Hebron University

Faculty of Graduate Studies

English Department

Applied Linguistics and the Teaching of English

A Morphological Approach towards Teaching Vocabulary among a Sample of EFL

Learners

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This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Applied Linguistics and the Teaching of English, Faculty of Graduate Studies, Hebron University, Palestine.

May 2019

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Declaration

I certify that this thesis, submitted for the Master Degree in Applied Linguistics, is the result of

my own research, and it has not been submitted for a higher degree to any other university.

Dedication

-To the souls of those who have passed away for the freedom of Palestine, the Palestinian martyrs…

- To those who still suffer the pain of prison, the Palestinian freedom prisoners…

-To the injured who fight for the freedom of Palestine…

- To the Palestinian students who suffer every day on their way from and to school because of Occupation…

I dedicate this work

Acknowledgements

I would like, here, to express my great gratitude to my supervisor Dr. Mahmood Eshreteh, whose huge patience, great flexibility, and intense support enlightened the path for me to achieve this work. To his helping hands, which he kept giving me when, on my way, I, sometimes, fell, to his continuous feedback and correction is my thankfulness. My great appreciation is to the trust he bestowed me, which encouraged me to have the will and determination to fulfill this work. My thanks are to his sincere encouragement, which gave me the peace to continue doing this work without surrendering or faltering.

It is also my duty to express my absolute appreciation to my MA instructors, at Hebron University, whose great effort and patience motivated me to learn more and more throughout my study as an MA student.

I would like to thank my family, whose encouragement and trust provided me with the motivation needed to keep going and face the difficulties during my study. My great and polite appreciation is to my lovely illiterate mother, whose great affectionate feelings were the candle lit in the darkness to guide me through this work.

Finally, I owe thanks to my relatives, friends and colleagues, whose sincere encouragement and support accompanied me till this work was finished.

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Abstract

The importance of teaching vocabulary while learning a language is not a controversial issue. Without vocabulary nothing can be done. One way of teaching vocabulary is making use of the morphological analysis through roots and affixes. This study was conducted to 44 Palestinian EFL participants belonging to four different groups (grades): 9th, 10th, 11th, and $12^{th.}$ The research method used to conduct this study is the One- Group Pretest-Posttest Design. The study aims at investigating the effect of the direct (explicit) teaching of the meanings of roots and affixes on enhancing the vocabulary of the four different grades by increasing the ability of these four grades to guess the meanings of newly encountered words. Also, the study aims at finding out whether this effect is significantly different between the four different grades and whether any significant difference may occur due to gender. The data was collected quantitatively through the pretest and post-test, and qualitatively through the participants' report and a three-supervisor focus group report. The results of the pretest showed lack of root and affix knowledge of the participants of the four grades. The results of the post-test showed that the effect of teaching roots and affixes on the four grades is significantly effective. Moreover, the results of the post-test demonstrated no significant differences due to grade and gender.

Keywords: roots, affixes, explicit teaching, quantitative, qualitative.

Abstract in Arabic

ملخص الدراسة

إن للمفردات أهمية بالغة عند تعلم لغة ما، فدون المفردات لا يمكن القيام بأي وظيفة لغوية. و من طرق تعلم المفردات طريقة تعتمد على التحليل الصرفي للكلمة من خلال معرفة المقاطع التي تتكون منها كلمات اللغة و معرفة معاني هذه المقاطع.ومن هنا فقد أجريت هذه الدراسة على عينة من الطلاب الفلسطينيين الذين يتعلمون اللغة الانجليزية كلغة أجنبية. تتكون العينة من 44 طالبا وطالبة ينتمون لأربع صفوف مدرسية مختلفة هي الصف التاسع و الصف العاشر والصف الحادي عشر والصف الثاني عشر. أتبع الباحث تصميم المجموعة الواحدة و الاختباران القبلي والبعدي لأداء هذه الدراسة.و تهدف الدراسة إلى التعرف على الأثر الذي يتركه تعليم معاني المقاطع على تعزيز المفردات لهذه العينة من خلال معرفة معاني كلمات جديدة تحتوي على المقاطع التي تعرف الطالب على معانيها .وتهدف الدراسة أيضا إلى معرفة فيما إذا كان هناك فروقا ذات دلالة إحصائية تعزى لاختلاف الصف او الجنس. للإجابة عن تساؤلات الدراسة تم جمع المعلومات الكمية من نتائج الاختباران القبلي والبعدي، وجمعت المعلومات النوعية من تقارير افراد العينة و تقرير مجموعة بؤرية مكونة من ثلاث مشرفين لغة انجليزية في وزارة التربية والتعليم . أظهرت نتائج الاختبار القبلي أن العينة ليس لديها القدرة على معرفة معاني كلمات جديدة من خلال التحليل الصرفي لهذه الكلمات، وأظهرت نتائج الاختبار البعدي تحسنا ذو دلالة إحصائية واضحة في أداء العينة بعد تعليمهم كيفية معرفة معاني الكلمات الجديدة من خلال التحليل الصرفي و معاني مجموعة من المقاطع. ولا يوجد هناك فروق دالة تعزى لاختلاف الصف او الجنس.

1 CHAPTER ONE: BACKGROUND OF THE STUDY

1.1 Introduction

Every language has its own way of creating its words. The important question, here, is whether there is a relationship between how a word is structured and its meaning. In other words, does the structure of a word lead to its meaning? Or is it just that the relationship between a word and its meaning is an arbitrary one. The internal system of a word is the detective that tells a lot about the words of the different languages. The internal logic of a word is the interest of the linguistic branch that is called morphology.

Most of English language words are not 'arbitrary' words. That is to say, the words in English have an internal system. They can be deciphered. A word in English should not be considered as wholeness or one unit that cannot be analyzed to smaller parts. Looking to an English word as if it were one unit kills the life this word has, and prevents grasping the inside logic of an English word and how this word develops and grows. Words of English have a unique internal system, through which a lot can be said about a word. This internal system tells where a word has come from, how the components of a word produce its meaning, why a word has been written this way, not that way. Morphology is the branch of linguistics that takes care of all these issues. McCarthy (2002) has pointed out that because of the predictability of the meanings of many words, they don't need listing in dictionaries (for example dioeciously). He has investigated the reason behind the predictability of the meanings of these words. He has explained that the reason is due to the parts of these words; these words consist of identifiable parts, and when these parts are put together in a systematic way, the meaning of the entire word can be accurately decided.

So morphology tells everything about words in English, especially how the structure of a word is related to its semantic aspect. This characteristic of the English language is of great importance when developing and learning as well as teaching vocabulary. And not considering it when learning and developing vocabulary is a severe negligence of what an English word is. The following section sheds lights on the concept of morphology in some details.

1.2   Morphology

1.2.1   Definition

The term morphology is Greek. It consists of two parts: *morph-* meaning 'shape, form', and -*ology* meaning 'the study of something'. It was first used to refer to sub-discipline of linguistics by the German linguist August Schleicher in 1859, who used it to refer to the study of words form (Booij, 2007). The Oxford Dictionary and Thesaurus has defined morphology as "The system of forms in a language." (Morphology, 1996, p. 971). Stowe (2019) has stated that morphology is interested in the parts of the words such as prefixes, suffixes and roots, and the history of the words. He has emphasized that this kind of knowledge is very crucial in extending a student's vocabulary

When looking into and investigating an English word, we find that there is logic in what a word is. That is to say, words can be made up of building units. This means that a word may be analyzed to its units. These units are called morphemes. Becerra (2000) has defined morphemes as "The smallest units of language that have meaning or grammatical function and form words or parts of words". And he has defined morphology as "The branch of linguistics in charge of studying the smallest meaningful units of language (i.e., morphemes), their different forms, the internal structure of words, and the processes and rules by which words are formed" (p. 1).

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Fromkin, Rodman and Hyams (2003) have defined morphology as " The study of the internal structure of words, and of the rules by which words are formed" (p. 141). Blachowicz, Fisher and Watts-Taffe (2005) have stated that " Morphology, also known as structural analysis, refers to the study of word parts, such as the Greek roots *tele-* and *graph* in telegraph" (p.15). Also, Jensen (1990) has defined Morphology as "the study of the internal structure of words" (p.1).

Fasold and Connor-Linton (2006) have defined the word from a morphological point of view as the language independent unit of meaning. The independency of a word, they have explained, implicates three conditions: the word doesn't depend on other words, can be separated from other units and can change place. On the other hand, O'Grady (1997) has listed two kinds of words according to the morphemes they contain, namely: simple words consisting of one morpheme and not having internal structure such as *work*, and complex words consisting of two or more morphemes and having internal structure such as *worker*. He defined the morphemes as the language smallest meaning- bearing units. For McGregor, W. (2009), free morphemes are simple words consisting of one morpheme such as *build,* and bound morphemes are morphemes that must be fasten to other morphemes such as *un-* in the word *unusual*.

This characteristic of English word can be of great use , if made use of, when teaching students vocabulary items, because learning the meaning of the building parts of words (e.g. roots and affixes) leads to knowing the meaning of one particular word as well as other words that English learners may encounter in other contexts. Silberstein, Dobson and Clarke (2002) have stated that one way of discovering the meaning of unfamiliar word is analyzing words to their constituting parts that may have Greek, Latin and older English origins. They have stated that by knowing the meaning of these parts, one can decide the meaning of new words, especially when these words are in a context.

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Therefore, the relationship between the morphology of word and its meaning is not arbitrary and so connected that it should be a key approach to teach and learn English language vocabulary

1.2.2 Morphemes and types of morphemes

As mentioned above, Becerra (2000) has defined morphemes as "The smallest units of language that have meaning or grammatical function and form words or parts of words" To create a complete understanding of the concept of morphemes, this section proceeds to discuss the types of morphemes in details. Becerra (2000) has given a classification of morphemes shown in the following figure (1):

Figure 1 Morphemes Classification
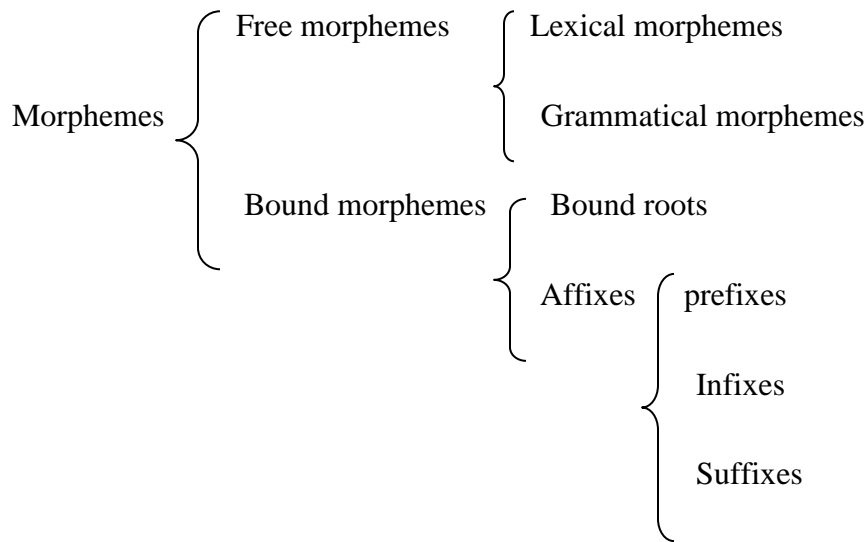
1.2.2.1 Kinds of affixes

There are prefixes and suffixes in English. There are no infixes in English. According to Becerra (2000) affixes can be discussed in two ways: 1-according to their whereabouts in a word and 2-according to their function in the word. For the first point, the following discussion is self-explanatory. When a morpheme comes at the beginning of a word, it is called a prefix, such as

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un- in *unusual*. When a morpheme comes at the end of a word, it is called suffix, such as *-fy* in *magnify*. Both prefixes and suffixes are called affixes. For the second point, there are the derivational and the inflectional affixes.

 Godby et al. (as cited in Becerra, 2000) have explained that derivational affixes affect the semantic and/ or syntactic category of the words they are joined with. Williams (2011) explained that a " Prefix creates a new word." whereas " a suffix can tell you what part of speech a word is. For example, it can tell you if a word is a *noun,* a *verb*, or an *adjective*" (p. 34). For instance, adding the prefix *un-* to the word 'official' turns its meaning into the opposite (not official). But adding the suffix *–fy* to the word '*simple'* makes it a verb (to make simple)."The addition of *-ify* to *pure-purify-* means "to make pure" and the addition of *-cation- purification-* means "the process of making pure" (Fromkin et. al, 2003, p. 83). Silberstein, Dobson, Clarke, Bober and Baudoin (1994) have stated that "Generally, prefixes change the meaning of a word and suffixes change the part of speech." (p. 9)

For the inflectional affixes, they have a grammatical influence on the already present meaning of a word. For example, they affect the number, person, gender, case, etc. For instance, in the present simple tense the inflectional *s* is added to the verb *speak* to signify the third person singular (*he, she* and *it*). The addition of the *s* to the verb *speak* does not affect its being a verb or its meaning. Another example, *stronger* and *strongest* are still adjectives despite the addition of *–er* and *–est.* Morphemes that don't affect the meaning of a word and have an inflectional aspect are called inflectional morphemes. For example, the morpheme *s* in the sentence "He likes football" shows that the verb is in the present tense, the subject is the third person singular, but it doesn't affect the meaning of the word *like* by any means.

1.2.2.2   Grammatical morphemes

These can be either free or bound morphemes. The free morphemes are functional in that they affect the grammatical aspect of a sentence. They have a job to do in connecting, for example, the different parts of the sentence. For example, the word *of* cannot be used out of a sentence and it is used to do a job for the other parts of the sentence. In other words, grammatical morphemes are not used as individual words in the language because they are empty of meaning, but they have a job to do in a sentence. Fromkin et. al. (2003) explained that there are morphemes with functional dimension due to their grammatical role in sentences and they are free ones. They have stated that there are bound morphemes that affect aspects such as tense, gender, and so on, and they never affect the syntactic class of morphemes they are added to.

For the other kind of the grammatical morphemes, bound morphemes, as it is clear from Fromkin et. al. (2003), they are attached to another word to do a job for the words they are attached to. For example, the grammatical bound morpheme *s* causes a singular noun be a plural one, but it does not affect its meaning.

1.2.2.3   Roots and stems

When our interest is the concept that a word has, what we look for is the root, whereas when our interest is the derivational stages of the word what we look for is stem. Roots are these parts of the words where the basic meaning of words can be met. For example, the word *thermometer* has its basic meaning contained in the root *therm*. This root has to do with heat and temperature. Becerra (2000) has made clear that the part of the word carrying the most important concept of the word is the root, or base. He has stated that roots constitute the essence of words, and there are free and bound roots. Becerra has noticed that roots, when used as free morphemes, they

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make free words (with content and function) by themselves such as *home, book, fast,* etc. Moreover, he has added that the bound roots are parts of words, and they have meaning only when they are attached to other morphemes. *–ceive* in perceive, *-tain* in *attain* are examples showing bound roots.

