-*, *mal-* and *pseudo-* are called pejorative negative prefixes. Attitude prefixes are the “morphemes that convey being against, with, opposite, for, or on the side of whatever stem they are added to” (Hatch & Brown, p. 272), and *anti-*, *co-*, *counter-* and *pro-* are all included in this group (only *anti-* is investigated in this study). The prefixes *anti-* means “against” in *anti-war*, *co-* means “with” in *co-author*, *counter-* means “opposite” in *counter-act*, *pro-* means “for” in *pro-bilingualism*. Size and degree prefixes include *arch-*, *hyper-*, *hypo-*, *maxi-*, *mini-*, *out-*, *over-*, *sub-*, *ultra-*, and *under-*. The fifth type is spatial and temporal prefixes, which include *ex-*, *fore-*, *inter-*, *post-*, *pre-*, *re-*, *sub-*, and *trans-* (*re-* and *sub-* are investigated in this study). The prefix *sub-*, which means “below or under” in this study, is selected according to its spatial meaning as in *subway*, not according to the degree meaning as in *substandard*. The last type of prefix is number prefixes, i.e. *bi-*, *di-*, *mono-*, *multi-*, *poly*, and *tri*.

### 2.6.2 Derivational suffixes

Derivational suffixes, on the other hand, are classified according to change in word class. According to different kinds of word class, suffixes are divided into four groups, i.e. suffixes used to form nouns (e.g., *-ce/-cy*, *-ant* and *-ion* in this study), verbs (e.g., *-ize* in this study), adjectives (e.g., *-ous* in this study) and adverbs. There are three kinds of suffixes that can change words into nouns, namely, noun-to-noun suffixes, verb-to-noun suffixes and adjective-to-noun suffix (Hatch & Brown, pp. 275-276). Noun-to-noun suffixes can be further divided into three

major categories, that is, noun-to-noun occupational suffixes which include *-ster*, *-eer*, and *-er* as in *gangster*, *mountaineer* and *geographer*; noun-to-noun diminutives or feminine suffixes which include *-let*, *-ette*, *-ess* and *-ie* as in *piglet*, *kitchenette*, *princess* and *cookie*; and noun-to-noun status or domain suffixes which include *-hood*, *-ship*, *-dom*, *-ocracy* and *-(e)ry* as in *adulthood*, *membership*, *kingdom*, *democracy* and *machinery*.

Verb-to-noun suffixes, of which there are three kinds, are much more numerous than noun-to-noun suffixes. The suffix *-ant* and *-ion*, which are investigated in this study, belong to verb-to-noun suffixes. The first category is the suffixes that form nouns which have the meaning of agent or instrument, for example, *-er* in *singer*, *-or* in *actor* and *-ant* in *etchant*. There is another suffix having “one who” meaning (Hatch & Brown, p. 275), i.e. *-ee*, but it is different from the former ones. As Plag (2003) claims, it “derives nouns denoting sentient entities that are involved in an event as non-volitional participants” (p. 87). For example, *employee* means someone who is employed by someone else and a *biographee* is someone who is the protagonist of a biography. The second category is the suffixes dealing with states or actions, as *-ation* in *organization*, *-ment* in *development* and *-al* in *approval*. The last group of verb-to-noun suffixes concern activity, i.e. *-ing* in *running*, *-age* in *drainage*. The third category of suffixes to form nouns is adjective-to-noun suffix. It consists of *-ness* and *-ity* as in *happiness* and *guilty*. An additional suffix is investigated in this study can also change adjectives to nouns, that is, *-ce/-cy*, but it is not mentioned in Hatch and Brown’s book. The suffix *-ce/-cy* “attaches productively to adjectives in *-ant/-ent*” (e.g. *convergence*, *efficiency*) as Plag (p. 88) suggests.

There are three suffixes that can change nouns or adjectives to verbs with a causative meaning, i.e. *-ify*, *-ize*, and *-en* as in *simplify*, *computerize* and *widen* (Hatch & Brown, p. 276). The suffix *-ize* is investigated in this study. Plag claims that *-ize* can “express a whole range of related concepts such as locative, ornative, causative/facitive, resultative, inchoative, performative, simulative” (p. 93). Locative means “put into X” as in *computerize*. Ornative can be paraphrased as “provide with X” as in *fluoridize*. Other examples of causative/facitive (“make (more) X”), resultative (“make into X”), inchoative (“become X”), performative (“perform X”), and simulative (“act like X”) *-ize* are *randomize*, *carbonize*, *aerosolize*, *anthropologize*, and *cannibalize* (Plag, pp. 93-94).

Suffixes that form adjectives can be classified into three categories. The first one is noun-to-adjective suffixes. There are in total six kinds of noun-to-adjective suffixes that have different semantic meanings. The first group of suffixes add the semantic notion of a membership group to the original words which include *-ite*, *-(i)an*, *-ese*, *ist*, and *-ism* as in *sociolite*, *Republican*, *Chinese*, *dentist* and *Protestanism* (Hatch & Brown, p. 275). The other five kinds of suffixes are: *-ful* which gives the meaning of giving or having (e.g., *helpful*); *-less* which adds the meaning of without (e.g., *endless*); *-ly* and *-like* which means having the quality of as in *friendly* and *childlike*; *-ed* which means “having X” as in *pointed*; and the last one, *-ish*, which has the meaning of belonging to or having the character of (e.g., *boyish*). The second category includes suffixes which “occur primarily in borrowed and neoclassical words,” i.e. *-al* in *musical*, *-ic* in *heroic*, *-ive* in *attractive* and *-ous* in *curious* (Hatch & Brown, p. 276), and *-ous* is tested in this study. The last group is verb-to-adjective suffixes, such as *-able* in *agreeable* and *-ible* in *flexible*.

The last category of derivational suffixes is suffixes that change words into adverbs. This can be further divided into two kinds: adjective-to-adverb suffix and noun-to-adverb suffix. The suffix *-ly* is usually used to change adjectives to adverbs as in *quickly*, *shortly*; *-wise*, which means “in the manner of X” as in *lengthwise* and “concerning X” as in *weatherwise*, is used to change nouns to adverbs (Plag, p. 98).

## ***2.7 Previous Research on Affixes***

Studies of L2 learners’ vocabulary have been carried out with respect to the breadth and depth of vocabulary (how much vocabulary learners need to know and what is required when learning a word). Morphological knowledge has been highlighted as a particularly important aspect of vocabulary learning (Schmitt, 2000; Nation, 2001). Many researchers claim that using knowledge of affixes to learn vocabulary is a useful and commonly used strategy to facilitate vocabulary acquisition (Bauer & Nation, 1993; Nation & Waring, 1997; Nation, 2001). According to Nation, one advantage of using affix knowledge for vocabulary learning is that it can help students learn unfamiliar words by connecting these to known roots or to known affixes (p. 264). Thereby, the strategy can lighten the “burden” of acquiring vocabulary by a) dividing up words into known word parts and b) perceiving words as part of a word family.