Stems can be thought of as a chain. For example, one ring is a stem because we can add another ring to it, and the two rings are a new stem because a third ring can be added to the first two rings. The result is a new stem containing the three rings and so forth. For example, the word *use* is a stem and the addition of *ful* results in another stem: *useful,*again*,* the addition of *ness* results in *usefulness*. Becerra (2000) has stated that free roots are considered stems because these free roots by themselves are independent words with a certain part of speech, and by adding derivational affixes, other parts of speech are derived. So, one stem is a free root that, by some addition, becomes another stem and free root. For example, *disagreement, disagree, agreement* and *agree* are stems.

Fromkin, Rodman and Hyams (2003) have defined a root as "a lexical content morpheme that cannot be analyzed into smaller parts. A root may or may not stand alone as a word (*paint* does, *ceive* does not)" (p.80). Therefore, the roots that can stand on their own and constitute words are called free roots, such as the root *paint*. On the other hand, roots that can't have meanings on their own and should be attached to other morphemes to have meanings are called bound roots like the root *ceive*. For example, it has a meaning when it is connected to the prefix *con-*. It is clear that a root can be distinguished from other parts of a word because it is the morpheme that has the 'content' meaning. For example, the part *ceive* in the word *perceive* is the root that has the 'content' meaning. When a morpheme forms a word by itself, it is a free morpheme, such as *boy*, and when it can't stand on its own, it is a bound morpheme, such as *un-*. A bound

morpheme is a prefix when it comes before other morphemes, and it is a suffix when it follows other morphemes (Fromkin, Rodman, & Hyams, 2003).

 Blachowicz, et.al. (2005) have mentioned the general distinction between free and bound morphemes that what can stand alone is a free morpheme such as *cut,* and what can't stand alone and need to be added to another is a bound morpheme like *–ing.* They have stated that the free morphemes are usually referred to as root words, and these root words can be put together to form compound words, for example, *airplane.* Also, they have stated that affixes are bound morphemes joined to root words

Another perspective, that is not isolated from morphology, is etymology. When English learners look into the constituting parts of a word, it is useful for them to learn about the origin and history of these parts. "Etymology is the study of the origin of words, history, and change in meaning", for instance, the word *etymology* comes from the Greek word, *etymon*, which means "true sense" and the ending, *ology*, comes from *logos* which means "word" and is used in the sense of" to study." (Wikipedia, n.d.). "Familiarity with Greek and Latin roots, as well as and prefixes and suffixes, can help students understand the meaning of new words" (McEwan, 2008, p. 1).

1.3   Processes of Formation of New Words in English

 Becerra (2000) has categorized the processes of formation of new words in English into two groups: the first group is of morphological nature, including affixation, compounding, symbolism, reduplication and suppletion, the second group is not necessarily of morphological nature, including acronym, clipping, blending, borrowing, back-formation, word coinage,

functional shift, morphological misanalysis and eponymy. This section explains these two groups of processes briefly.

1.3.1   The morphological processes of new word formation

Through these processes the structure of a word is affected to create another form of the word. In these processes a whole entity is used to get another form. These processes include affixation, compounding, symbolism, reduplication and suppletion. This section discusses these five morphological processes in some detail according to Becerra (2000):

1.3.1.1   *Affixation*

Through this process the word is exposed to addition at the beginning or at the end of a word to get new words. Apart from affecting the part of speech the word belongs to, this process affects the word in that it is a way to create new words with new meanings. In other words, this process leads to words with different concepts as well as words with different part of speech

Affixation is the addition of derivational affixes (i.e., prefixes, and suffixes) to roots or stems to create new words. For example, adding the suffix *–able* to the root *comfort* creates the new word *comfortable*. In the same manner, adding the prefix *un-* to the stem *comfortable* produces the new word *uncomfortable.*

1.3.1.2   *Compounding*

As for compounding, it is the combination of two or more roots, usually free, to form a new word, for example, the word blackboard. The word *blackboard* consists of two words (*black* and *board*) and at the same time a word by itself. Another point related to the compound words is that they can be written in three ways, namely: open, i.e. there is a space between the parts of the compound word, e.g. toy store , hyphenated, i.e. a hyphen is used to separate the parts, e.g.

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flower-pot, finally, solid, i.e., there is neither space nor hyphen, e.g. flowerpot. Moreover, in general the meaning of the compound can be guessed by the elements of the compound. There are a few cases the meaning of a compound cannot be known from the individual parts of it, so the compound is learnt as one word. Kosur (2019) has referred to the compound whose meaning can be known from its parts as compositional, and to the one whose parts do not create its meaning as non-compositional. It is vital to mention that a compound may consist of bound root, e.g., *socio-,* and a free root, e.g., *socioeconomic.* Also, a compound may consist of two bound roots, e.g., *nephrolithotomy.* Kosur (2019) has stated that it is important to differentiate between compound nouns and modified nouns. He has emphasized that the compound noun *blackbird* is totally different from the modified noun *bird* that is modified by the adjective *black* as *black bird.* The compound noun blackbird is inseparable and refers to a certain kind of bird, while in *black bird* as modified noun refers to any black bird because *black* is an adjective that modified the noun *bird*

1.3.1.3   Symbolism

Unlike affixation, which affects words through adding at the beginning or at the end of words, this process affects words by altering and modifying the structure of words. Through this process another grammatical form is reached. Symbolism, also, morpheme internal change, involves a phonemic change of a morpheme, for example, the word *tooth* becomes *teeth,* when it is plural. Another example is the verb *sing*. To get the past and past participle form, this verb becomes *sang* and *sung* respectively. The words created this way are considered irregularities.

1.3.1.4 Reduplication

Reduplication, as the name suggests, is repeating something. There are two types of reduplication, including complete reduplication and partial reduplication. The former is more common in English than the latter. An example of the complete reduplication is *goody-goody*. As for the partial reduplication, *walkie-talkie* is a self-explanatory example.

1.3.1.5 Suppletion

Unlike symbolism, which partially affects phonemic parts of the word, suppletion is a complete change in the form of a word. Through this process, a complete new word is used to express another grammatical content. For instance, the word *good* becomes *better* in the comparative. Similarly, the past form of *go* is *went.* The words dealt this way are considered irregular.

1.3.2 The non-morphological processes of new word formation

A according to Becerra (2000) these processes are acronym, clipping, blending, borrowing, back-formation, word coinage, functional shift, morphological misanalysis and eponymy. He has discussed these processes as follows:

1.3.2.1 Acronyms

These are words derived from the initial letters of other words or phrases. The product word of these initial letters becomes a new word that is pronounced as a word. "Acronyms are words derived from the initials of several words. Such words are pronounced as the spelling indicates: *NASA* from *N*ational *A*eronautics and *S*pace *A*gency, and *UNESCO* from *U*nited Nations *E*ducational, *S*cientific, and *C*ultural *O*rganization." (Fromkin, Rodman, & Hyams, 2003, p. 95). Becerra (2000) has considered another type of acronyms, that is, when the acronym word is

pronounced as 'sequences of letters'. This type is called *alphabetism. VIP (Very Important Person)* and *FBI (Federal Bureau Investigations)* are examples of this kind.

1.3.2.2 Clipping (abbreviation)

Clipping, as the name suggests, is removing part of a word. Kosur (2019) has defined clipping as "The word formation process in which a word is reduced or shortened without changing the meaning of the word." For example, *advertisement* is clipped as *ad*. He has numerated four types of clipping: first, the word may be clipped from the end, for example, the word *gasoline* is clipped as *gas,* second, the word may be clipped from beginning part, for instance, the word *alligator* is clipped as *gator*, third, the word may be clipped from both the beginning and end, e.g., the word *influenze* is clipped as *flu,and* finally, clipping affects more than one word such as *sitcom* which is the result of clipping the words *situation comedy*.

1.3.2.3 Blending

Blending is mixing parts of words together to create a new word. The meaning of this word is the mixture meaning of the words blended. "Blending is the word formation process in which parts of two or more words combine to create a new word whose meaning is often a combination of the original words" (Kosur, 2019). For example: the word *biopic* is the result of blending the two words *biographical* and *picture*. Yousefi (2009) has mentioned five ways of blending: one word's beginning is joined with another word's end ,e.g., *brunch* is the result of blending *breakfast* and *lunch,* two words' beginnings are joined, e.g., *cyborg* is the blend from *cybernetic* and *organism*, whole word is attached to another word's part, e.g., *guesstimate* is the blend of *guess* and *estimate*, two words are blended because of common sequence of sounds, e.g.,

Californication is a blend of the two words *California* and *fornication*, and the blend when multiple sounds of two words are combined, e.g., *slithy* is the combination of *lithe* and *slimy.*

1.3.2.4 Borrowing

Borrowing is when one language takes or loans from other languages. "In 1973, a computerized survey of about 80,000 words in the old Shorter Oxford Dictionary (3rd edition) was published in Ordered Profusion by Thomas Finkenstaedt and Dieter Wolff." The survey showed that the 80,000 English words were 28.3% French, 28.24% Latin, 25% from Germanic languages, 5.32% Greek, 4.03% of unknown origin, 3.28% from proper nouns, and less than 1% from all other languages. For example, the word *ozone* comes from German, *yoghurt* from Turkish, and *robot* from Czech (Yousefi, 2009).

1.3.2.5 Back-formation

Back-formation is the process of deleting a mistakenly supposed affix to create or derive a new word (Fromkin, Rodman, & Hyams, 2003). Thinking mistakenly that the *or* in the word *editor* is a suffix, not original part of the word, leads to derive the verb *edit.* Becerra (2000) has noticed that this process is usually meant to change a word with certain part of speech to another part of speech. The words *peddle, edit, hawk, enthuse, stoke, swindle, televise, donate, sculpt, buttle* are the back-formation of the words *peddler, editor, hawker, enthusiasm, stoker, swindler, television, donation, sculptor* and *butler* respectively.

1.3.2.6 Word coinage (invention)

This process is like casting something totally new using a new mould. The result is a totally new word that didn't exist before. "Coinage is the invention of totally new words. The typical process of coinage usually involves the extension of a product name from a specific reference to a more

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general one. For example, think of *Kleenex*, *Xerox,* and *Kodak*" (Yousefi, 2009). "…. words are sometimes based on existing words, such as *Jell-o on gel*, *Kleenex on clean*….. However, words are more often created out of thin air, i.e., without basing on any other pre-existing word." These names are used sometimes to refer to a process, e.g, to *xerox* is to *photocopy* (Becerra, 2000, p.10).

1.3.2.7   Functional shift

This process involves shifting from one grammatical class to another without changing of the form. For example, the word *water* can be used as a verb or a noun without changing its form. Sometimes there is change in the pronunciation while the word is changing from one grammatical class to another. For example, the word *use*, when it is a verb, it is pronounced as use /-z/, and pronounced as use /-s/ when it is a noun. Some words, in addition to the voicing of the final consonant, there is obvious change in pronunciation, e.g., *breath*, when change from a noun to a verb, it is pronounced as breath \bre^θ\, breathe \bri:^{ð}\ respectively.

 Moreover, there is a change in terms of the stressed syllable. For example, the word *record* has the stress on the first syllable (re), when it is a noun, and the stress is on the second syllable (cord), when it is a verb. (Godby et al., 1982; Byrne, 1978; Pei, 1966, as cited in Becerra, 2000).

 Quirk et al. (1985) have presented other common cases of functional shifting or conversion, as it is also called. First, the following shows the conversion to noun cases: a verb becomes a noun, e.g., *answer*, the adjective becomes a noun, e.g., *comic*, again, the adjective becomes a noun, e.g., (the) *poor*, closed-class word becomes a noun, e.g., *a must*, an affix becomes a noun, e.g., *isms*, a phrase becomes noun, e.g., *do's and don'ts*. Second, the following shows the conversion

to verb cases: a noun becomes a verb, e.g., cash, an adjective becomes a verb, e.g., *empty.* Third, the following shows the conversion to adjective case: from noun to adjective, e.g., *cotton.*

1.3.2.8 *Morphological misanalysis*

Thinking, erroneously, that the word *hamburger* consists of two morphemes, i.e. *ham-* and -*burger*, originally it is a one-morpheme word, leads to creating new words such as *cheeseburger* and *salmonburger.* This process is called morphological misanalysis or false etymology (Godby et al.,1982, as cited in Becerra, 2000).

1.3.2.9 *Eponymy*

It is a way to "…derive words from proper names and they are another of the many creative ways that the vocabulary of a language expands." (Fromkin, Rodman, & Hyams, 2003, p. 98). For example, Washington, D. C. has been named for George Washington and District of Columbia for Christopher Columbus.

Becerra (2000) has grouped suffixes and prefixes according to their effect on a word as follows: 1- derivational suffixes that do not change the grammatical class of the words they are attached to, 2- prefixes that change the grammatical class of the words they are attached to, 3- suffixes that do not change the grammatical class of the words they are attached to, 4- derivational prefixes that do not change the grammatical class of the words they are attached to, 5- derivational prefixes that change the grammatical class of the words they are attached to, 6- derivational prefixes that are attached to bound roots to form content words,7- derivational suffixes that do not change the grammatical class of the words they are attached to (See appendix 6)

1.4   Vocabulary knowledge importance

 Wallace (2007) has pointed out that insufficiency of language vocabulary is said to be the greatest inhibition of the ability of English language learners to read. He explained that the lack of vocabulary knowledge results in negative effects on reading comprehension, writing, and grammatical words function. Hubbard (1992) has indicated that the most important factor in inhibiting studying anything is encountering a word the reader does not know the meaning of. He has carried on to explain that what stops the reader's appetite to continue reading something is facing words that are not familiar, or, new to him. A study has demonstrated that vocabulary knowledge affects the whole reading accomplishment (Davis, 1944). Reading comprehension highly indicates the strong relationship with the level of vocabulary knowledge (Nourie & Davidson, 1992). The more vocabulary knowledge is, the easier decoding process is, which is a critical factor of reading (Qian, 2002). Liu and Nation (1985) have explained that guessing a meaning of an unfamiliar word needs knowing the other 95% surrounding words. This should pose questions on the traditional way of using the strategy of context clue. Using this strategy is not always possible, especially when learners don't know the meaning of most of the other words surrounding the unfamiliar word. Therefore, the importance of teaching vocabulary through the strategy of teaching affixes and root knowledge   has been established. The interest of this study is this morphological aspect of the English language. According to Nation (2001), vocabulary skills lead to better comprehension, better academic success, and better success in life. Despite the fact that vocabulary knowledge comes in the first place to learn a language, the need to more studies on vocabulary learning strategies is obvious. "…. there is still inadequate work on vocabulary learning strategies" (Ahari, Sadeghoghli & Araghi, 2014, p. 35).