Numerous studies have been done on English affixes. Most, however, focus primarily on the affix itself. Issues investigated include assessing the knowledge and the acquisition of affix (Tyler & Nagy, 1989; Nagy, Diakidoy & Anderson, 1993; Schmitt & Zimmerman, 2002); the ordering of affixes in English (Mochizuki & Aizawa, 2000; Hay, 2002; Plag & Baayen, 2009); and the classification of affixes for teaching and learning purposes (Bauer and Nation, 1993). In addition, some researchers have attempted to look at the relationship between affix knowledge and overall vocabulary size (Schmitt & Meara, 1997; Mochizuki & Aizawa, 2000).

Very few studies (Nakayama, 2008; Ward & Chuenjundaeng, 2009) focus on the efficiency aspect of using word part strategy or affix knowledge to learn vocabulary. Nakayama looked at the efficiency of systematic vocabulary teaching using affix knowledge. The focus was on five prefixes. The study aimed to investigate whether teaching affix knowledge facilitate vocabulary learning. Two groups of students took part in Nakayama's study; the only difference between the two groups being that one was given a short lecture about affixes while the other was not. The two groups of students were then given the same time to guess the meaning of sixty words by filling out a work sheet. They were subsequently given the L1 translations of the sixty words to memorize. Finally, the students took a vocabulary test in which they were required to fill in the L1 meaning of the sixty words. The same test was taken a week later. As for the short lecture about affixes in Nakayama's study, it was a three-minute powerpoint display: the explanation of prefixes and their visualized images were shown at first and then a display of the target words with these prefixes. In the present study, the students were also given a lecture about affixes at the very beginning (see Section 1.2.5), but the method is otherwise very different from Nakayama's: the students in the present study were not given time to guess and memorize words. Instead, the test was designed to examine whether students can understand the meaning of whole words by using the given meaning of their root. Also, all the instructions and answers of the materials in this study were in English and not in L1.

Another study, conducted recently, investigated whether word-building as learning or teaching strategy could facilitate vocabulary learning from another perspective – suffix acquisition (Ward & Chuenjundaeng, 2009). The study investigated whether knowing a word facilitated understanding of other words within the same word family. Two tests were taken in Ward and

Chuenjundaeng's study; there was a one-week interval between the two tests. The students were required to write down the L1 meaning of the thirty-two words selected. The first test consisted of sixteen headwords (or roots) and sixteen derived words; the second test consisted of sixteen derived words from the headwords in the first test and sixteen headwords of the derived words in the first test (e.g., *design* in the first test and *designer* in the second one; *challenger* in the first test and *challenge* in the second one). The results of Ward and Chuenjundaeng's study suggest that learning roots can facilitate learning the derived form of the root, but not vice versa. Their study also suggests that in order to acquire word-building strategy, the frequency of exposure seems to be indispensable.

The aim of the present study is similar to the former two studies (Nakayama, 2008; Ward & Chuenjundaeng, 2009), i.e. to investigate the efficiency of word part strategy. However, the focus, the method and subjects are totally different. In the present study, both the prefixes and suffixes were examined and the focus was on how affix knowledge can help students to understand new words and facilitate vocabulary learning. Two tests were designed for the purpose. Test A was created by the writer while test B was a modification of Nation's format.

### **3. Analysis and Discussion**

To find out whether word part strategy is an effective method for helping students to understand new words and facilitate vocabulary learning, ten participants were given two tests each (Tests A and B). The results are displayed in the following tables and graphs. In addition, the data from the questionnaire were analyzed to offer some inspiration about students' attitudes towards word part strategy as well as their responses to the two tests. The following discussion is divided into five sub-sections. The first two present the results of the two tests and provide important information about the questionnaire. The following two sub-sections discuss the results of the tests and questionnaire from several different perspectives.

#### ***3.1 Overall View of Tests Results***

Immediately after the short lecture about affix knowledge and word part strategy, the ten students took two tests. The results are shown in Table 1 below. The data show that the accuracy of the tests is relatively high: 69.5% for Test A and 67.5% for Test B. As already explained, the

purposes of Tests A and B are to investigate a) whether word part strategy can help students understand new words and b) whether word part strategy can help facilitate vocabulary acquisition. Therefore, the results of the two tests suggest that using word part strategy can help students to understand new words as well as facilitate vocabulary acquisition.

**Table 1: The Results of Two Tests**

Tests \ Items	Total Answers*	Total Right Answers	Percentage	Average**
Test A	200	139	69.5%	13.9
Test B	200	135	67.5%	13.5

\*Each student answered twenty questions, so there were two hundred ( $10 \times 20$ ) answers altogether in each test.

\*\* “Average” refers to how many right words each person can answer for each test.

The twenty words in the tests were not familiar to the students. By using word part strategy, i.e. figuring out the meaning of words by relating them to the known meaning of affixes and roots, it was demonstrated in Test A that the meaning of 13.9 out of twenty words on the average could be worked out. This result complies with Nation’s theory that word part strategy can help students to learn unfamiliar words by connecting the words to known word parts (p. 264). However, the results of Test A are not sufficiently conclusive to demonstrate that knowing a word necessarily involves knowing the members of its word family, as many researchers have suggested (Bauer & Nation, 1993; Nation, 2001). The result of Test B is roughly the same as the result of Test A, i.e. 13.5 words were known out of the twenty unknown words. The data suggests that the process of recognizing the meanings of the unfamiliar words by using affix knowledge and the meaning of roots helps students to remember the meaning of the words and thus facilitate vocabulary learning. The reasons for and implications of this result are discussed below.

### ***3.2 Some General Information about the Results of the Questionnaire***

The questionnaire was presented to the students the day after the tests. This section briefly summarises some important results of the questionnaire by way of a context for discussing the results of the tests. As mentioned in Section 1.2.7, the questionnaire incorporates different aspects of the study. In order to offer some possible reasons for the results of the tests, questions four to seven and questions ten and eleven in the questionnaire are displayed in this section. A more detailed analysis of these results will be discussed later, in Section 3.3. Other questions that

explore basic information about and attitudes to vocabulary learning strategy and word part strategy are discussed in Section 3.5.

Six students (60%) thought that Test A was difficult to answer, while four students (40%) thought it was not. As for Test B, three students (30%) thought the test was much easier to answer, while the majority (70%) of students thought Test B was also very difficult. All of the students claimed nonetheless that they used word part strategy when answering the questions in Test B and all of them could see the connections between the dictionary meaning of the words and the meaning of word parts after the answers to the tests had been sent. Question 11 was designed to test students' affix knowledge (the lecture about the knowledge was given the day before they answered the questionnaire). The results of Part A in question 11 show that all the students could recognize the word parts, however, the results of Part B in question 11 show that the students only mastered 78% of the meaning of affixes.

### ***3.3 Detailed analysis of Tests and Comparison of Tests A and B***

Table 1 in Section 3.1 displays the average number of the tests results, and the results are not sufficiently conclusive to demonstrate that word part strategy is an effective method for helping students to understand new words and facilitate vocabulary learning. However, the number fluctuates a great deal with regard to individual results. In this section, individual performances are discussed, and reasons for the results are given.

#### **3.3.1 Analysis of Test A**

As shown in Table 2, the accuracy of Test A ranges from 100% (Student A) to 40% (Student J), therefore, the average result of Test A is much influenced by individual answers. Five students' grades are higher than the average number 69.5%, while another five grades are lower. That is to say, for those students who performed well in the test, word part strategy may have helped them understand new words. On the other hand, for those who did not receive a high score in the test, the strategy may not have had a positive effect on their understanding of new words. As Sökmen claims, students need to acquire some useful vocabulary learning strategies and recognize their own style of learning in order to facilitate vocabulary learning (p.256). In other words, not every strategy can apply to all students and some students may have their own special vocabulary

learning strategy that helps them to acquire vocabulary more efficiently.

It is, however, debatable whether one can draw too firm conclusions on the basis of ten respondents' answers. In addition, as mentioned in the theoretical background, Schmitt conducted a survey to investigate trends of Japanese learners' perceptions of helpfulness about fourteen strategies. The results show that most (83%) college students consider "analysing affixes and roots" as more helpful strategies than other people<sup>5</sup> do. Many college students thus prefer word part strategy. There may be other factors affecting the test results.

**Table 2: The Individual Results of Test A**

	Average	A*	B	C	D	E	F	G	H	I	J
Test A	69.5%	100%**	90%	85%	80%	70%	65%	60%	60%	45%	40%

\*The capital letters A-J represent the ten students (The same applies to the other tables).

\*\*Student A explained 20 words correctly; the accuracy was thus 100%.

According to the ten students' answers to question four (Do you think it is difficult to explain the advanced English words in Test A by using word part strategy?) in the questionnaire, six students (60%) chose "Yes" while four students (40%) chose "No." For those students who thought the test was difficult, two reasons were given: a) the advanced words were unfamiliar to the students and it was thus difficult to work out the meaning by using word part strategy; b) the students did not know how to explain the words by using word part strategy; they needed more time. Table 3 shows two sample answers (Student E and Student I's) that fall into the two categories. For the people who thought it was not difficult, their answers were very similar, i.e. once you know the meaning of roots and affixes, you just connect them. This is a simple operation. Two sample answers (Student B and Student C's) belonging to this category are displayed in Table 3.

It is interesting to note that among the six students who thought the test was difficult, one student's (Student E) score is a little bit higher than the average (69.5%) but the other five students' scores are lower. That is to say, all the students who did not perform well in the test though it was difficult, but for those who achieved high scores in Test A, their opinion was the opposite. Some researchers claim that affix knowledge is correlated with vocabulary size

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<sup>5</sup>Other people participating in the investigation include Junior High School students, High School students and adults.



(Schmitt & Meara, 1997; Mochizuki & Aizawa, 2000). It is thus possible that the size of the students' vocabulary may have affected their scores in Test A as their answers vary considerably. As the vocabulary size of the students is unknown, it is difficult to attribute the result to the students' level of English. However, the results of the two tests may offer some insight.

**Table 3: Four Sample Answers of Question 4**

Students	Answers*
Student E	Yes. Since many words change meaning when given a suffix or prefix that changes the word class. Therefore it can sometimes be difficult to grasp the meaning of advanced words only using the word part strategy.
Student I	Yes. The strategies were new to me and having to implement them immediately after having had a short lecture about them took time for me to think in order to use them.
Student B	No. Once you understand what prefix and suffix, it's easier to understand the new words. But of course you must know the meaning of the root word first.
Student C	No. Because I have already known the root meaning and the affix meanings are taught so that I just connect them together. It is not so difficult.

\* Students' answers are presented here in unedited form (The same applies to the other tables).

Table 4 shows the ten students' total number of right answers from both tests. The data show that Students A, B, C, and D answered more than thirty words out of forty correctly and their scores are much higher than the others, which indicates they know better how to use the word part strategy and acquire more words than the other students.

**Table 4: The Total Right Answers of Two Tests**

	A	B	C	D	E	F	G	H	I	J
Test A	20	18	17	16	14	13	12	12	9	8
Test B	16	14	16	16	13	12	16	12	10	10
Total	36	32	33	32	27	25	28	24	19	18

Another factor that can explain the result of Test A is the answers to Question 11 (Part B) in the questionnaire. There are ten affixes (which were taught in the lecture) in part B of question 11. The students were required to choose the right meaning of the affixes. The results of this question are displayed in Table 5. The students were given the same lecture the day before they did the questionnaire, so they got the same information about these ten affixes. However, the results of the question show that only 78% of the meaning of affixes has been acquired (i.e. the ten students had answered seventy-eight affixes out of one hundred correctly). As displayed in Table 4,

Students A, B, C, and D achieved much higher scores than the others when it came to the total number of right answers from the two tests. They also acquired good knowledge of the meaning of ten affixes as shown in Table 5. Therefore, there is a connection between affix knowledge and the performance of the two tests. Students who performed well in the tests acquired more affix knowledge, which in turn could help them to use word part strategy to understand the meanings of words. That is to say, the efficiency of using word part strategy may depend on individual performances, and there is correlation between affix knowledge and application of word part strategy.

**Table 5: The Number of Right Answers for Ten Affixes**

	A	B	C	D	E	F	G	H	I	J
Number	10	10	10	8	8	8	7	7	4	6

As mentioned in the theoretical background, in order to use word part strategy, the learners need to acquire two things: the ability to divide the words into parts, and to know the meaning of affixes (Nation, p.278). According to the answers from Part A of question 11 in the questionnaire, all the students could recognize the word parts; they thus met Nation’s first requirement of using word part strategy. However, as shown in Table 5, some of them (Students G-J) could not remember the meaning of affixes clearly. Students who failed to identify the meaning of affixes also failed to make good use of word part strategy to figure out most of the unknown words, as already explained. The results thus comply with Nation’s idea of what is needed before using word part strategy.

Since it takes time to learn the meaning of affixes and to learn how to re-express meanings with the aid of word part strategy, as Nation suggests (p.280), the result of Test A is influenced by the limited time of the lecture about affix knowledge and the short time for practising word part strategy. As shown in Table 3, some students did not know how to explain the words by using word part strategy, suggesting that more time is needed to practise the strategy. In addition, all of the students thought it necessary to spend time on practising word part strategy, as demonstrated in their answer to question 10: “Do you think it is necessary to practise word part strategy much more in order to grasp it?” in the questionnaire. The above results suggest that word part strategy is helpful when working out the meaning of words, but much more time is needed to learn the

meaning of affixes and how to use word parts.

### 3.3.2 Analysis of Test B

Test B was designed to test whether students could acquire the new words after working out the meaning of words in Test A with the aid of word part strategy. As Table 1 demonstrates, the average score in Test B is 67.5%, i.e. 13.5 of the 20 words were correctly defined. While there are many contributory factors, an important factor is that many roots of the words were unfamiliar to the students at the time of taking the test.

As Nation claims, in order to understand unfamiliar words, students should first know the meaning of affixes and roots, making it possible to connect the unknown words to known roots and affixes (p.264). However, since the derivative words were not initially familiar to the students, it was possible that many roots were also unfamiliar to them. This is because some words only change their word class after being attached to suffixes. *Aggravation*, for example, is the noun form of *aggravate*, and students who did not know *aggravation* might not know *aggravate*. It thus did not help students if they knew that the suffix *-tion* can change a verb into a noun but they did not know the meaning of the root. Nonetheless, it was still possible that the students could identify the words because some roots of these derivative words are easy to work out (e.g., *irrigate* in *sub-irrigate*). In addition, since students had spent much time in re-expressing the meaning of words in Test A, it is reasonable to assume that they could remember some of the difficult roots when they answered Test B.