1.5   Strategies to Deal with Newly Encountered Vocabulary Items

Although there are many strategies new vocabulary items in a certain texts, this section attracts attention to the common strategies that are used to deal with vocabulary items in reading texts. These strategies include using the context clue (i.e. guessing the meaning of a new vocabulary item making use of the text itself), consulting dictionaries, and making use of morphological analysis.

1.5.1   Context clue

Context clue, as the name suggests, is trying to guess a meaning of a word making use of   the context it appears in. In other words, using the surrounding words and the general topic of a text and relate this to new words to know their meanings. The following example is from McEntire and Williams (2009):

 "*When Marcus entered the classroom, he felt calm. However, as soon as he opened the test paper, he began to feel agitated*" (p. 3).

The meaning of the word *agitated* can be guessed if we make use of the contrast made by the word *However*. Through this contrast, we can guess that the meaning of the word *agitated* is the opposite of the word *calm*, which may be nervous. Although most words are learned contextually (Anderson & Nagy, 1992), context clue strategy is no easy to master. What makes this strategy not easy is that guessing a meaning of an unfamiliar word requires knowing the other 95% surrounding words (Liu & Nation, 1985). Actually, this last point should pose questions on this strategy. The use of this strategy is not always possible, especially when learners don't know the meaning of most of the other words surrounding the unfamiliar word.

1.5.2   Using dictionary

One reference related to this discussion is dictionary. Using dictionary is not an easy task for students. They struggle when looking up a word. Also, it is not necessary that students understand accurately the meaning of a word they look up in a dictionary. For example, the word *erode* is defined as *eats out*. A student produced a sentence, using the word *erode*: "Since my mom went back to work my family *erodes* a lot" (Miller & Gildea, 1987). Another point to be taken in consideration when making use of these vocabulary building strategies has been stated by Blachowicz et al. (2005): when teaching students vocabulary –building strategies such as using dictionaries, using context clue and using word analysis, students should realize the underlying rationale. They have stated that this can be achieved through focusing on how to use these strategies by starting with easy words, and then moving to practice with difficult words and phrases till learners become well-versed in using such strategies.

What is important here is to remember that these are strategies. In order to make use of any strategy, it is important to have awareness of the strategy and have time to train to use this strategy till reaching the automaticity of using and applying it. Therefore, training on a strategy is part of what a strategy is.

1.5.3   Morphological clue

Harris and Sipay (1990) have noticed that 20 prefixes constitute almost all the English prefixed words, and that the four prefixes (un-, re-, in-, and dis-) constitute about half of the English words with prefixes**.**

Many researchers are with the idea of using affixes and roots as a way to develop vocabulary (Bauer & Nation, 1993). A questionnaire by Schmitt (1997) has shown that 69% of Japanese

EFL learners believe that studying words through roots and affixes is beneficial; however, 15% of the learners use this strategy. This means that although learners think this strategy is useful, they don't use it in their own learning. Okada (2005) has explained that the reason behind this is the Japanese learners' a little amount of vocabulary and affixes limited knowledge This study, therefore, focuses on the effect of systematic vocabulary teaching through teaching roots and affixes knowledge. According to Nation (1990), advanced learners can deal with new vocabulary items they encounter by relating them to word parts or prefixes and suffixes they know.

There are three reasons why affixes should be taught: First, the number of affixes is few, but they are used in a large number of words. Second, these affixes have almost constant meanings which are easy to understand. Finally, the spelling of these affixes is regular (Graves & Hammond, 1980). Blachowicz et al. (2005) have stated that attracting students' attention to word parts (structural analysis), such as the Greek root *tele-* and *graph* in *telegraph,* is necessary so that students become aware of the composing parts of words, and from the meanings of these individual parts, students are helped with new words they encountered in a certain context.

One study has stressed the idea of the early learning of suffixes as it is very important for children. It empowers their reading comprehension at all levels. Children as well as adults like enjoyable learning about suffixes through matching games. For children it is vital to understand suffixes and prefixes as it is important for English grammar. Suffixes and prefixes increase children vocabulary the same way teaching them root words do (Onish, 2010).

Learning the meanings and definition of suffixes lets students be aware of and use context and etymology clues, which enable them, figure out meanings about unfamiliar vocabulary items. Teaching these basic suffixes at even elementary level helps with parts of speech which will be

very useful for them in future when they take different kinds of exams from elementary to TOFEL. So, an early introduction to this topic is a big success, and, later on these suffixes should be taught in middle school and high school.

 A very large number of suffixes come from Greek and Latin. ESL students and teachers can take advantage of a multi-lingual approach to the meanings of suffixes (Callella, 2007). Short and Echevarria's study (2004) has emphasized that students with a language having Latin origin are capable of knowing English words with Latin derivation. Therefore, roots and affixes help students decrypt the meaning of new words. There is an evidence that root and affix knowledge has great positive effect on students with different ages   on variety of areas of interest (Vance, 1991) Breen (1960) has studied a list of common words used frequently among children in elementary schools and has discovered that just 82 Latin roots and 6 Greek roots appear ten times or more in the vocabulary of children. Tempelton (1983) has recommended that we should teach Greek roots first because they are easier to spot in words, even though, typically, the focus is on Latin roots. Take the words *telephone* and *telegraph* as examples. Spotting the Greek root *tele-* is easier than spotting the Latin root *regere*, which takes different forms, in the word *regular*. Prince (as cited in Stowe, 2019) has   suggested four main instructional strategies from Lesaux's work with morphology:

- Morphology should be taught as a distinct component of a vocabulary improvement program throughout the upper elementary years.

- Morphology should be taught as a cognitive strategy to be learned. In order to break a word down into morphemes, students must complete the following four steps:

    o Recognize that they do not know the word.

- o   Analyze the word for recognizable morphemes, both in the roots and suffixes.

- o   Think of a possible meaning based upon the parts of the word.

- o   Check the meaning of the word against the context of the reading.

- Students also need to understand the use of prefixes, suffixes, and roots, and how words get transformed.

This study has made great use of these points during the treatment phase of this study. During the instruction on roots and affixes these points were taken in consideration. The participants were taught the meanings of some roots and affixes and they were given example words to guess their meaning through the roots and affixes the participants know. Also, the participants were asked to make up words by connecting roots and affixes in a way that produces meaningful new words.

1.6   Educational Philosophies

The Educational philosophies and foundation that this study has made use of is Bloom's work and the so-called Constructivism. In education sciences, "Bloom's Taxonomy" is a way to sort learning objectives in teaching. In 1956, a committee of educators headed by Benjamin Bloom proposed this project, which, later, becomes a standard text, Taxonomy of Educational Objectives: the classification of educational goals in which the educational content knowledge is demonstrated by defining and categorizing relevant processes.

 "Constructivism" is a philosophy of learning through which students are assisted to construct knowledge through information they are exposed to (Buddingh, 2005). In other words, knowledge is formed through what learners already know. Learners use what they know to deal with new situation. Bloom's Taxonomy provides the researcher with the elements he needs for the pre and posttests. Nagy (as cited in Stowe, 2019) has proposed that teaching morphological

awareness and decoding in school may be the way to narrow the achievement gap for children whose families differ in education and income levels, and ethnic or racial backgrounds.

Explicit-Direct Instruction is a strategy through which students are taught to use clear objectives and break down a lesson step by step (Goeke, 2008). From the above mentioned philosophies in education we can understand the reason behind using morphology as a part of instruction in teaching vocabulary. In short, students are exposed to roots and affixes, as word parts, and from theses, students construct the meanings of different words

1.7   Statement of the Problem

Although Palestinian students spend twelve years studying English, they suffer acute lack of English vocabulary at the end of these years. Obviously, this affects negatively their language proficiency in general and their performance on the level of comprehension and vocabulary in particular. A study has demonstrated that vocabulary knowledge affects the whole reading accomplishment (Davis, 1944). Also, when Palestinian students leave school and join university, they have difficulty dealing with English courses due to this shortage of vocabulary. Blachowicz et al. (2005) have presented the risks of lack of vocabulary among English learners:

> Limited knowledge of English vocabulary may affect the school performance of English language learners in at least four ways: the development and maintenance of social relationships with other students, participation of academic learning routines, comprehension as a part of reading instruction, and comprehension as a part of content area instruction (p.20).

This failure of vocabulary knowledge should be paid attention to, and should be treated through focusing on ways and strategies that help Palestinian students gain the amount of English vocabulary knowledge required in different areas of interest.

English learners in Atwani Co-Educational Secondary School, one of the Palestinian distant schools, do badly on English tests due to shortage of vocabulary knowledge. Clearly, it is imperative to look for strategies to help students overcome this problem. Despite the fact that there is a variety of methods that can be used, one way that can be useful is through teaching students the meaning of many common roots and affixes. Davoudi and Yousefi (2009) have noted that the word parts have old English, Greek and Latin origins, and they are so many to list, so learning just the strategic parts is enough to develop vocabulary. They stated that by the conjugation of knowledge of roots and affixes, a huge number of words can be analyzed.

This study, therefore, tries to adopt a morphological strategy to help students increase their vocabulary items, and deal with new vocabulary items they may encounter in many other areas of interest. This, in return, might affect positively their language proficiency and their academic success.

1.8   Significance of the Study

The importance of vocabulary is not debatable when we talk about learning a foreign language. Therefore, the need for such a study is vital as long as it aims at investigating a way through which Palestinian students, as foreign learners of English, may be helped develop and increase their English vocabulary in a systematic way to be able to use the language, and understand texts in academic contexts, and, therefore, achieve academic success.

 Also, teaching vocabulary through roots and affixes prepares Palestinian students to face new vocabulary items they encounter in different fields, i.e. content areas, such as geography, medicine, literature, etc. Moreover, in today's world of accelerating computer technology, the necessity for facilitating vocabulary learning in speed and quality using a systematic way

might be established. In addition to this, the Palestinian English Curriculum doesn't focus on morphology as a part of instruction when presenting vocabulary, which gives a kind of justification to this study.

1.9 Objectives of the Study

This study aims to:

1. Investigate whether teaching the meanings of roots and affixes (morphological analysis) explicitly affects positively students' vocabulary development in terms of guessing the meaning of new vocabulary items.

2. Find out if teaching the meanings of roots and affixes (morphological analysis) affects different groups (grades) of students the same way.

3. Find out if teaching vocabulary explicitly through roots and affixes (morphological analysis) has the same impact on both genders.

1.10 Research Questions and Hypotheses

1.10.1 Research questions:

The study aims at answering the following questions:

1. To what extent does teaching the meanings of roots and affixes explicitly affect students' improvement in guessing the meaning of unknown words?

2. Does the explicit teaching of the meanings of roots and affixes affect different groups (grades) of students the same way?

3. Does the explicit teaching of roots and affixes affect one gender over another?

1.10.2 Hypotheses:

1- There are no statistically significant differences between students' scores in both the pretest and post-test due to teaching roots and affixes.

2- There are no statistically significant differences between students' scores in the post-test due to their grades.

3- There are no statistically significant differences between students' scores in the post-test due to gender.

1.11 Scope and Limitations of the Study

There are obstacles that may put limit on the generlizability of this study:

1- The size of the sample of this study may limit its generalizability.

2- This study was conducted in a rural school which may mean that results of the study may differ in another area.

3- The school where this study took place is adjacent to one of the Israeli settlements, which may affect negatively the whole teaching process in the school.

4- Some students were absent during the treatment period, which might affect their scores in the post-test, and, in return affect negatively the generliability of this study.

5- Because the question items of the pretest and posttest of this study are all multiple choices, the probability of getting the right choice by chance should be considered.

1.12 Definition of Key Terms

1- Vocabulary: A number of words and fixed expressions available to the learner, the choice of which is determined by the domain and themes within which the learner needs to operate. (Bader, 2009).

2- **Receptive and productive vocabulary:** Receptive vocabulary knowledge refers to the ability to understand a word when it is heard or seen while productive knowledge is the ability to produce and use a word when one writes or speaks.(Zhou, 2010)

3- **Bloom's Taxonomy:** A hierarchal framework of learning based on three domains: the *cognitive domain* which includes six levels of knowledge: comprehension, application, analysis, synthesis, and evaluation, the affective domain, and the psychomotor domain (Bader, 2009).

4- **Teaching aids:** Any materials or resources a teacher uses in the classroom. Aids can be visual or electronic (Bader, 2009).

5- **Constructivism:** A theory of teaching that knowledge cannot be instructed by a teacher; it can only be constructed by a learner. This means learning is not just a direct result of listening to a teacher (Bader, 2009).

1.13 Summary

This introductory chapter presented a general view on morphological issues that are essential to this study. It discussed the concept of morphology in details. It focused on the morphological and non-morphological processes through which English words are formed, casted, coined, and devised. It, also, presented the educational basis on which this study is built. Moreover, it offered some ways to deal with new words. It, moreover, emphasized the role of vocabulary in learning a language. Finally, it presented some points that may affect the generability of the study.

2 CHAPTER TWO: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

This section aims at providing a theoretical framework showing the changes vocabulary encountered throughout the 20th century, shedding lights on the importance and centrality of vocabulary knowledge while learning another language, listing vocabulary-building strategies, discussing the effect of morphological knowledge on English vocabulary proficiency, and considering some related studies focusing on the morphological knowledge aspect as an important strategy in teaching English vocabulary.

2.2 Theoretical Framework

2.2.1 Background

Vocabulary gained its important position throughout history. It, sometimes, lost this position, but it has been established that vocabulary should be considered the most important factor in learning a language. About a hundred years ago, the importance of vocabulary in language learning was paid huge attention, and vocabulary was the major tool used "in many experiments: studies of human learning, reading and writing ability, attention, memory, and emotions" in the fields "linguistics and psycholinguistics", but this changed when studying vocabulary shrank because of Chomsky's trend of generative grammar that deviated linguistic research from vocabulary to grammar (Kulikova, 2015, p. 2). This has been pointed to by Miller (as cited in Kulikova, 2015, p. 215) when he stated that the huge focus on vocabulary was followed by extreme negligence.

Meara (1980) has criticized that about forty years ago, in comparison to other linguistic aspects of language such as grammar, writing, etc., vocabulary didn't receive enough focus because

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vocabulary was considered an underestimated factor of language learning ,and research in vocabulary learning at that time was abstract and unsystematic.

Oxford and Nyikos (1989) have demonstrated that language learning strategies are employed by more successful learners more than less successful learners do. Nowadays, interest in vocabulary has reinitiated and many findings have shown that unless students are active learners and use vocabulary- learning strategies efficiently, they are unlikely to gain the required amount of vocabulary to use the language well (Kulikova, 2015). Nowadays, Schmitt (2010) has considered learning vocabulary as the most important element in becoming proficient in a second or foreign language.

2.2.2 Vocabulary versus grammar

Teaching the language and teaching about the language are two extreme opposites, so it can be related to this discussion in that teaching grammar is not a guarantee to proper language communication. In other words, teaching grammar doesn't necessarily lead to efficient or real use of the language learnt because learning grammar is not part of language i.e. it is a way to talk about the language. On the other hand, teaching vocabulary can't be looked at as teaching about the language because vocabulary is part of the language practice per se. There are no ideas without vocabulary. Hudson (2007) has stated that vocabulary makes up the language; therefore, learners knowledge of vocabulary is critical for language acquisition. "Accurate and adequate vocabulary influences language comprehension more than grammatical correctness in effective communication" (Zolfagharkhani & Moghadam, 2011, p. 2).

Meara(1984) has indicated that the number of errors, for second language learners, related to vocabulary is three or four times more than the ones related to grammar. This kind of errors

(vocabulary errors) affects negatively comprehensibility more than other linguistic aspect, such as grammar, do (Chastain, as cited in Rifkin & Roberts, 1995). As for Wallace, he has stated that "it is possible to have a good knowledge of how the system of a language works and yet not to be able to communicate after a fashion" (cited in Akn & Seferolu, 2004, p. 9).

Language can be looked at as a building. Its structure is the grammar and its bricks are the vocabulary. Both are important, but the number of the bricks exceeds the number of structures. Wilkins (1972) has commented that conveying ideas is partially affected by lack of grammar, but with vocabulary shortage no ideas can be conveyed, "which clearly places vocabulary above grammar and highly values vocabulary learning and teaching" (Zolfagharkhani & Moghadam, 2011, p. 2). Furthermore, for learners to be able to grasp grammar, they should first have vocabulary knowledge to understand grammar in a context (Ellis, 1997). So vocabulary is a pre-request to grammar understanding.

2.2.3   Word knowledge

According to Chall (1983) when we encounter a word, this word can be put under one of the four following levels:

1- The word is new , when we have never encountered the word before,

2- the word is recognized , when we have heard the word before,

3- the word is not completely understood, when it is used in unclear way, i.e. there is not exact understanding of the word, and

4- the word is fully understood , when it can be used clearly in writing and speaking

From this Blachowicz, Fisher and Watts-Taffe(2005) have noticed that there are receptive words, which are the words that we understand when we encounter when we read texts, and, on

the other hand, there are expressive words, which are words we can use in our own speech and writing. They explained that, just because you know words you encounter in a written context, or you hear, it doesn't mean that you can use them in your own writing or speech. From this, they concluded that it is clear that the number of the receptive words outnumbers the number of expressive words.

Having enough receptive words for students in academic situations is very vital because it helps them understand the variety of language they encounter in their study. Miller (as cited in Kulikova, 2015, p. 5) has stated that for each word it is important to know how it is pronounced, how it is written, and what meaning it has, what function it has, what use it has, what history it has. Word knowledge is not an easy task when all the elements of knowing a word is considered (Kulikova, 2015).

Knowing a word, according to Nation (2001), is a complex process involving a number of elements: form, meaning and use. For Nation, form involves three elements: the spoken element, the written element and the word part element. For the spoken element, he provided two kinds of knowledge , i.e., the receptive and the productive knowledge (" What does the word sound like? And how is the word pronounced?"), For the written element, he provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What does the word look like? And how is the word written or spelled?").Finally, for word part element, he provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What parts are recognizable in this word? What word parts are needed to express this meaning?"(p. 27).

For the meaning element, he has presented, again, three elements: form and meaning, concepts and referents, and associations. For form and meaning, he provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What meaning does this word form signal?

What word form can be used to express this meaning?"). For concepts and referents, he has provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What is included in the concept? What items can the concept refer to?"). For associations, he provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What other words does this make us think of? What other words could we use instead of this one?") (p.27).

For use, he, also, provided three elements: grammatical functions, collocations, and constraints on use. As for the grammatical function, he provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("In what patterns does this word occur? In what patterns must we use this word?"). For collocations, he has provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("What words or types of words occur with this one? What words or types of words must we use with this one?"). For constraints on use, he has provided two kinds of knowledge, i.e., the receptive and the productive knowledge ("Where, when, and how often would we expect to meet this word? Where, when, and how often can we use this word?") (p.27). The above mentioned receptive and productive knowledge and questions related to them are ordered respectively.

2.2.4   Amount of vocabulary needed

First of all, it is important to know how much vocabulary a native speaker knows. Nation (2006) has stated that it is estimated that an educated English native speaker knows around 18000 word families. Bonk (2000) has stated that, for L2 learner, knowing about 95% is a must to be able to understand a listening passage. For reading, the same percentage is correct for L2 learners to be able to guess the meaning of the remaining words in a text (Laufer, 1998). The percentage 95% for reading and listening comprehension was not enough for   Hu and Nation (2000). They have stressed that the percentage should be 98%, particularly for a written discourse. It is clear that the

100% is the number of vocabulary items that an educated English speaker knows (the above mentioned 18000 word families) (Kulikova, 2015). This is important to know what we mean when we say the percentage should be 98%. Nation (2013) has given how many words are needed to cover the percentage 98% of different kinds of texts. He has stated that for novels, 9000 word families are needed, for newspapers, 8000 word families are needed, for spoken English, 7000 words families are needed, and finally, for children's movies, 6000 word families is needed.

2.2.5 Vocabulary cruciality in L2 proficiency

Many researchers have shown how important vocabulary is while learning another language. Without vocabulary it is inevitable that communication through the language becomes impossible. "No linguist today would seriously contest the fact that, quantitatively, vocabulary dominates in the language field and that vocabulary acquisition is the main obstacle to language acquisition" (Ma, 2009, p. 21). Richards and Renandya (2002) have stated that vocabulary is what underlies language proficiency in the language four skills: listening, reading, writing and speaking. They have emphasized that lack of vocabulary as well as lacking strategies to learn new vocabulary impede students' chances to learn language and inhibit learning from what surrounds them such radio, native speakers, television etc.

Shortage of vocabulary often deprives students from being at good command at L2 because it does not let them be capable of reading and writing, and speaking comfortably in L2, which is the reason why language learners and students in academic programs often ask for more instruction related to vocabulary knowledge (Folse, 2004). Hudson (2007) has emphasized that words are the building blocks of the language, so learners' strong knowledge of vocabulary is

inevitable to acquire the language. A study has demonstrated that vocabulary knowledge affects the whole reading accomplishment (Davis, 1944). Blachowicz et al. (2005) have stated that vocabulary lack may affect negatively English learners in at least four aspects: the students' social interaction with other students, students' participation in academic routines, reading comprehension instruction, and comprehension related to an area of interest.

Turner and Williams (2007) have found that vocabulary knowledge is the main reason of learners' success. Waring (2002) has stated the vitality of building trustworthy body of vocabulary knowledge to learn another language linguistically and psychologically and without this suitable knowledge of vocabulary , it becomes difficult to learn in foreign language ,and, also, by building an efficient amount of vocabulary knowledge, learners can use that language with competence .

Wallace (2007) has pointed out that insufficiency of language vocabulary is said to be the greatest inhibition of the ability of English –language learners to read. He explained that the lack of vocabulary knowledge results in negative effects on reading comprehension, writing, and grammatical words function. Hubbard (1992) has indicated that the most important factor in inhibiting studying anything is encountering a word the reader does not know the meaning of. He has carried on to explain that what stops the reader's appetite to continue reading something is facing words that are not familiar, or, new to him. A study has demonstrated that vocabulary knowledge affects the whole reading accomplishment (Davis, 1944). Reading comprehension highly indicates the strong relationship with the level of vocabulary knowledge (Nourie & Davidson, 1992). The more vocabulary knowledge is, the easier decoding process is, which is a critical factor of reading (Qian, 2002). Liu and Nation (1985) have explained that guessing a meaning of an unfamiliar word needs knowing the other 95% surrounding words. This should

pose questions on the traditional way of using the strategy of context clue. The use of this strategy is not always possible, especially when learners don't know the meaning of most of the other words surrounding the unfamiliar word. According to Nation (2001), vocabulary skills lead to better comprehension, better academic success, and better success in life.

Martin-Chang and Gould (2008) have found that there is a strong relationship between both vocabulary knowledge and reading comprehension and between reading rate and primary print knowledge. Nation (2001) has asserted that vocabulary learning is essential for some reasons: First, having a large range of vocabulary is the factor behind a good comprehension of reading on the part of learners. Second, learners with higher vocabulary knowledge not only do well at reading comprehension, but also at writing, listening, speaking and thinking since words are important in all of these skills. A study has considered vocabulary knowledge as a vital factor that has great impact on reading comprehension in both the first and second language learning (Joshi, 2005). According to Krashen and Terrell (cited in Aksungur, 2000, p. 170), "Acquisition will not take place without comprehension of vocabulary." Callella (2004) has stated that many students can pronounce a word through its parts, but it is not as easy for them to understand the meaning of the word. He has stated that there is no bone of contention that strong vocabulary is the base for reading comprehension, and the base for the language four skills: reading, writing, speaking and listening.

From the comments of these researchers, it can be understood that vocabulary learning is an inevitable part of language   learning. Therefore, looking for strategies and approaches to develop vocabulary becomes a must. Although there are a lot of vocabulary problems faced by teachers and learners, they can be overcome easily by giving more time to vocabulary.

2.2.6 Vocabulary learning strategies

The great effect of vocabulary knowledge on language learning in general has become crystal-clear and should be given enough attention through looking for and devising strategies that help L2 learners build solid vocabulary. The quest for such strategies is not deniable. . There are various strategies such as guessing, inferring or direct teaching of words. Lotto and De Groot (1998) raised the point which often arise in the field of vocabulary learning or other kinds of learning: What is the most effective and positive strategy to learn vocabulary in a new language, and what kind of words are the most comfortable ones to be learned in a new language? Nation (2001) has thought that with the assistance of vocabulary strategies a huge amount of vocabulary could be acquired and that there is evidence the strategies are useful for students at different levels.

Bearing in mind the importance of vocabulary knowledge in learning a foreign language, learners should have approaches and strategies to learn vocabulary. When more vocabulary is there, the better comprehension is.

Schmitt's taxonomy is the result of a study conducted to 600 EFL students in Japan. The study was meant to find out what strategies are used among the students to learn vocabulary (Ahari, Sadeghoghli & Araghi, 2014). Fifty-eight strategies were found to be used. Schmitt's vocabulary learning strategy taxonomy is shown in Table (1).

Table 1
Vocabulary Learning Strategies Taxonomy by Schmitt

(1997, pp. 207-208)

Strategies for consolidating a word once it has been encountered				Strategies for the discovery of new words meaning	
COG	Verbal repetition	MEM	Study the spelling of a word	DET	Analyze part of speech
COG	Written repetition	MEM	Study the sound of a word	DET	Analyze affixes and roots
COG	Word list	MEM	Say new word aloud when studying	DET	Check for L1 cognate
COG	Flash card	MEM	Image verb form	DET	Analyze any available pictures or gestures
COG	Take notes (in class)	MEM	Underline initial letter of a word	DET	Guess from textual context
COG	Use your vocabulary section in your text book	MEM	Configuration	DET	Bilingual dictionary
COG	Listen to tape of word lists	MEM	Use keyword method	DET	Monolingual dictionary
COG	Put English labels on physical objects	MEM	Affixes and roots (remembering)	DET	Word list
COG	Keep a vocabulary note book	MEM	Part of speech (remembering)	DET	Flash card
MEM	Study word with a pictorial representation of its meaning	MEM	Paraphrase the word's meaning	SOC	Ask teacher for L1 translation
MEM	Image word's meaning	MEM	Use cognates in study	SOC	Ask teacher for paraphrase or synonym of new word
MEM	Connect word to a personal experience	MEM	Learn the words of an idiom together	SOC	Ask teacher for sentence including new word
MEM	Associate the word with its coordinates	MEM	Use physical action when learning a word	SOC	Ask classmates for meaning
MEM	Connect the word to its synonyms and antonyms	MEM	Use semantic features grids	SOC	Discover new meaning through group work activity

MEM	Use semantic maps	MET	Use English language media (songs, movies, newscasts etc)		
MEM	Use scales for gradable adjectives	MET	Testing oneself with word lists		
MEM	Peg method	MET	Use spaced word practice		
MEM	Loci method	MET	Skip or pass new word		
MEM	Group words together to study them	MET	Continue to study word over time		
MEM	Group words together spatially on a page	SOC	Study and practice meaning in a group		
MEM	Use new words in sentences	SOC	Teacher checks student's flash cards for word lists for accuracy		
MEM	Group words together within a storyline	SOC	Interact with native speaker		

It is worthy to notice that Schmitt had made use of Oxford's (1990) classification of language learning strategy, in general, and strategies related to vocabulary learning strategy, in particular. He has asserted that this classification is the most practical in grouping the strategies related to vocabulary (Ahari, Sadeghoghli & Araghi, 2014).

He has sorted the strategies under four main categories (e.g. Social, Memory, Cognitive, and Metacognitive). The fifty-eight vocabulary learning strategies were grouped under two main titles: Discovery Strategies and Consolidation Strategies. The first one is strategies which are applied to words newly encountered , i.e. identifying affixes and roots of a new word. The latter consists of strategies learners use to help them memorize the words once taught, such as using semantic maps, using new words in a sentence …etc. (Ahari, Sadeghoghli & Araghi, 2014).

2.2.7 The effect of English morphological aspect on vocabulary development

Mousavi and Hasani (2014) have stated that one of the most important ways that readers, no matter what level they are, can make use of is having knowledge of great number of root words, prefixes and suffixes. The reason behind that is that English is the most complex of all the European languages due to the mixture of Greek, Latin, French and Germanic roots that the English language characterized with (Frost, 2005). They have commented that root words, as the name suggests, are the words from which many common English words originate. They are considered as the origin of other words, and prefixes and suffixes are two types of affixes which aid to form longer words but are not words in themselves.

The learning of English vocabulary is the basis of language learning, just as the base for an edifice. Affixation is one of the most vital and effective methods of word-formation. It provides us with a good perspective to expand vocabulary. Therefore, mastering the formation rules of affixation is absolutely necessary to extend vocabulary easily, productively and effectively. Also, learners are not expected to learn English words without knowledge of what constitute these words and that the constituting parts help know the meanings of a wide range of vocabulary.. Affixation is such a useful way.