As displayed in Table 6, there is a wide range of test scores of Test B. Four students scored 80% (they had learned sixteen words out of twenty), while two students scored only 50% (ten words were correct out of twenty). The data suggest that word part strategy can facilitate vocabulary learning since the students had learned at least ten words with the aid of word part strategy. In addition, the data of the four students (A, C, D and G) substantiate the idea that students could remember the meaning of some roots after finishing Test A, thus answering the majority of questions correctly in Test B.

**Table 6: The Individual Results of Test B**

	Average	A	B	C	D	E	F	G	H	I	J
Test B	67.5%	80%	70%	80%	80%	65%	60%	80%	60%	50%	50%

However, the answers to question five (Do you think it is easy to answer the questions in Test B?) in the questionnaire give a different picture of their retention of meaning of the roots. According to the students' answers, two students (20%) thought Test B was easy to answer while most of them (80%) thought the test itself was difficult. For the students who thought the test was easy, two reasons were given a) it was easier to guess the meaning than giving a proper definition as in Test A; b) it was easy because you saw the word choices. Their answers (Student G and I's) are displayed in Table 7. For the students who thought the test was difficult, their answers were very similar, i.e. they did not remember the meaning of the roots. Two sample answers (Student A and C's) belong to this category, as displayed in Table 7. The above results suggest that the students who thought the test was difficult was based on the fact that they did not know the meaning of the roots, while the students who thought the test was easy was because they could guess the meaning by opting for one of the multiple choice options. In consequence, almost all of the ten students forgot most of the meaning of the roots and some guessed the meaning by choosing one of the multiple choice alternatives when they answered the questions in Test B.

**Table 7: Four Sample Answers to Question 5**

Students	Answers
Student G	Yes I think so, since I know most words by guessing or assuming their meaning. However, I have a hard time explaining or giving a proper definition of words.
Student I	Yes. I guess it might be easier when you see the choices and a context to put the word in.
Student A	No. I cannot remember many words and do not grasp the word part strategy in TEST A, so some words are still unknown words to me.
Student C	No. Because I forgot their meanings.

It is, however, interesting to note that all of the students claimed that they used word part strategy when answering the questions in Test B, as demonstrated in their answer to question 6: "Did you use the word part strategy explained in my lecture to analyse words when you answered the questions in Test B" in the questionnaire. Moreover, their explanations suggest that they thought word part strategy helped them to understand the words. Table 8 shows the students' answers.

Five students' answers have been selected because all the students' choices were the same for the two questions. Therefore, half the sample answers were given. The answers to question 6 explained their answers to question 5. The students thought the test was difficult because they could not remember all of the unfamiliar words. Therefore, the definition or the degree of "difficulty" should be reconsidered. The test is difficult due to the advanced nature of the English words selected. However, the test is less difficult if word part strategy is applied as it can help students to find the right answer. According to students' answers in Table 8, word part strategy is helpful when working out the word class or the meaning of words, and even if the student guesses the meaning, word part strategy can still help him/her to find the right answer, as Student G's answers suggest in both Table 7 and 8. Word part strategy is thus effective when determining the correct meaning of words in Test B and can thus be used as a strategy to facilitate vocabulary acquisition.

**Table 8: Five Sample Answers to Question 6**

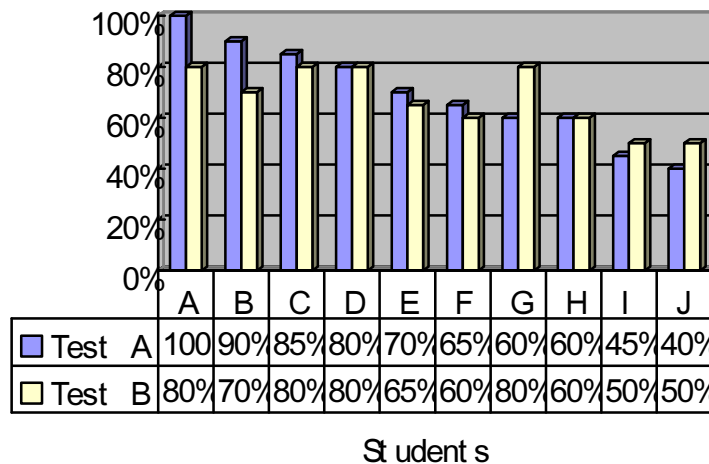
Students	Answers
Student A	Yes. I have tried to use it but I cannot remember all of them.
Student C	Yes. It helps me to find the right answers.
Student D	Yes. Because of the understanding of the various word parts.
Student E	Yes. At first, I judge the meaning of new words by their affix and then consider the root meaning of the new words.
Student G	Yes, it was very helpful in recognizing what type of word class the words in test b belonged to, when considering your lecture.

### 3.3.3 Comparison of Tests A and B

There is some similarity between the results of Tests A and B in that the individual student's scores in both tests vary a great deal as already discussed. This section makes a comparison of both tests in order to investigate the connections between the tests results. Ten students' correct scores for both Tests A and B are displayed in Graph 1. The data show that there is a correspondence between most students' (seven students) results in the two tests, i.e. students' scores in Test A are consistently a little higher or the same as those in Test B. Although the other two students' (Student I & J's) scores in Test A are lower than in Test B, the results of the two tests are approximately the same. Possible contributory factors include that the students did not know how to define the meaning of words in Test A even if they had worked out the possible

meaning, or the students guessed some words in Test B. In the following, the students' results are divided into three perspectives for discussion purposes: the first includes Students A-D whose scores are relatively high in both Tests A and B; the second includes Students E, F, H, I, J, whose scores in the two tests are similar; finally, Student G belongs to the third category because his scores in the two tests are very different from the others, i.e. his score in Test B is much higher than in Test A.

**Graph 1: Individual Results of Two Tests**



As is discussed in Section 3.3.1, Students A, B, C, and D better understood how to use the word part strategy to re-express words in Test A and they also acquired good knowledge of the meaning of the ten affixes (see Table 5). In addition, they worked out most of the words in Test B, as shown in Graph 1. The data thus suggest that word part strategy facilitates understanding words as well as acquiring words, and there is a correlation between affix knowledge and application of word part strategy. The better students master the meaning of an affix, the better they understand words and remember them. The students' scores in Test B are not higher than in Test A. This is because some meaning of roots were forgotten and it was impossible to remember all the meanings in such a short time, as discussed in Section 3.3.2. However, the four students' scores are high enough to demonstrate that word part strategy facilitates vocabulary learning.

Students E, F, H, I, J's results are a little complicated. All the five students' scores of two tests are approximately the same, however, the scores of students E and F in Test A are a little higher than in Test B, while the scores of students I and J in Test A are lower than in Test B. It is natural

that the students' scores in Test B are lower or the same as in Test A, because they forgot the meaning of the roots, as already explained. However, if the students did not work out the meaning of the words in Test A, it was difficult for them to know the meaning in Test B. Nonetheless, Students I and J are the exceptions. There are two possible reasons, as suggested at the beginning of this section: they did not know how to give the definitions of words in Test A even if they understood the word, or they guessed in Test B. Although there is no evidence to suggest which of the two explanations is correct, students' answers in the two tests can offer some insight. Table 9 displays the number of identical words that students could not identify in either Test A or B. The data show that among the unknown words in Test B, at least 50% of the words were the same as those that students could not work out in Test A, suggesting that the reason why students could not provide correct answers in Test B was that they had also failed in Test A. If students could recognize words in Test A, they could identify most of them in Test B too. The present study thus supports Nakayama's hypothesis that knowledge of affixes can help increase vocabulary.