Nation (2001) has explained that content words can modify their form and meaning by the addition of prefixes and suffixes, so mastering prefixes, suffixes and other word-formation tools may be a source of vocabulary development, therefore, new words may be learned by the correlation to known ones, and guessing the meaning of unfamiliar words in readings can be checked using knowledge of morphological analysis

However, sometimes if learners depend too much on word parts analysis , they may get the wrong ideas about the text they are dealing with (Laufer, 2009). So, as Nation (2001) has suggested the explicit way in teaching L2 learners to use word part analysis to infer the unknown word meaning only after knowing the atmosphere of the text ,so that the learner will not twist the meaning of these words because they don't know what the text is about.

Mousavi and Hasani (2014) has defined affixation as a process that results in the formation of new words by adding an affix or more to a root morpheme. They explained that affixation is either suffixation or prefixation. For them, suffixation basically distinguishes noun and adjective formation, while prefixation mostly forms verbs. Mousavi and Hasani (2014) has stated that in addition to other ways of teaching vocabulary, there is another powersome method_ word parts. They have explained that these word parts are the building bricks of many English words. Learning them can help students with the meanings of new words and spelling well.

Nourie and Davidson (1992) have stated that affixation is one of the most efficient tools of word building throughout the history of English. In the first place, affixation is a way to create   one part of speech when added to another part of speech, and the second place, affixation is a way to alter the semantic meaning of the same part of speech.

Kulikova (2015) has made it clear that making use of word parts analysis is of great use in teaching ESL learners vocabulary because it provides them with a weapon to deal   with new vocabulary items as well as helps them to build solid vocabulary. He emphasized that, through this strategy, ESL learners, can both learn new vocabulary comfortably and retain already learned words.

Schmitt and McCarthy (1997, p. 277) have mentioned that "knowing of how words are made up of can help students to have at least a receptive knowledge of the words in the same family"

"Categorizing the word in terms of syntactic roles and breaking morphologically complex words into stems and affixes is an important step in word learning, structuring the lexicon and marking grammatical relationships within a sentence" (Hasani, &, Mousavi, 2014, p, 62).

Many researchers are with the idea of using affixes and roots as a way to develop vocabulary (Bauer & Nation, 1993). A questionnaire by Schmitt (1997) has shown that 69% of Japanese EFL learners believe that studying words through roots and affixes is beneficial, however, 15% of the learners use this strategy. This means that although learners think this strategy is useful, they don't use it in their own learning. Okada (2005) has explained that the reason behind this is the Japanese learners' a little amount of vocabulary and affixes limited knowledge This study, therefore, focuses on the effect of systematic vocabulary teaching through teaching roots and affixes knowledge. According to Nation (1990), advanced learners can deal with new vocabulary items they encounter by relating them to word parts or prefixes and suffixes they know.

Harris and Sipay (1990) have noted that 20 prefixes constitute almost all the English prefixed words, and that the four prefixes (*un-*, *re-*, *in-*, and *dis-*) constitute about half of the English words with prefixes. There are three reasons why affixes should be taught: First, the number of affixes is few, but they are used in a large number of words. Second, these affixes have almost constant meanings which make it easy to understand and learn them. Finally, the spelling of these affixes is regular (Graves & Hammond, 1980). A very large number of suffixes are Greek and Latin; ESL students and teachers can take advantage of a multi-lingual approach to the meanings of suffixes (Callella, 2007). There is evidence that root and affix knowledge has great positive effect on students with different ages on variety of areas of interest (Vance, 1991). Short and Echevarria (2004) have emphasized that students speaking languages having Latin

origin are capable of knowing English words with Latin derivation, therefore, roots and affixes helps students decrypt the meaning of new words.

 Yortbasi (2015) has thought that being aware of the meanings of suffixes as well as using context and etymology clues enables students to figure out meanings about unfamiliar vocabulary items. He agreed with the idea that teaching these basic suffixes at even elementary level helps with parts of speech, which will be very profitable for students in future when they take different kinds of exams from elementary to TOFEL. So, an early knowledge of this topic is a big success, and, later on these suffixes should be taught in middle school and high school (Yortbasi, 2015). Davoudi and Yousefi (2009) have noted that the word parts have old English, Greek and Latin origins, and they are so many to list, so learning just the strategic parts is enough to develop vocabulary. They stated that by the conjugation of knowledge of roots and affixes, a huge number of words can be analyzed.

One study by Yortbasi (2015)   has stressed the idea of the early learning of suffixes as it is very important for children in that it empowers their reading comprehension at all levels. The study has stated that children as well as adults like enjoyable learning about suffixes through matching games. Yortbasi stressed that, for children, it is vital to understand suffixes and prefixes as it is important for English grammar. Suffixes and prefixes increase children vocabulary the same way teaching them root words do (Onish, 2010). Yortbasi (2015) has noted that the benefits of using the systematic way of learning vocabulary through roots and affixes have been demonstrated by many researchers. He has presented a study, which had a collection of 82 roots and affixes (27 roots, 32 prefixes, 23 suffixes). He has stated that this study showed that by learning the 82 roots and affixes, more than 100,000 words can be unlocked. He has added that this study showed that it is not only that learning these roots and affixes help native and non-native build solid

vocabulary and have good command, but also it helps learn other languages based on Latin such as Spanish, French, Italianand Greek easily.

Students who understand how words are formed by combining prefixes, suffixes, and roots tend to have larger vocabularies and better reading comprehension than peers without such knowledge and skills (Prince, as cited in Stowe, 2019). Direct instruction of morphology is an effective means to help with understanding and applying word structure for decoding, spelling, and vocabulary study (Wilson, as cited in Stowe, 2019).

Breen (1960) has studied a list of common words used frequently among children in elementary schools and has discovered that just 82 Latin roots and 6 Greek roots appear ten times or more in the vocabulary of children. Tempelton (1983) has recommended that we should teach Greek roots first because they are easier to spot in words, even though , typically, the focus is on Latin roots. Take the words *telephone* and *telegraph* as examples. Spotting the Greek root *tele-* is easier than spotting the Latin root *regere,* which takes different forms, in the word *regular*.

2.2.7.1   Word analysis

When investigating the word parts, it is clear that "Roots are the fundamental building blocks of all words. Through learning prefixes and suffixes, students can get the meaning behind various words and have the skills of separating unknown words into elements that are easily understood" (Maboudi, & Karimkhanlooei, 2017).

 In many languages, prefixes and suffixes are the tools through which content words' form and meaning can be changed. Having enough knowledge about the meaning of these prefixes and suffixes may be a source of vocabulary development. That is, new vocabulary items may be learned by relating them to known ones, and capability of guessing newly encountered words in texts can be measured through the use of knowledge of word parts. Also, knowing the meaning

of roots (base words) helps in understanding sixty percent of English words (Bauer & Nation, 1993).

Several studies have established that great deal of English words is the result of using affixes and roots, and more than half of the English words can be learnt through knowing their base words (Bauer & Nation, 1993). One study by Mochizuki and Aizawa (2000) has found that there is a strong association between the awareness of the morphological aspect of English (knowledge of derivational affixes) and vocabulary amount in L2 students. So, learning how to take benefits from word parts is worth its weight in gold, so paying attention, and applying this strategy can be very fruitful. Using word part analysis and context to guess the meaning of new words in a reading text increases guessing chances up to 80% (White, Power, & White, 1989).

2.2.7.2   *Roots*

Rasinski (2008) (as cited in Yurtbasi , 2015) has given an example of a Latin root to show the effect of learning roots on vocabulary building. He explained that the learning of one root leads to learn many other vocabulary items making use of this one root, for example, the Latin root *docere* ,which means   *to teach*, leads to learn the following words*:   doctor , doctrine, indoctrinate, docile, indocile, docility, docent, Ph.D, J.D., doctoral* and *doctorate*. **"**By using a Latin root, we could go on with a few hundred more to generate thousands of new words to instill in our students this tremendous vocabulary learning potential" (Yurtbasi , 2015, p.46). About 28% of English vocabulary are from Latin, 28% are from French (most of them are originally Latin) and around over 5% is with Greek origin (Prestwick, 2012) as cited in Yurtbasi , 2015). "The point here is that such Latin roots make the nature and composition of words transparent so that the students raise their familiarity and power of analysis to use them in new situations" (Yurtbasi , 2015, p.46).

2.2.7.3 *Prefixes*

A prefix is what comes at the beginning of a word as addition (word beginning). It is an affix that is added to a word at the beginning. Prefixes have a vital role in word formation, but they do not, in general, alter the word-class of the base and only modify its meaning (Mousavi & Hasani, 2014). Graves and Hammond (1980) have given three reasons why prefixes should be taught: the English language, proportionally, has few prefixes and these prefixes are frequently used in a great number of words. Most prefixes have fixed meaning which has a clear definition, and prefixes have relatively constant spellings. Generally speaking, prefixes change words' meaning according to time, place, direction, degree, amount and negation.

Harris and Sipay (1990) have added four prefixes that are the most frequently used prefixes. These prefixes are 'un-, re-, in-, and dis-' and constitute about half of the common prefixes used in the English words and there are 20 prefixes constituting almost all prefixes of words. The same prefixes can be seen in many different words.

Plag(2002) (as cited in Mousavi, & Hasani ,2014, p. 63), semantically speaking, has grouped prefixes into four groups. First, The group that quantifies the base words meaning, for example, 'one' (*uni-, unilateral*), 'many' (*multi-, multi-purpose*). Second, the group that contains location prefixes such as *circum-* 'around' (*circumscribe), counter-* 'against' (*counterbalance,*). Third, there are time prefixes signaling notions like 'before' (*ante-,* and *fore-,* as in *antedate, foresee*), or 'new' (*neo-, neoclassical*). The fourth group is a group consisting of prefixes expressing negation (*a (n)-, de-, dis-, in-, non-, un-*, *disagree, unimportant*). He has also stated that there are also a lot of prefixes which do not obey any of the four groups and express a variety of notions, such as 'wrong, evil' (*mal-, malfunction*), 'badly, wrongly' (*mis-, mistrial*), and etc.

Ebbers and Carroll(2010) (as cited in Mousavi, & Hasani, 2014, p. 63) have stated that prefixes usually have an impact on word meaning in any context. In a lot of words, the meaning is contained into and limited to the prefix, as in *interior*, *exterio*r, *posterior*, *anterior*, and *ulterior.* They noticed that in many words, prefixes change the connotation of the word. For instance, *deport* is more negative than s*upport*, and *super molecule* is more impressive than *molecule*.

2.2.7.4 Suffixes

A suffix is what comes at the end of a word as addition (word ending). It is a group of letters you can add to the end of a base word. Suffixes can affect or add to the word meaning, but mainly, they show how a word will be used in a sentence and what part of speech (e.g. noun, verb, and adjective) the word belongs to.(Mousavi & Hasani ,2014). Examples are the words *importance, freedom, childhood, creation*. These are noun -making suffixes and knowing them is very important (Scalise, 1984, as cited in Mousavi & Hasani, 2014, p. 63).

Nagy, Diakidoy and Anderson (1993) have explored the growth of students' knowledge of the meaning of 10 common English suffixes. The goal of the study is to gain a clearer conception of students' acquisition of knowledge about what some common derivational suffixes contribute to the meanings of derivatives. They found that inflectional suffixes and compounding are mastered before derivational suffixation because the information conveyed in derivational suffixes is abstract. Another reason for the later acquisition of derivational suffixes may be that such affixes are more common in written language, or more formal oral language, than they are in everyday conversation. In general, derivational suffixes are associated with the more complex syntax of written language and formal discourse.

In his study, Plag (as cited in Mousavi & Hasani, 2014, p. 63) stated that through suffixes new words are coined by adding these to base words, unlike prefixes which are tools that cause base words to   change   semantically, therefore, suffixes have the role of   changing the grammatical function of the bases. To conclude, suffixes should be considered as a grammatical parts of the basis , that is, they change the word part of speech with a slight change of meaning. He categorized suffixes into four types:

1. 'Nominal suffixes' are often used to form abstract nouns from verbs, adjectives and nouns. Nouns are difficult to recognize well, and they are used widely, so having knowledge of suffixes is very useful.

2. 'Verbal suffixes': there are four suffixes used to form verbs from other word classes (mostly adjectives and nouns) are *-ate*, *- en*, *-ify* and *-ize*.

3. 'Adjectival suffixes': the majority of the adjectives are considered relational , whose role is to relate to noun. For example, *colonial officer* means 'officer having to do with the colonies'.

4. 'Adverbial suffixes': Most of them are derived by adding –ly to adjectives such as quickly, rapidly, and slowly.

Mousavi & Hasani (2014) have stated that "On the whole, it is appropriate to say that although there are a number of studies investigating the effect of affix knowledge on vocabulary learning, there are few studies which have examined their direct effects on vocabulary…."(p. 64).

2.3   Related Studies

The first study presented here is meant to establish the fact that strategy use has great impact on vocabulary development. Those who use strategies while learning vocabulary have greater vocabulary proficiency than those who don't use strategies. So students should be equipped with strategies to be better and autonomous learners.

Ahari, Sadeghoghli and Araghi's (2014) experimental study examined the differences between students in terms of vocabulary levels proficiency and differences, in terms of strategy use, between students with vocabulary consolidation strategy training and those with no such training. The study was conducted to 50 intermediate level females who were first year ELT students, aged between 18 to 21 in Tabriz Azad University. The study lasted eight weeks. Pre- and post- questionnaires were the instruments used to collect data about strategy use and the data about vocabulary proficiency were obtained through pre- and post vocabulary proficiency tests. Both data on strategy use and vocabulary proficiency were quantitatively analyzed.

As for the procedure of the study, it has gone as follows: one pre-test was given to the experimental group , then the experimental group was exposed to treatment, the control group received no treatment and one post-test. The same pre-test and post-test given to the experimental group were given to the control group, but the control group were not exposed to treatment between tests. The indication of data analysis was that vocabulary increased after treatment by using strategies to learn vocabulary. The study has emphasized that learning strategies should be included in classroom language in the university level in Iranian EFL context. The study has concluded that training in vocabulary learning strategies is a way, through which learners can discover themselves, though it is not a magic way to turn them into independent learners in a short period of time.

Itmeizeh (2018) has scrutinized the impact of making use of morphological analysis (word parts such as prefixes, suffixes, and roots) on vocabulary learning among 75 Palestinian female 10th - graders from Idna Secondary School for Girls at Hebron governorate. The 75 female students, with mean age 15.7, belong to two different sections. The students' grades in the 9th grade were checked for the purpose of homogeneity. The 75 students were divided into two groups: the

control group (37), the experimental group (38). First of all, the two groups took a test to find out if the participants can guess the meaning of some complex words using morphological analysis strategy. The same test was used as a post test. Then, the experimental group was exposed to instruction on how to analyze complex words using morphological analysis besides learning the meanings and function of the single root, prefix, or suffix. For the control group, it wasn't exposed to such instruction on morphological analysis except for the traditional way of teaching vocabulary. The experimental group received a two-month treatment period. After the treatment period, the two groups took the post test, and the experimental group excelled the control group as they got higher grades. This means that teaching vocabulary through morphological analysis strategy is much more effective than the traditional way. The study concluded that teachers should introduce this strategy in teaching vocabulary inside our Palestinian English classrooms.

The study by Mousavi and Hasani (2014) has investigated the connection between the number of affixes and vocabulary learning. The study was conducted to a sample of 43(male and female) Iranian advanced EFL students chosen randomly among M.A. students, aged between 23 and 34 in Qazvin universities. After the exposure to MTELP (Michigan Test of English Language Proficiency) to see if the participants have the same level of proficiency in English, the first number was decreased to 37 participants. Two separate tests were used to collect data. As for the proficiency test (Michigan Test of English Language Proficiency), it consisted of 30 vocabulary items, as multiple choice format, that require selection of a synonym or completion of a sentence. As for the vocabulary recognition test, it made use of 51 TOFEL (Test of English as a Foreign Language) as follows: 17 questions on vocabulary root items, 17 questions on single affixes vocabulary item and 17 questions on double affixes vocabulary items. The results of the study have showed that the more roots and affixes students learn, the more vocabulary can be

learnt, and the outcomes of learning more and more roots and affixes are remarkable and positive. Also, giving instruction on roots and affixes is a way to create a motivating environment for the students to learn vocabulary, it is a way to let students understand vocabulary better, and it is a way to introduce strategies that students don't know about resulting in more autonomous students.

 A similar study by Mousavi , Hasani and Zarei (2014) has studied the use of one of the vocabulary learning strategies called word formation strategy (morphology) in terms of the number of affixes by English as foreign language (EFL) intermediate students in Qazvin Province in Iran. The study was conducted to a sample of 43(male and female) Iranian intermediate EFL students chosen randomly among B.A. students, aged between 18 and 23 in Qazvin universities. The initial number was reduced to 40 because three students did not complete the questionnaire. Two separate tests were used to collect data. As for the first one, KET (Key English Test) test of English language proficiency, consisted of 30 vocabulary items, as multiple choice format, that require selection of a synonym or completion of a sentence. As for the second one, a vocabulary recognition test for intermediate level, made use of 51 as follows: 17 questions on vocabulary root items, 17 questions on single affixes vocabulary item and 17 questions on double affixes vocabulary items. The finding have showed that the number of roots and affixes learnt affect positively vocabulary learning among these EFL learners. The study has explained that by learning words with different number of affixes, learners did better in vocabulary learning. It was noticed, though, that learners with intermediate level are better in learning root words than in learning words with single and double affixes, so they answer questions on root word better.

Another study by Zolfagharkhani and Moghadam (2011) has mainly investigated the influence of etymology instruction in terms of vocabulary learning. The study has 60 upper-intermediate EFL learners studying English as their major. They fell in the age group 20 to 28 in Sabzevar Tarbiat Moallem University and Sabzevar Payam-e-Noor University, Iran. A TOFEL test was given to find out about their language proficiency, and vocabulary test was given to determine whether they are homogenous in their vocabulary level or not. A control and experimental group were randomly chosen, each has thirty participants. The experimental group received a treatment while the control group did not and continue with its normal educational program. A post-test was given to see the effect of the etymology instruction. A t-test was given to find if the difference between the sets of scores has statistical significance.The results of the study made it clear that the participants in the experimental group, who received treatment, excelled and exceeded the participants in the control group who didn't receive treatment.

 The focus of a study by Nakayama (2008) was to find out about the effect of systematic teaching of prefixes on Japanese EFL learners in terms of short and long term retention. Those learners are with little affix knowledge before the teaching. Thirteen prefixes were used in the study. To ensure they are not known to the subjects of the study, a test was given to students with the same language proficiency level and the five prefixes that were known by less than 30% of the subjects were chosen. These prefixes were *en-*, *inter-*, *post-*, *in-* and *ante-*. Twelve words were chosen for each prefix. These words were tested by Vocabulary Knowledge Scale test in a pilot study to be sure they are not known to the subjects. The total of the target word were 50 words (5*10). There were two groups. One received systematic teaching and the other received non-systematic teaching through teaching materials that suits each group. The procedure of the experiment was to give the two groups the same activities within a learning stage save that the

systematic teaching group received   3- minute lecture about the meanings of the target prefixes. Then, both groups were given two tests. The first one is immediate after the learning stage to find out about the learner's short term retention. The same test was given one week later to check the long term retention. The study stated that "(1) Despite the learners' English level, systematic teaching of prefix knowledge resulted in a higher score on the vocabulary test (immediate). …… (2) Systematic teaching of prefix knowledge did not lead to better long-term retention than not teaching them" (pp. 68-69).

A study by Buddingh (2005) has aimed to find out if teaching roots and affixes to underperforming students in a public school in Northern California have a positive impact on students' ability in decipher the meaning of new words. The school has about 8% English learners and about 95% of them speak Spanish. There were two groups of seventh graders: a 17- student experimental group and 17- student control group. The two groups were exposed to the same amount of root and affixes instruction before the research period. The   two groups were given a pre-test at the same day. During the research time (four weeks), the experimental group received instruction in roots and affixes "with approximately three lessons in roots and affixes delivered per week at a rate of 20 minutes per lesson"(pp. 35), and the control group was only given the normal vocabulary instruction related to the Literature book they use in class. Statistical analysis was done to see if there was a significant difference between the two tests. "Data analysis showed the gains in the test scores of the experimental group were statistically significant. Teaching roots and affixes does positively affect the vocabulary development of underperforming students" (p. 42).

2.4 Summary

This section established a theoretical framework discussing some issues related to vocabulary knowledge, presented some vocabulary learning strategies, emphasized the role of vocabulary in language proficiency, and explained the importance and effect of morphological analysis on vocabulary learning. In addition, the study has summarized some studies that have been conducted to find out about the effect of teaching roots and affixes on vocabulary development.

3 CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapters aims at discussing the methodology used to answer the research questions. It discusses the nature of the research method of this study and why this method was used. The specialty of the school where this study took place, the participants, the instrumentations of the study, the supervisors' focus group, the procedures, and the way how the data were analyzed are all presented in this part.

3.2 Research Method of the Study

The research method of this study is the One-Group Pretest-Posttest Design (O1 X O2). Through this design, a group is tested for an issue before an intervention or a treatment takes place through a pretest (O1).Then, the same group is exposed to intervention or treatment(X). Finally, the effect of the treatment on the group is tested through a posttest (O2). By calculating the differences between the two tests, it is decided whether the treatment has a positive effect or not.

There are some scholars who criticize this method because, they argue, the difference in results between the pretest and the post test may be attributed not to the intervention or treatment. The results of the post-test may be the result of other factors such as "history, maturation, testing, instrumentation, mortality, and regression threat" (Trochim, 2006). For this study, these threats can be neutralized and refuted. Take maturation threat, for example. This threat can be considered when there is a long –period-treatment program. This study lasted for about two months, which means this threat is not expected to have any kind of effect on this study, and the testing threat can be refuted due to the nature of roots and affixes. It is not possible that the

participants become aware of the meanings of the roots and affixes just because they had the pretest

3.3 Setting

The present study was conducted in one of the Palestinian rural schools, Al-tuwani Co-Educational Secondary School. The school has 12 grades (1st through 12th), just one section for each level (grade). The number of students in the school is 133 students. There are 66 females and 67 males.

The area where the school is located is adjacent to one of the Israeli settlements. Due to this, there is permanent presence of some internationals in this area. This specialty of the area where the school is located gives the study a kind of importance in that students need English to communicate with these internationals. Students struggle with vocabulary in such situation. This study tries to help students to develop vocabulary, through direct instruction on roots and affixes, to be able to use the English language communicatively.

3.4 Participants

In the present study, a sample of 44 Palestinian EFL students, with ages 14-18 were chosen from Al-tuwani Co-Educational Secondary School. The sample consisted of the students of the four different levels (grades) in the school: 9th, 10th, 11th, and $12^{th.}$ The number of the females of the sample is 26, and the number of the males of the sample is 18. Table (2) shows the demographic details of the participants:

Table 2
Participants' Demographic Details

Grade	Total number	Female number	Male number
9th	11	6	5
10th	15	8	7
11th	9	6	3
12	9	6	3

There are two reasons why the sample consists of four grades. First of all, the number of students in one class is not enough for such a study. Therefore, the researcher increased the number of the participants by selecting other grades. On the other hand, finding out about the effect of teaching the morphological analysis strategy on different grades may be better and more beneficial for pedagogical future purposes than finding this effect on just one grade.

3.5   Instrumentation

This study has made use of the following instruments to answer the research questions: Cambridge English Unlimited Placement Test (written test), pre/posttests, and the participants' reports.

3.5.1   Cambridge English Unlimited Placement Test (written test)

It was used to determine about the participants' general level of English proficiency, which helps determine the homogeneity of the participants (see appendix 1).The test consisted of 120 multiple choice items. Each item has a sentence to be completed choosing from four choices.

3.5.2 Pretest

The pretest was used to find out if the participants have "knowledge", according to Bloom's (1984) taxonomy, in terms of affixes and roots. Also, the pretest was used to find out if the participants have the "application" of the knowledge according to Bloom's (1984) taxonomy. In other words, the pretest finds out if the participants know that words may have smaller parts and that these have meanings, if they know that these parts repeat themselves in a variety of other words, and if they can apply this knowledge to know the meaning of new words(see appendix 2).The pretest consisted of 40 multiple choice items adapted from Callella (2004).

3.5.3 Post-test

The post-test was used, after the treatment period, to find out what effect teaching roots and affixes had on the participants. It mainly focused on the application side, i.e. guessing the meaning of new words through the knowledge of roots and affixes (see appendix 3).The post-test consisted of 40 multiple choice items.

3.5.4 Participants' reports

The participants were asked to write a short report after the post-test to convey what they think about the strategy they have used to develop their vocabulary. This report was in Arabic so that students can express themselves comfortably without facing difficulty expressing their ideas in English (see appendix 4)

3.6 Supervisors' focus group

The focus group consisted of three supervisors from the Palestinian Ministry of Education. They were asked, as professionals, to try to explain why the four different grades and the female and

female participants have no significant differences in their results of the post-test (see appendix 5)

3.7 Validity of the Pre/posttests

The researcher consulted three jury instructors in the university, where he was doing his M.A. degree (Hebron University), to make sure that the pre/ post-tests are valid. Those raters suggested certain changes for the pre/posttests. Their suggestions were taken into consideration while designing the tests till the tests were approved.

3.8 Procedures

3.8.1 Cambridge English Unlimited Placement Test (Written Test) CEF

For the purpose of finding out to what extent the participants are homogeneous, Cambridge English Unlimited Placement Test (Written Test) CEF was administered. It consisted of 120 items requiring completion of sentences by choosing from four choices. The test is an indicator of the participants' general level in English language, and the extent to which the participants are homogenous. Table (3) shows the range of scores connected to certain level of proficiency.

Table 3
Scoring and its Related Level According to Cambridge English Unlimited Placement Test (Written Test) CEF

Starter	1-20
Elementary	21-40
Pre-intermediate	41-60
intermediate	61-80
Upper intermediate	81-100
Advanced	101-120

The participants of the four grades were given the test on the same day by the researcher. Table (4) shows the participants scores of Cambridge English Unlimited Placement Test (Written Test) CEF.

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Table 4
Participants' Scores of Cambridge English Unlimited Placement Test (Written Test) CEF

Grades and scores			
9th scores	10th scores	11th scores	12th scores
75	77	78	78
64	66	77	78
60	67	70	79
62	67	68	69
55	66	68	67
53	64	65	64
52	63	50	63
52	60	47	60
52	58	46	52
42	57		
41	58		
	45		
	45		
	44		
	42		

The scores of the participants show that the participants of the four grades (9th, 10th, and 11th, 12th) belong to the two levels: pre-intermediate and intermediate, according to Cambridge English Unlimited Placement Test (Written Test) CEF. The 44 participants were all selected for the study.

3.8.2 Pretest

Three days later, after taking the Cambridge test, the pretest was administered to the participants of the four grades (9th, 10th, 11th, 12th) on the same day by the researcher to find out if the participants know that words may have smaller parts and that these have meanings, if they know that these parts repeat themselves in a variety of other words, and if they can apply this knowledge to know the meaning of new words. In other words, the pretest finds out if the participants have knowledge in terms of roots and affixes. The items of the pretest were adapted from a book entitled *Greek and Latin roots: Teaching vocabulary to improve reading*

comprehension by Trisha Callella (2004). The book discusses about 30 common roots and affixes in English. The book, also, suggests a complete systematic lesson plan to teach these roots and prefixes.

3.8.3 Treatment

The treatment period of the present study lasted about eight weeks. In the first place, one full period, for each grade, was dedicated to raising the participants' knowledge of roots and affixes in English. Then, a collection of roots and affixes were selected from Callella (2004) and Becerra (2000) to be taught to the participants. The roots and affixes taken from Callella because the book is didactic and the roots and affixes in it are common in English. For the ones from Becerra, most of them are pairs of opposites. Take the two roots *Hetero* and *Homo.* These opposites make it easy for the students to learn them. Most of the morphemes in this study are roots and prefixes because the focus of this study is the meaning that can be contained mostly in roots and prefixes. In other words, this study doesn't focus on the morphemes that mostly affect the meaning related to the part of speech of a word. Instead, it focuses on the roots and prefixes because they are the tools to create totally new words in English in different areas. Table (5) shows the roots and affixes and their meanings of the present study:

Table 5
The Meanings of the Roots and Affixes Used in the Study

Roots and affixes	Meanings
Cent	Hundred
Mono	One
Bi	Two
Tri	Three
Quad, rect	Four
Pent	Five
Angle, gon	Mathematical corner
ology	The study of
Ped,pod	Foot
Man, manu	Hand
Dent	Tooth
Cardio	Heart
Hydro	Water
ex	Out
Archaeo	Ancient
biblio	Book
Meter	An instrument to measure something
Scope	An instrument to view things
phone	Sound
Struct	Build
Re	Again
Anti	Against
Anthropo	Human being
Baro	Air pressure
Fract, frag	Break
Tele	Far off
Geo	Land
Bio	Life
Script	Write
Phil	Love of
phobia	Fear of
Pre, ante	Before
Post	After
Homo	Same
Hetero	Different
Inter	Between
Intra	Within
Micro	Very small
Mega	Big
Hypo	Low

Hyper	High
Therm	Heat, temperature
Or, er, cian, ist	One who …. (Noun person)
Tion, ence, ance, sion	Indicate the noun part of speech

About fifteen minutes at the beginning of the participants' regular school class was dedicated to teaching one root or affix at a time. The four grades were taught individually in their regular classes according to the school class schedule. The researcher made use of word cards to teach the roots and affixes. Each root or affix was written on a word card. One side of the word card had the root or affix, and the other side had the meaning of the root or affix. Each participant had a set of word cards containing the roots and affixes. The participants took the word cards home to review the roots and affixes studied so far, and bring them back to school.