**Table 9: The Total Number of Wrong Answers from both Tests**

	E	F	H	I	J
Test A	6	7	8	11	12
Test B	7	8	8	10	10
Same*	4	4	4	7	5

\* "Same" refers to the number of identical words that students could not identify in either Test A or B.

While there are many contributory factors affecting student G's tests results (low score in Test A and high score in Test B), an important one is that student G did not have better ability to re-express the meanings of words but he could identify the words with the aid of word part strategy. As shown in both Tables 7 and 8, his answers to questions five and six of the questionnaire suggest that he found it difficult to explain or give proper definitions of words with the aid of the meanings of roots and affixes. However, word part strategy helped him recognize words even if he also guessed at meanings. In addition, for the three words—serendipitous, dispersant and etchant—in Test A that were left blank, he answered them correctly in Test B. All the above results demonstrate that word part strategy facilitates vocabulary learning although more time is needed to practise how to use word part strategy to define words.

Although the students' scores from both tests vary a great deal, their answers to question seven (Can you see the connections between the dictionary meaning of the words and the meaning of word parts after I sent you the answers to the tests? Please explain your answer.) in the questionnaire show that all could see the connections between the dictionary meaning of the words in Test B and the meaning of word parts in Test A after the answers to the tests had been sent. For the same reason as in Table 8 above (showing five sample answers to Question 6), five sample answers have been selected for Question 7, too, and are displayed in Table 10. As Nation claims, a very important extension of word part strategy is to help learners to see how the meaning of word parts connects with the dictionary meaning of the new word because this can facilitate retention of words (p. 274). The students' answers in Table 10 also suggest that it is more effective to offer a dictionary definition of new words at the beginning to help students see the connections between the meaning of word and word parts. This process can help students to master word part strategy.

**Table 10: Five Sample Answers to Question 7**

Students	Answers
Student B	Yes, absolutely. After all, it is very logical.
Student C	Yes, I think so. I can see that it is practically the same meaning but in another form, aka word class... to reject, a rejection. It goes from something you do, to something that is.
Student E	Yes, they are connected if you know the base meaning.
Student G	Yes, its always easier when you see the answers and you think "yes of course." Its helps one to realize the truth.
Student I	It actually does make sense to do it that way.

### ***3.4 Analysis of Prefixes and Suffixes***

As mentioned in the theoretical background, many researchers have studied the ordering of affixes in English (Mochizuki & Aizawa, 2000; Hay, 2002; Plag & Baayen, 2009), and their findings suggest that affixes are acquired in a certain order, some being easier to master than others. In this section, the results of the two tests are discussed from an affix perspective in order to investigate whether or not one's choice of affix affects one's application of word part strategy to establish the meaning of a word.

Hatch and Brown claim that English prefixes are categorized according to their semantic meaning; suffixes, on the other hand, can be classified according to their change in word class (pp.271-275).



Therefore, prefixes and suffixes have different functions when they are attached to roots. However, according to the results of the present study, there is no major difference in the acquisition of prefixes and suffixes in both Tests A and B. As Table 11 shows, the scores of prefixes and suffixes in both tests are approximately 69%, although the results of the tests are not consistent, i.e. the score of prefixes is a little higher than that of suffixes in Test A, while the result in Test B is the opposite. The results are discussed below and individual affixes are investigated.

**Table 11: The Accuracy Rate of Affixes in the Two Tests**

	Prefixes	Suffixes
Test A	72%	67%
Test B	66%	69%

### 3.4.1 Analysis of prefixes

In order to analyze the results in Graph 2 and 3, the number of right answers for ten affixes (the data are from the results of Part B of question 11 in the questionnaire) is shown in Table 12. A detailed analysis of the data is given in the discussion of the graphs. Graph 2 shows the results of five prefixes in both tests; the scores vary a great deal. According to the results of the two tests, students acquired a good knowledge of *de-*, and identified in Test B most of the words (95%) that use this prefix. In addition, they knew exactly how to define the words with *de-* as the score related to *de-* in Test A is 100%. The data in Table 12 also show that all the students mastered the meaning of *de-*. The above results thus demonstrate that a perfect understanding of the prefix *de-* facilitates vocabulary acquisition.

**Table 12: The Number of Right Answers for Ten Affixes**

	in-/im	anti-	sub-	re-	de-	-tion	-ize	-ous	-ance	-ant
Number*	6	8	10	10	10	7	6	10	6	5

\*The total number for each affix is 10.

The second prefix with high scores in both tests is *sub-*. The score related to *sub-* in Test B is a little higher than in Test A: most students failed to give a proper definition of the word *deregulate* in Test A, but they could identify the meaning of the word when they saw the definition in Test B. The root of *deregulate* is *regulate*, which is a familiar word to most students, it is thus possible that they could work out the meaning by connecting it with the meaning of the

root and prefix. The data in Table 12 demonstrate that all the students mastered *sub-*, which also substantiates that good knowledge of the prefix *sub-* helped students to understand the words in Test B. The reason why the score for Test A is lower than Test B is that students did not, as already established, know how to re-express the meaning of words using *sub-*.

**Graph 2: Individual Prefix Results for the Two Tests**

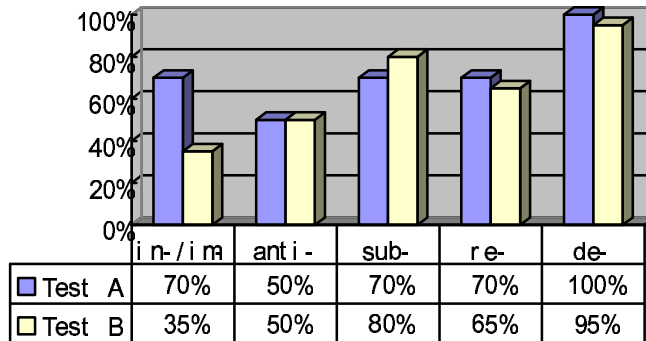


Table 12 shows that all the students knew the meaning of *re-*, however, the scores for this prefix in both tests are relatively low as shown in Graph 2, which demonstrates that words with *re-* are a little difficult to understand if one applies word part strategy. Unlike other prefixes, the scores of *in-/im-* range a great deal, from 70% to 35%. The reason the score in Test B is low can be explained with reference to the students' scores of two words: *implausible* and *immoderate*. According to the students' answers in both tests, 40% of the students did not identify the word *implausible* in Test B and 20% failed to understand the word in Test A; 80% of the students did not understand the word *immoderate* in Test B and 40% could not work out the word in Test A. The data demonstrate that the score in Test B is low is because most students failed to identify the word *immoderate*; the reason students could not work out the meaning of the word is that the root word *moderate* was not familiar to most students. In addition, 40% of the students failed to master the meaning of *in-/im-*, as shown in Table 12. It is thus clear that poor knowledge of the meaning of this prefix also reduces the effectiveness of word part strategy when it comes to understand words. More time is needed to learn the meaning of the affix and practise the word part strategy.

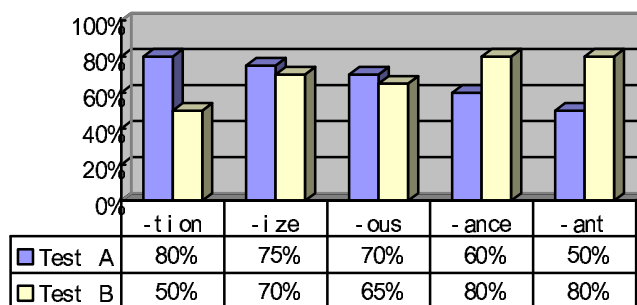
The last prefix to be discussed is *anti-*. Graph 2 shows that the scores for this prefix are very low in both tests (50% for each test). It is interesting to note that 90% of the students failed to work

out the meaning of *antipathetic* in both tests, which is the main reason why the scores of two tests are so low. The meaning of *pathetic*<sup>6</sup> is “arousing pity, especially through vulnerability or sadness,” while the meaning of *antipathetic* is “showing or feeling a strong aversion; being nasty, unpleasant.” The definitions of the two words show that there is no explicit and direct connection between the meaning of the root and prefix (*anti-* means against, opposing) and the meaning of the whole word. That is to say, words like *antipathetic* are difficult to work out with the aid of the word part strategy. Nonetheless, only one student (Student I) did not identify the other word *anticatalyst* in both tests. Moreover, the data in Table 12 show that 80% of the students have mastered the meaning of *anti-*; more have mastered it than the other five affixes. Therefore, it can be seen that a good knowledge of the prefix *anti-* facilitates vocabulary learning and can help students to work out most words.

### 3.4.2 Analysis of suffixes

Graph 3 shows the results related to suffixes in the two tests. The data show that the results for suffixes are more consistent than those for prefixes. The results are categorized according to three perspectives for discussion purposes: the first includes *-tion*, for which the scores in the two tests vary a great deal; the second includes *-ize* and *-ous*, where the scores are similar; and finally, *-ance* and *-ant* belong to the third category because their scores in Test B are much higher than in Test A.

**Graph 3: Individual Suffix Results for the Two Tests**



The score for *-tion* in Test A is the highest, which demonstrates that most words ending in *-tion* can be understood with the aid of word part strategy. However, the score in Test B is the lowest.

<sup>6</sup> The definitions of *pathetic* and *antipathetic* are from *Oxford Dictionary*: <http://oxforddictionaries.com/>.

As mentioned in Section 3.3.2, one possible reason for the low score of *-tion* in Test B is that many of the root words ending in *-tion* were not familiar to the students. In addition, although 80% of the students worked out the words ending in *-tion* in Test A, 70% forgot the meaning of this suffix, as demonstrated in Table 12. The above results thus suggest that students need to study the meaning of affixes on a regular basis.

Both the scores of *-ize* and *-ous* in Tests A and B are relatively high, which demonstrates that students could use word part strategy to understand the meaning of words with the two suffixes and thereby facilitate vocabulary learning. The reason why the scores in Test B are lower than in Test A is that not every root word was remembered after answering Test A. The scores for *-ize* in the two tests are higher than the scores for *-ous*. However, more people mastered the meaning of *-ous* than *-ize* according to the data in Table 12 (all the students knew the meaning of *-ous*, while only 60% of the students acquired the meaning of *-ize*). Therefore, as already suggested, students need to spend more time studying the meaning of affixes.

The results for the suffixes *-ance* and *-ant* are quite different to those of other suffixes in that the scores in Test B are much higher than in Test A. As already explained in Section 3.3.3, it is natural that students' scores in Test B are lower than in Test A, because they forget the meaning of the roots. However, if the students did not work out the meaning of the words in Test A, it was difficult for them to know the meaning in Test B. According to the students' answers in Test A, those who failed to give the definitions of the words with the two suffixes either left the words blank or did not know how to give a proper definition. Two sample answers for each suffix are given in Table 13. The answers related to *vigilance* show that while students may know the meaning of the word, they failed to define it, however, they could work out the meaning of *vigilance* when they saw the definition in Test B. Similarly, students who wrote the definition of *dispersant* as a "person" could understand that it actually means "something" to do with chemicals when they answered Test B. The reason why the scores in Test B are higher than in Test A is that students did not know how to give the definition of the words in Test A even if they understood the word. The data in Table 12 also show that students did not master the suffix *-ance* and *-ant* since the scores are only 60% and 50%. Therefore, these two suffixes are difficult to acquire, and the students need to practise how to use the affix knowledge to explain derivative

words.

**Table 13: Sample Answers of the Words *Vigilance* and *Dispersant***

Students	Answers
Student E	Vigilance: something that keeps careful watch for possible danger.
Student J	Vigilance: you are careful, you don't want to get hurt.
Student C	Dispersant: a person who distribute over a wide area.
Student I	Dispersant: the person that disperse

In summary, this section discusses the results of two tests from an affix perspective. They demonstrate that the choices of affixes influence the application of word part strategy. The prefixes *de-* and *sub-* are better mastered by students and are more helpful in understanding words and increase vocabulary. Although students had a good knowledge of *re-* and *-ous*, it was also difficult to work out words with the two affixes with the aid of word part strategy. On the contrary, the knowledge of *-tion* and *-ize* is very useful in identifying words although more time is needed to acquire these two suffixes. Most students did not know the meaning of *in-/im-*, *-ance* and *-ant*; neither are these three affixes efficient when it comes to facilitating vocabulary acquisition. Finally, *anti-* was mastered by most people and can be applied to understand words. However, some difficult words (e.g. *antipathetic*) are difficult to work out with the aid of word part strategy.

### 3.5 Analysis of the Questionnaire

As explained in Section 3.2, the questionnaire incorporates different aspects of the present study. Questions four to seven and questions ten and eleven in the questionnaire are discussed in Section 3.3 as a context for discussing the results of the tests. In this section, the remaining questions are discussed to investigate students' attitudes to vocabulary learning strategy and word part strategy.

**Table 14: Answers to Questions 1 and 2**

Questions	Answers & Percentages		
Question 1	A. Yes 100%	B. Not really 0%	C. No 0%
Question 2	A. Yes 0%	B. Sometimes 60%	C. No 40%

Table 14 shows the results of questions 1 and 2 in the questionnaire. Question 1 concerns

students' attitude towards using vocabulary strategies to learn new words; the results show that all the students thought it was important to learn vocabulary acquisition strategies. However, according to the answers to question 2 (Do you usually use vocabulary strategy to learn new words?), only 60% of the students used vocabulary strategy on occasions, and 40% never used them at all. As mentioned in the theoretical background, many researchers have noted the importance of vocabulary learning strategy in helping students to become independent learners; more time and effort are thus needed to encourage students to use vocabulary learning strategies. Question 3 was designed to establish which strategies are favoured by the students when they encounter a new word. The results are displayed in Table 15. The results suggest that none of the students had ever use word parts to guess meaning of words before. Since word part strategy is, as many researchers have shown (Nation and Waring, 1997; Schimitt, 1997; Nation, 2001), efficient in facilitating vocabulary learning, it is highly advisable to introduce word part strategy to students and help them to practise the strategy.