At the beginning of the class, five minutes was dedicated for the purpose of reviewing the roots and affixes studied so far. The other ten minutes was allotted to study another root or affix. During the ten minutes, a root or an affix from the table above was presented to the students. After being familiar with the root or affix meaning, the participants discussed one or two words containing the root or affix that had been presented to them. The participants used their knowledge of the meaning of the root or affix to guess the meaning of the words under discussion. The participants wrote this word to remember the root or affix. During the five-minute review, the participants were given a group of words containing the roots and affixes presented so far to guess the meaning of these words depending on their so-far knowledge about roots and affixes. This process continued until the roots and affixes were completely studied. In short, the treatment period consisted of ten minutes to discuss the meaning of a new root or affix, and 5 minutes to review what had been learnt so far. The same strategy was repeated during the fifteen minutes at the beginning of the regular school classes until the whole set of the roots and

affixes were completely discussed and thoroughly understood. Another thing is that the participants were asked to look up a word that contains the root or affix they have learnt as homework to strengthen their familiarity with the root or affix.

During the treatment period, it was noticed that the participants had fun learning the meanings of new words making use of roots and affixes. Many of them expressed their enjoyment of what they were experiencing. It seemed that they liked the logic they were making use of to learn new words.

3.8.4   Post-test

After the treatment period, the post-test was administered to the participants by the researcher on the same day and at the same time. The post-test consisted of 41 multiple choices items. The post-test is similar to the pre-test, but it has different unknown words to be guessed by the participants. The post-test was mainly designed to check Bloom's (1984) "application" level, not Bloom's (1984) "knowledge" level which was mainly tested in the pretest.

3.9   Data Analysis

The data collected from the pretest and post-test were analyzed using descriptive statistics as well as the One-Way ANOVA through the SPSS version 22 software programme to answer the proposed questions. They were used to study the effect on EFL students achievement, in terms of teaching roots and affixes, and to find out if teaching roots and affixes has different effect on the participants grade and gender groups. Also, the supervisors' focus group helped interpret and give meaning to the results of the post-test.

3.10 Summary

This chapter discussed the research method of the study, the specialty of the area and school where this study has taken place, the participants of the study, the quantitative and qualitative instruments used to collect the data for the study: pre/posttests, participants' report, the supervisors' focus group report. This section, also, illustrated the treatment phase of the study, and finally it discussed how the data were analyzed (through the statistical software program SPSS).

4 CHAPTER FOUR: DISCUSSION AND FINDINGS

This section answers the questions of this study: 1.To what extent does teaching the meanings of roots and affixes explicitly affect students' improvement in guessing the meaning of unknown words? 2. Does the explicit teaching of the meanings of roots and affixes affect different grades of students the same way? 3. Does the explicit teaching of roots and affixes affect one gender over another?

The results of the pre/posttests (quantitative data) were statistically processed through the software program SPSS using the one-way ANOVA. In addition, the data from the participants' report (qualitative data) and the focus group interpretation of the findings are also presented in this section.

4.1 Pretest Grades Statistics

The results of the participants in the pretest are shown in table (6). Since the pretest and post-test have 40 items, the results are out of 40.

Table 6
Pretest Results by Grades

Grades and scores			
9th scores	10th scores	11th scores	12th scores
11	14	14	16
10	15	14	15
13	10	10	12
9	17	15	17
13	12	11	14
11	14	11	11
10	10	13	14
13	9	9	10
13	10	10	17
9	9		
13	13		
	10		
	9		
	15		
	9		

The pretest results of the four groups (9th, 10th, 11th, 12th) were calculated using SPSS version 22 to find out about the descriptive statistics, as shown in table(7). Also, the One-Way ANOVA was conducted to find out if there was statistically significant difference in the means of the pretest between the four groups (9th, 10th, 11th, 12th) as shown in table(8)

Table7
Descriptive Statistics of the Groups

Grade	N	Mean	Std.Deviation
9th	11	11.36	1.690
10th	15	11.73	2.712
11th	9	11.89	2.147
12th	9	14.00	2.550
Total	44	12.14	2.465

The means of the four groups as well as the standard deviations in table (7) show that the participants of the four grades lack the knowledge of roots and affixes because the highest mean is 12.14 out of 40. This mean is an indicator that the participants can't guess the meaning of unknown words depending on the morphological analysis of these words. In other words, the participants lack Bloom's (1984) two levels: "comprehension" and "application" in terms of roots and affixes.

Table 8
Pretest One-Way ANOVA

	Sum of squares	df	Mean Squares	F	Sig.
Between groups	40.814	3	13.605	2.469	.076
Within groups	220.368	40	5.509		
Total	261.182	43			

it is clear from table 8 that the value of the significance between the means of the four grades in terms of the pretest, which is 0.076, indicates that there is no significant difference between the four grades' means. This means that the participants have no significant differences   in terms of

roots and affixes knowledge. In other words, the participants don't have root and affix knowledge to be able to guess the meaning of unknown words.

4.2   Post-test Grades Statistics

The results of the participants in the post-test are shown in table (9). The results, again, are out of 40.

Table 9
Post-test Results

Grades and scores			
9th scores	10th scores	11th scores	12th scores
22	22	17	23
20	36	37	38
35	36	25	39
18	37	36	34
36	19	35	30
35	23	36	22
35	35	21	25
35	21	21	26
37	14	39	27
25	28		
26	36		
	37		
	34		
	38		
	18		

The post-test results of the four groups (9th, 10th, 11^{th,} and 12th$^{)}$ were calculated using SPSS version 22 to find out about the descriptive statistics, as shown in table (10). Also, the One-Way ANOVA was conducted to find out if there was statistically significant difference in the means of the Post-test between the four groups (9th, 10th, 11^{th,} and 12th$^{)}$ as shown in table (11)

Table 10
Post-test Descriptive Statistics

Grade	N	Mean	Std. Deviation
9th	11	29.45	7.285
10th	15	28.93	8.506
11th	9	29.67	8.529
12th	9	29.33	6.325
Total	44	29.30	7.547

The means of the four groups show that the participants of the four groups have been affected equally after the treatment period, as shown in table (10).

Table 11
Post-test One-Way ANOVA by Grade

	Sum of squares	df	Mean Square	F	Sig.
Between groups	3.498	3	1.166	.019	.996
Within groups	2445.661	40	61.142		
Total	2449.159	43			

Table (11) shows that the value of the statistical significance is 0.996. This means that there is no significant statistical difference between the due to grade after the treatment. In other words, teaching roots and affixes had the same effect on the four grades: 9th, 10th, 11th, and 12th.

4.3 Comparing Pretest and Post-test Descriptive Statistics

The information presented in table (12) below is reproduced again in a way that lets the comparison between the pretest and post test easier. Take the 9th grade, the difference between the two means is an indicator of the huge effect teaching roots and affixes has on vocabulary development through guessing the meaning of new words on the part of the participants within this group. Also, the total pretest mean (12.14) and total post-test mean (29.30) have a great

difference. This means that the four groups have been positively affected in terms of guessing the

meaning of new words by being taught the meanings of roots and affixes.

Table 12
Pretest and Post-test Descriptive Statistics

Grade	Pre-test	Post-test
9th Mean	11.36	29.45
N	11	11
Std. Deviation	1.690	7.285
10th Mean	11.73	28.93
N	15	15
Std. Deviation	2.712	8.506
11th Mean	11.89	29.67
N	9	9
Std. Deviation	2.147	8.529
12th Mean	14.00	29.33
N	9	9
Std. Deviation	2.550	6.325
Total Mean	12.14	29.30
N	44	44
Std. Deviation	2.465	7.547

Table 13
Pretest and Post-test Results One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	6477.557	1	6477.557	205.535	.000
Within Groups	2710.341	86	31.516		
Total	9187.898	87			

It is obvious, from table (13), that there is a statistically significant difference between the means

of the pretest and post-test results. It is clear that the P-value here is (.000). Statistically speaking,

the value (.000) means that there is a highly significant statistical difference before and after

treatment using the morphological analysis strategies. The ability to guess unknown words

among the four grades due to this strategy has greatly developed. Therefore, the null hypothesis

that teaching roots and affixes will not have a positive effect after treatment or intervention on the participants is totally rejected because it has been statistically revealed that there is a highly significant difference. This leads to a serious consideration of this approach when teaching English vocabulary in EFL contexts.

4.4 Gender Groups Statistics

This section focuses on the gender group statistical aspects to find out if there are differences between the female participants and the male participants of the four groups, in terms of the effect of teaching roots and affixes. The following table (14) shows the scores by gender in the pretest and post-test.

Table 14
Pre/Posttests Female and Male Participants' Scores

Female		Male	
Pretest scores	Post-test scores	Pretest scores	Post-test scores
11	22	10	35
10	20	13	35
13	35	13	37
9	18	9	25
13	36	13	26
11	35	10	14
14	22	9	28
15	36	13	36
10	36	10	37
17	37	9	34
12	19	15	38
14	23	9	18
10	35	13	21
9	21	9	21
14	17	10	39
14	37	14	25
10	25	10	26
15	36	17	27
11	35		
11	36		

16	23		
15	38		
12	39		
17	34		
14	30		
11	22		

To have a clear picture about these figures, the descriptive statistics and the One-Way ANNOVA were used for the purpose of the interpretation of these figures of the results by gender in the pretest and post test. The following table (15) shows the pretest descriptive statistics by gender:

Table 15
Pretest Descriptive Statistics by Gender

Gender	N	Mean	Std. Deviation
Female	26	12.62	2.401
Male	18	11.44	2.455
Total	44	12.14	2.485

From table (15), it can be concluded from the means and standard deviations that the male and female participants can't guess the meaning of unknown words using the morphological analysis strategy. In other words, both female and male participants lack knowledge of roots and affixes that enables them to guess the meaning of new words. This can be noticed from the two means: 12.62 and 11.44.

Table 16
Pretest One-Way ANOVA by Gender

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.584	1	14.584	2.484	.123
Within Groups	246.598	42	5.871		
Total	261.182	43			

Table (16) of the One-Way ANNOVA shows that there is no statistical significant difference in the results of the pretest and post-test due to gender. This can be clearly noticed from the value the value (.123) which is more than the critical value: (.05).

The following part of the discussion interprets the statistical aspects of the Post-test scores by gender to find out if there are significant differences between the male and female participants, in terms of the effect of learning roots and affixes. The following tables,(17), (18), show the statistics of this part.

Table 17
Post-test Scores by Gender Descriptive Statistics

Gender	N	Mean	Std. Deviation
Female	26	29.50	7.649
Male	18	29.00	7.608
total	44	29.30	7.547

It is clear, from table (17), that the means and standard deviations of both the female and female participants have been affected the same way. The One-Way ANOVA was conducted and the statistical value .832, in table (18), shows that there are no statistical differences between the female and male participants of the four groups, in terms of their achievement in the post-test.

Table 18
Post-test One-Way ANOVA by Gender

	Sum of Squares	df	Means Square	F	Sig.
Between Groups	2.659	1	2.659	.046	.832
Within Groups	2446.500	42	58.250		
Total	2449.159	43			

Table (18) shows that the Significance value .832 is more than .05. Therefore, both females and males showed no differences in terms of the effect of learning roots and affixes. Thus, the null hypothesis that there are no differences, in terms of teaching roots and affixes, between the female and male participants is totally accepted.

4.5   The Focus Group

Three supervisors, from the Palestinian Ministry of Higher Education, Directorate of Yatta, were asked to explain why there was great improvement in guessing the meanings of unknown words, after the treatment period, as indicated by the results of the posttest. Also, they were asked to explain why there were no significant differences in the results of the post-test between the different grades and gender groups. They reported the following interpretation: the participants in the four groups fall in age groups that may make the systematic way used to teach vocabulary (through roots and affixes) preferable to them. In other words, teaching vocabulary using this strategy suits the age groups of the participants in the four groups. Another point related to the prefixes and roots is that they have fixed meanings, which makes it easy to learn them. Also, for these four groups, it is not hard or difficult to learn the meanings of some prefixes and roots. In addition, students tend to like what comes from outside their textbooks more than what is inside their textbooks. Finally, not being a traditional way of teaching vocabulary, this systematic way attracts the both grade and gender groups in such same way that there are no significant differences.

Despite the fact that many studies have shown differences between the two genders, in terms of linguistic aspects learning, there are studies that have shown no or few differences. For example,

the study by Bacon (1992) has found no differences between the sexes in two authentic listening tasks.

4.6   The Students' Reports

The students' report had the question "Did you enjoy learning vocabulary through roots and affixes? Explain your answer". The answers of the students implicated that they prefer to learn vocabulary this way because this is an easy and meaningful strategy of learning vocabulary, and they can learn more and more vocabulary through just one root or affix.

4.7   Summary

This chapter included the quantitative and qualitative results of the study. The former included the statistical analysis of the pre/posttests' results through the SPSS software program to establish the ANOVA and descriptive statistics needed to answer the study questions. The latter included the students' report results and the focus group explanation of the results of the post-test.

5   CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

5.1.1   Pre-treatment phase

In this study, before the treatment period, the participants of the four grades (9th, 10th, 11th, and 12th grades) showed that they don't have knowledge of roots and affixes that enable them guess the meanings of unknown words. The total mean of pretest results was 12.14 out of 40, and the significance value was revealed to be .076, more than .05. Between gender groups, the significance value was revealed to be .123, more than .05. In short, both the different grades and gender groups showed no statistical significant differences in terms of roots and affixes knowledge.

5.1.2   Post-treatment phase

First, after the period of treatment, the participants, whether males or females of the four grades (9th, 10th, 11th, and 12th) showed dramatic improvement in guessing the meanings of unknown words after receiving treatment depending on teaching the meanings of roots and affixes (morphological analysis strategy). The significance value, here, was revealed to be .000, less than .05. Second, after the period of treatment, the participants of the four groups (9th, 10th, 11th, and 12th grades) showed that they were equally and positively affected in terms of the development of their vocabulary through guessing the meaning of new words by being taught the meanings of roots and affixes. No group was affected over the other. The significance value related to this point was revealed to be .996, more than .05. Also, the study has revealed that both the female and male participants were affected equally and positively the same way. No gender was affected over the other. The significance value relevant to this was revealed to be .832, more than .05.