**Table 15: Answers to Question 3**

Answers	Percentages
A. I use words parts (i.e. affixes and roots) to guess.	0%
B. I look up the word in a dictionary.	100%
C. I guess the meaning by studying the context.	60%
D. I use another method (please explain)	0%

Table 16 displays students' answers to questions 8 and 9. The students' answers to question 8 show that 40% thought word part strategy was helpful, and another 60% claimed the strategy was helpful to some extent. The results for this question substantiates the results of Test A in that four students had mastered the strategy better than others and the word part strategy helped all the students to work out most words. Moreover, when asked whether or not the students wanted to learn more about affix knowledge and word-formation rules in question 9, 60% of the students said they would learn them in the future; 40% were not sure. It can be concluded that the present study had a positive effect on the students because they they have expressed a desire to learn more about word part strategy even though none of them had ever used the strategy before.

**Table 16: Answers to Questions 8 and 9**

Question 8		Question 9	
Answers	Percentage	Answers	Percentages
A. Very helpful	40%	A. Yes	60%
B. Helpful to some extent	60%	B. Maybe	40%
C. I do not think it is helpful at all	0%	C. No	0%

#### **4. Summary and Conclusion**

The present study investigates whether word part strategy is useful in helping students to understand unfamiliar words as well as facilitate vocabulary learning. Based primarily on the results of two tests and a questionnaire, the study assesses different perspectives on the efficiency of learning vocabulary with the aid of the word part strategy.

The results for Tests A and B demonstrate that word part strategy helps students to understand the meaning of words and facilitates vocabulary learning. Moreover, the better affix knowledge students have, the more efficient is the strategy in facilitating vocabulary acquisition. However, more time is needed to learn the meaning of affixes and to practise how to re-express meaning of words with the aid of the word part strategy. A helpful step, as already suggested, is to offer a dictionary definition of a new word to help students see the connections between the meaning of the word and its constituent word parts. This process can help students to master word part strategy.

In addition, the analysis of the test results from an affix perspective demonstrates that one's choice of affix also affects how word part strategy is applied. The affixes *de-*, *sub-*, *-tion*, *-ize* and *anti-* are more helpful in understanding words and increasing vocabulary than the other five. However, more time is needed to acquire the meaning of affixes *-tion* and *-ize*. Although students had a good knowledge of *re-* and *-ous*, it is also difficult to work out words using these two affixes. Finally, the most difficult affixes to be mastered are *in-/im-*, *-ance* and *-ant*; neither are these three affixes efficient when it comes to facilitating vocabulary acquisition.

In conclusion, it is clear that word part strategy can assist students in working out most words and increasing their vocabulary. As one of the experimental studies which focuses on the effectiveness of word part strategy, the results of the study demonstrate that the efficiency of word part strategy changes a great deal when considering individual performances. Further research should be carried out in a wider range to investigate the connection between students' English level and the effectiveness of word part strategy. This study is a starting point.



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## Appendices

### Appendix 1

*Dear students,*

*I am very grateful for your participation in this vocabulary test. The words in the test are all advanced, so it does not matter if you do not know most of them. Also, this is not a formal test and does not affect your grade at the university.*

### Pre-test

There are 60 words with 40 meanings in 10 groups. Please choose the right word to go with each meaning. Write the number of that word next to its meaning. There is an example below.

#### NOTE!!

You may not consult with anyone else. No dictionary is allowed. **DO NOT GUESS!!** First look at the 6 words on the left, if you do not know the word, then skip it. Only write down the answer if you know the exact meaning of the word. Thank you for your truthful answers!

#### Example:

- 1 birth
- 2 hire        \_\_ 1 \_\_ being born
- 3 horse        \_\_ 3 \_\_ animal with four legs
- 4 motor        \_\_ 5 \_\_ something used for writing
- 5 pencil        \_\_ 4 \_\_ this moves a car
- 6 wall

#### Group I

- 1 deputize
- 2 allegiance        \_\_\_\_\_ careful and persistent work or effort
- 3 anthologize        \_\_\_\_\_ temporarily act or speak on behalf of someone else
- 4 diligence        \_\_\_\_\_ examine and analyse in detail
- 5 convergence        \_\_\_\_\_ loyalty or commitment to a superior or to a group or cause
- 6 anatomize

## Appendix 2

### Outline of the Lecture

**1. –ion:** the suffix attached to verbs ending in –ate to form nouns

**Create:** bring (something) into existence

**Creation:** the action or process of bringing something into existence

**2. –ize:** the suffix forms verbs

**Modern:** relating to the present or recent times as opposed to the remote past

**Modernize:** adapt (something) to modern needs or habits

**3. –ous:** the suffix forms adjectives

**Glory:** high renown or honour won by notable achievements

**Glorious:** having , worthy of, or bringing fame or admiration

**4. –ce/-cy:** the suffix attached productively to adjectives in –ant/-ent to form nouns

**Efficient:** (of a system or machine) achieving maximum productivity with minimum effort

**Efficiency:** the state or quality of being efficient

**Consequent:** following as a result or effect

**Consequence:** a result or effect, typically one that is unwelcome or unpleasant

**5. –ant:** the suffix forms count nouns referring to persons or to substances involved in biological, chemical or physical processes

**Apply:** make a request

**Applicant:** a person who makes a formal application for something, especially a job

**Suppress:** prevent the development, action, or expression of (a feeling, impulse, etc.); restrain

**Suppressant:** a drug or other substance which acts to restrain something

**6. in-/im-/il-/ir-:** not

**Active:**

**Inactive:** not engaging in or involving any or much physical activity

**Possible:**

**Impossible:** not able to occur, exist, or be done

**Legal:**

**Illegal:** contrary to or forbidden by law, especially criminal law

**Regular:** arranged in a constant or definite pattern, especially with the same space; recurring at short uniform intervals:

**Irregular:** not even or balanced in shape or arrangement; occurring at uneven or varying rates or intervals

**7. anti-: against, opposing**

**War:**

**Anti-war:** opposed to war in general or to the conduct of a specific war

**8. sub-: below, under**

**Title:**

**Subtitle:** a subordinate title of a published work or article giving additional information about its content; captions displayed at the bottom of a cinema or television screen that translate or transcribe the dialogue or narrative

**9. re-: again, repeatedly**

**Gain:** obtain or secure (something wanted or desirable)

**Regain:** obtain possession or use of (something, typically a quality or ability) again after losing it

**10. de-: taking something away; to remove; the opposite**

**Rail:** railway

**Derail:** cause (a train or tram) to leave its tracks accidentally

Appendix 3

**Test A**

Please use word formation rules to explain the meaning of the following 20 words. The meaning of the roots is given. There is an example below. You may not consult with anyone else. No dictionary is allowed. Please write **LEGIBLY!!**

Example:

*Frame: formulate or express (a concept, plan, or system).*

**Reframe:** express (concept or plan) differently

1. Repudiate: refuse to accept; reject.

Repudiation: \_\_\_\_\_

2. Aggravate: make (a problem, injury, or offence) worse or more serious.

- Aggravation: \_\_\_\_\_
3. Deputy: a person who is appointed to undertake the duties of a superior in the superior's absence.  
Deputize: \_\_\_\_\_
4. Anatomy: a study of the structure or internal workings of something  
Anatomize: \_\_\_\_\_
5. Serendipity: the occurrence and development of events by chance in a happy or beneficial way  
Serendipitous: \_\_\_\_\_
6. Duplicity: deceitfulness; a fraudulent or dishonest representation.  
Duplicitous: \_\_\_\_\_
7. Allegiant: being loyal, faithful, devoted.  
Allegiance: \_\_\_\_\_
8. Vigilant: keeping careful watch for possible danger or difficulties.  
Vigilance: \_\_\_\_\_
9. Disperse: distribute or spread over a wide area.  
Dispersant: \_\_\_\_\_
10. Etch: (of an acid or other solvent) corrode or eat away the surface of (something).  
Etchant: \_\_\_\_\_
11. Moderate: average in amount, intensity, quality, or degree.  
Immoderate: \_\_\_\_\_
12. Plausible: (of an argument or statement) seeming reasonable or probable.  
Implausible: \_\_\_\_\_
13. Pathetic: arousing pity, especially through vulnerability or sadness.  
Antipathetic: \_\_\_\_\_
14. Catalyst: a substance that increases the rate of a chemical reaction without itself undergoing any permanent chemical change.  
Anti-catalyst: \_\_\_\_\_
15. Irrigate: supply water to (land or crops) to help growth, typically by means of channels.  
Sub-irrigate: \_\_\_\_\_
16. Discipline: a branch of knowledge, typically one studied in higher education.  
Sub-discipline: \_\_\_\_\_

17. Apportion: divide up and share out.

Reapportion: \_\_\_\_\_

18. Furbish: give a fresh look to (something old or shabby); renovate.

Refurbish: \_\_\_\_\_

19. Regulate: control something by means of rules and regulations.

Deregulate: \_\_\_\_\_

20. Hydrate: cause to absorb water.

Dehydrate: \_\_\_\_\_

## Test B

There are 40 words with 20 meanings in 4 groups. Please choose the right word to go with each meaning. Write the number of that word next to its meaning. You may not consult with anyone else. No dictionary is allowed.

### *Group I*

**1 deputize**

**2 allegiance**

**3 anthologize** \_\_\_\_\_ temporarily act or speak on behalf of someone else

**4 diligence** \_\_\_\_\_ examine and analyse in detail

**5 convergence** \_\_\_\_\_ loyalty or commitment to a superior or to a group or cause

**6 anatomize** \_\_\_\_\_ showing or feeling a strong aversion; being nasty, unpleasant

**7 antipathetic** \_\_\_\_\_ not sensible or restrained; excessive

**8 immoderate**

**9. archaize**

**10. imprudent**

### *Group II*

**1 deregulate**

**2 dispersant**

**3 aggression** \_\_\_\_\_ the state of becoming worse or more serious

**4 imprudent** \_\_\_\_\_ an acid or corrosive chemical; a mordant

- 5 anticatalyst** \_\_\_\_\_ a liquid or gas used to spread small particles in a medium
- 6 aggravation** \_\_\_\_\_ a substance that slows down a chemical reaction
- 7 etchant** \_\_\_\_\_ remove restrictions from
- 8 bacterize**
- 9 anti-aliasing**
- 10. eloquence**

*Group III*

- 1 sub-discipline**
- 2 duplicitous**
- 3 exuberance** \_\_\_\_\_ the action of keeping careful watch for possible danger or difficulties
- 4 regellate** \_\_\_\_\_ being deceitful, dishonest
- 5 subaudition** \_\_\_\_\_ assign or distribute (something) again or in a different way
- 6 regatta** \_\_\_\_\_ a field of specialized study within a broader branch of knowledge
- 7 reapportion** \_\_\_\_\_ rejection of a proposal or idea
- 8 capricious**
- 9 vigilance**
- 10 repudiation**

*Group IV*

- 1 sub-irrigate**
- 2 serendipitous**
- 3 empathy** \_\_\_\_\_ renovate and redecorate (something, especially a building)
- 4 impeccable** \_\_\_\_\_ occurring or discovered by chance in a happy or beneficial way
- 5 dehydrate** \_\_\_\_\_ to water (land) by a system of underground pipes
- 6 ineluctable** \_\_\_\_\_ not seeming reasonable or probable; failing to convince
- 7 deconcentrate** \_\_\_\_\_ cause (a person or their body) to lose a large amount of water
- 8 impertinent**
- 9 implausible**
- 10 refurbish**



Appendix 4

**Questionnaire**

1. Do you think it is important to use vocabulary strategies to learn new words?

- A. Yes            B. Not really            C. No

2. Do you usually use vocabulary strategy to learn new words?

- A. Yes            B. Sometimes            C. No

3. Which of the following strategies do you use when you encounter a new word? (*You can choose up to two answers*).

A. I use words parts (i.e. affixes and roots) to guess.

B. I look up the word in a dictionary.

C. I guess the meaning by studying the context.

D. I use another method (please explain): \_\_\_\_\_

4. Do you think it is difficult to explain the advanced English words in Test A by using word part strategy?

A. Yes (please explain): \_\_\_\_\_

B. No (please explain): \_\_\_\_\_

5. Do you think it is easy to answer the questions in Test B?

A. Yes (please explain): \_\_\_\_\_

B. No (please explain): \_\_\_\_\_

6. Did you use the word part strategy explained in my lecture to analyse words when you answered the questions in Test B?

A. Yes (please explain): \_\_\_\_\_

B. No (please explain): \_\_\_\_\_

7. Can you see the connections between the dictionary meaning of the words and the meaning of word parts after I sent you the answers to the tests? Please explain your answer.

A. Yes (please explain): \_\_\_\_\_

B. No (please explain): \_\_\_\_\_

8. How do you evaluate the helpfulness of using affix knowledge and word part strategy in understanding the meaning of the new words in the tests you have done in the context of my study?

- A. Very helpful
- B. Helpful to some extent
- C. I do not think it is helpful at all

9. Do you want to learn more about affix knowledge and word-formation rules in the future?

- A. Yes
- B. Maybe
- C. No

10. Do you think it is necessary to practise word part strategy much more in order to grasp it?

- A. Yes
- B. Not really
- C. No

11. Please complete the following questions by using word-formation knowledge.

A. Please identify the different word parts in the following four words.

Example: unhappiness      un/happi/ness

- 1) de-contextualize
- 2) reassurance
- 3) defendant
- 4) ungracious

B. Pair each affix in bold with the answers in the box below.

1. again	2. makes a noun	3. to remove	4. not	5. makes a verb
6. makes an adjective	7. former	8. against, opposing	9. below, under	
10. makes a noun referring to person or to substance			11. makes an adverb	
12. with, together	13. above			

**absorbance** \_\_\_\_\_

**reconsider** \_\_\_\_\_

**imprudent** \_\_\_\_\_

**gracious** \_\_\_\_\_

**depollute** \_\_\_\_\_

**westernize** \_\_\_\_\_

**antibiotic** \_\_\_\_\_

**foundation** \_\_\_\_\_

**subarid** \_\_\_\_\_

**suppressant** \_\_\_\_\_

Thank you for your kind participation and truthful answers!