To sum up, the improvement in guessing unknown words, after exposing to instruction on the morphological analysis strategy, was clear-cut and statistically notable. But neither gender nor grade was affected over the other after the exposure to instruction on how to use the morphological analysis strategy to guess the meaning of unknown complex words.

5.2 Recommendations

5.2.1 Recommendations to the Palestinian Ministry of Education and Curriculum Center

1- In the short-term, the Palestinian Ministry of Education can make use of this study by integrating such strategy of teaching vocabulary in the current scholastic text books.

2- In the long-term, Palestinian Ministry of Education can make use of this study by developing a curriculum to teach roots and affixes to help students develop their vocabulary.

3- Palestinian Ministry of Education should provide schools with devised suitable teaching aids to help apply such approach.

4- In addition, Palestinian Ministry of Education should prepare the material needed for the purpose of training the supervisors in this context.

5- Palestinian Ministry of Education should raise the awareness of this approach among the Palestinian English supervisors, teachers and principals by offering the suitable training.

6- Also, the Ministry of Education should integrate this approach in other subjects other than English such as science, technology, biology.etc to enable students understand many of the modern terminology through this approach.

5.2.2 Recommendations to supervisors:

1- English supervisors should train teachers to use this approach in teaching vocabulary.

2- English supervisors should pay visits to schools to help teachers in the process of applying such approach.

3- Teachers should be given enough space to give their feedback to help design a suitable curriculum in this context that fulfills the learners' needs.

4- Teachers should be given enough time to improve skills related to this approach of teaching roots and affixes.

5.2.3 Recommendations to teachers:

1- English teachers in Palestine should encourage and motivate their students to learn the meanings of roots and affixes to improve their English vocabulary.

2- English teachers in Palestine should take benefits from this study to help the Palestinian students empower their vocabulary.

3- English teachers in Palestine should look for the suitable ways to teach the meanings of roots and affixes.

4- English teachers in Palestine should look for the most suitable roots and affixes to teach.

5- Also, teachers of the other subjects, not just English teachers , should benefit from this study to teach roots and affixes related to the subjects they teach because these roots and affixes can be of great use for subjects like mathematics, technology, physics,..etc.

5.3   Suggestions for Further Research

Several studies have been conducted on roots and affixes, as tools to develop English vocabulary, but there are very few ones that have been conducted in the Arab World, and there are no such studies that have been conducted in the Palestinian contexts. This means that further studies are needed to learn more about the effect of teaching roots and affixes on vocabulary development.

For future studies on roots and affixes, these studies may tackle with finding the best ways to teach roots and affixes. Also, additional research may be conducted to English major university-level students to find out in what way this strategy may affect the vocabulary development of English major students. This study has been conducted to the 9th, 10th, 11th, and 12th grades. So, future studies may include the other grades to find out what effect teaching roots and affixes has on them.

5.4   Summary

In this chapter, the researcher has shed lights on the conclusion of the study. Moreover, the researcher has presented some recommendations for the Palestinian Ministry of Education and Curriculum Center, supervisors, and teachers. Also, the researcher has suggested further topics related to this study to be studied. Finally, the researcher has presented some limitations that may affect the generliability of this study.

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APPENDICES

Appendix 1 Cambridge English Unlimited Placement Test (Written Test)

Placement test(Written test) CEF A1 to C1

- Choose the best answer for each question.
- Stop when the questions become too difficult.
- Spend no more than 40 minutes on the test.

1   Where_____ from?   I'm from Russia. A you are   B you   C are you

2   We have_____ house in Moscow.   A any   B a   C an

3   I have two_____ , a boy and a girl.   A sons   B daughters   C children

4   I work in a_____ . I'm a doctor.   A hospital   B hotel   C supermarket

5   This is my brother. _____ name's Paul.   A His   B He's   C Her

6   _____ five people in my family.   A They are   B There is   C There are

7   I get up_____ 7 o'clock in the morning.   A for   B at   C in

8   I like apples, but I_____ bananas.   A don't like   B like   C do like

9   Excuse me, _____ speak French?   A do you   B you do   C you

10   How much are_____ shoes?   A this   B these   C that

11   Where are my glasses? They're _____ the table.   A at   B on   C in

12   My sister _____ tennis very well.   A plays   B play   C playing

13   I usually go to work_____ train.   A on   B with   C by

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14   I don't see my parents very often_____   they live in South Africa.

A so   B but   C because

15   Rosie stayed_____ home yesterday afternoon.

A in   B at   C to

16   Last night I_____ to the cinema.

A went   B did go   C was

17   The_____ is quite expensive but the food there is excellent.

A film   B restaurant   C book

18   Do you want to listen to music or_____ TV?

A see   B look   C watch

19   _____ were you at the weekend? I was in Scotland.

A When   B Where   C What

20   _____ you have a good time at the party?   Yes, it was fun.

A Did   B Were   C Had

21   Are you_____ English teacher?

A Maria   B Marias'   C Maria's

22   Bob will meet_____ at the airport.

A us   B we   C our

23   I'm going to a concert tonight. _____ you like to come?

A Do   B Are   C Would

24 _____ use your dictionary? Sure. Here you are.

A Could I   B Could you   C Do I

25   I like this apartment but the_____ is too expensive for me.

A money   B rent   C cost

26   Excuse me, how do I_____ to the bus station?

A come   B get   C arrive

27   Do you sell stamps?   Yes, we do. How_____ do you want?

A any   B many   C much

28   Sorry I'm so late.   That's_____ .

A OK   B great   C right

29   I'd like_____ milk in my coffee, please.

A some   B any   C a

30   _____ a bus stop near my flat.

A It's   B Here's   C There's

31   Is this a good time to talk?   Sorry, no. I_____ dinner.

A cook   B am cooking   C cooking

32   I think cycling is more dangerous_____ driving.

A as   B like   C than

33   We_____ going to the theatre next Saturday.

A will   B do   C are

34 _____ meet for coffee some time soon.

A Let's   B Do you   C Shall they

35   Kamal has got a holiday home near sea.

A a   B the   C some

36   If you've got a headache, you_____ go home.

A should   B did   C had

37   _____ ever been to New York?

A Have you   B Are you   C Did you

38   I only get about five hours' sleep a night.   That's not .

A enough   B lot   C too much

39   Did   Amina   finish   the   report?   No.   She_____   it   tomorrow.

    A finishes   B is going to finish   C finished

40   Paula_____ loves working with children.

A very   B really   C much

41   Is Ottawa the capital of Canada?   I think_____ .

A is   B yes   C so   D right

42   We never_____ a television when I was a child.

A have had   B hadn't   C had   D didn't have

43   We paid the restaurant_____ bill credit card.

A to   B with   C on   D by

44 The last time I_____ Joanna was in Paris.

A have seen   B saw   C see   D was seeing

45 If you_____ money from a friend, you should always pay it back promptly.

   A borrow   B earn   C spend   D lend

46 Can I make myself a cup of coffee? Of   course.   You_____   to   ask.

   A haven't   B mustn't   C needn't   D don't have

47 I_____ a lot of sport in my free time.

A do   B practise   C make   D exercise

48 _____ anywhere interesting recently?

   A Do you go   B Have you been   C Are you going   D Will you go

49 It's Walter's birthday on Friday. He_____ be 30, I think.

   A should   B can   C will   D shall

50 Learning   the   piano   isn't   as   difficult_____   learning   the   violin.

A like   B so   C than   D as

51 If   the   weather_____   bad   tomorrow,   we   can   go   to   a   museum.

   A will be   B was   C is   D would be

52 About a billion cans of Coca-Cola_____ drunk around the world every day.

   A is   B are   C was   D were

53 My mum's not very well.   Oh, _____ .

   A it doesn't matter   B I do apologize   C sorry to hear that D not bad, thanks.

54   Hans isn't here. He_____ to see his grandmother. He'll be back tomorrow.

A has gone   B had been   C has been   D had gone

55   Would you mind changing my appointment? _____ time on Friday is fine.

A Next   B All the   C Every   D Any

56   When I was a child, I _____ climb the wall and jump into our neighbors' garden.

A would   B did   C have   D used

57   Have you finished_____ the wall yet?

A paint   B to paint   C painting   D painted

58   Can you help me? I've tried_____ hotel in the city and can't find a room.

A many   B any   C every   D all

59   Lena used to find work boring_____ she became a nurse.

A unless   B until   C if   D since

60   If I_____ closer to my office, I could walk to work.

A lived   B would live   C had lived   D live

61   I_____ outside the cinema when suddenly a police car arrived.

A stood   B was standing   C have stood   D am

62   Shall we go to The Riceboat for dinner? It _____ be fully booked. They're

sometimes busy on a Monday.   A will   B may   C can   D must

63   We've_____ come back from a trip to India. It was amazing.

A already   B yet   C just D only

64   I've got to be at work in five minutes.   Don't worry, I _____ you a lift if you want.   A give   B am giving   C 'll give   D 'm going to give

65   My   doctor   advised   me_____   more   exercise.

        A take   B taking   C having taken   D to take

66   I couldn't_____ up with the noise in the city, so we moved to the countryside.

        A put   B live   C set   D take

67   There's no name on this dictionary.   It_____ be mine then. Mine's got my name on the front.   A might not   B mustn't   C won't   D can't

68   Julia_____ married since she was 20.

A is   B was   C has been   D is being

69   Don't worry if I_____ late tonight. I'm going to the gym after work.

        A am   B will be   C would be   D was

70   I've got a terrible headache, and it won't go away.   Have you tried_____   some aspirin?

        A to take   B take   C took   D taking

71   Boxing is a sport_____ requires a lot of speed and fitness.

A it   B that   C what   D where

72   Jon _____ working on this project for a couple of months so he hasn't made much progress yet.

        A is only   B has only been   C was only   D had only been

73   I was wondering I could ask you some questions.   Sure, go ahead.

A what   B if   C that   D how

74   What clothes should I pack for a trip to Boston?   Well, it depends_____ the time

of year that you go.   A on   B with   C up   D to

75   I've finished this salad and I'm still hungry. I _____ ordered something more filling.

A must have   B would have   C should have   D may have

76   Do you ever ask your neighbors to do favors _____ you?

A for   B to   C with   D about

77   Some married couples seem to get more_____ over time.

A alike   B same C like   D equal

78   I don't know how much this card costs. The price label's_____ off.

A gone   B taken   C done   D come

79   Ben got the job because he_____ a very good impression at his interview.

A made   B did   C put   D took

80   Salsa music always_____ me of my trip to Cuba.

A remembers   B realizes   C recognizes   D reminds

81   I _____ to be picking Tom up at the station but I've lost my keys.

A am supposed   B am requested   C am intended   D am obliged

82   How about going to Colors nightclub?   There's no_____ I'm going there. It's

awful!   A hope   B way   C time   D opportunity

83   By the age of 18, I_____ not to go to university.

A had decided   B decided   C have decided   D was deciding

84   I'm afraid your car_____ repaired before next week.

A hasn't been   B wasn't   C wouldn't be   D can't be

85   The amount of organically grown food on sale has_____ enormously in recent

years.   A raised   B lifted C increased   D built

86   Can you believe it? A woman has been _____ for hacking into the computer of her

online virtual husband.   A accused   B suspended   C arrested   D

suspected

87   You may borrow my laptop_____ you promise to look after it.

A unless   B in case   C as long as   D although

88   It's a huge painting. It_____ taken ages to complete.

A must have   B can't have   C should have   D won't have

89   Pierre tends to put_____ dealing with problems, rather than dealing with them

immediately.   A down   B off   C over   D away

90   If the taxi hadn't stopped for us, we_____ standing in the rain.

A were still   B would still be   C are still   D will still be

91   My mother's Italian, so the language has been quite easy _____ for me.

A to learn   B learn   C having learned   D learning

92   _____ I had the talent, I still wouldn't want to be a movie star.

A In case   B Even if   C Provided that   D However much

93   The factory workers threatened_____ on strike if they didn't get a pay rise.

A going   B to go   C that they go   D to have gone

94   I was about to go to sleep when it_____ to me where the missing keys might be.

A remembered   B happened   C appeared   D occurred

95   There's going to be a new department at work. They've asked me to_____ it up.

A take   B set   C put   D bring

96   If the film is a_____ success, the director will get most of the credit.

A big   B high   C large   D good

97   By the end of today's seminar I will_____ to each of you individually.

A speak   B have spoken   C be speaking   D have been speaking

98   This is a photo of my little sister ice cream on the beach.

A eat   B eating   C was eating   D having eaten

99   Our students take their responsibilities very _____.

A considerably   B thoroughly   C seriously D strongly

100   Pia   was_____   delighted   with   the   birthday   present.

A very   B completely   C fairly   D absolutely

101   People   were   amazed   that   the   burglary   took   place   in   daylight.

A wide   B broad   C large   D open

102   She invested a lot of time researching---------------- the most appropriate university course.

A to   B for   C with   D in

103 The police claimed that they acted in self- _____.

A interest   B confidence   C defence   D discipline

104 I_____ remember putting my briefcase down on that shelf.

A deeply   B entirely   C clearly   D strongly

105 He turned_____ to be considerably older than I had imagined.

A over   B up   C out   D round

106 The windows in this house are in urgent_____ of replacement.

A need   B help   C want   D demand

107 Speed cameras _____shown to reduce accidents.

A have   B were being   C have been   D are being

108 Life is a_____ deal easier for immigrants who can speak the local language.

A far   B huge   C big   D great

109 The experiment_____ testing people's responses before and after drinking coffee.   A contained   B incorporated

C involved   D consisted

110 We may be a bit late. We're in a_____ traffic jam.

A buried   B stuck   C blocked   D surrounded

111 Having_____ his driving test several times, Paul finally passed at the fourth attempt.

A taken   B made   C had   D attended

112 Gospel music has been a major influence_____ other musical styles, especially soul.

A with   B to   C about   D on

113 Maintaining an accurate balance sheet is essential, _____business you're in.

A however   B wherever   C whatever   D whenever

114 It's_____ likely that this novel will win a literary prize.

A totally   B deeply   C strongly

115 It's no_____ for me to get Brad's phone number – I'll be seeing him tonight.

A point   B wonder   C secret   D problem

116 I'd lived in Australia, so I was used to_____ on the left side of the road.

A driving   B drive   C having driven   D drove

117 I don't think the colours in Julia's outfit _____ together.

A fit   B suit   C match   D go

118_____Very rarely here in July.

A it rains   B does it rain   C is it raining   D it is raining

119 I prefer to buy CDs _____ download music from my computer.

A in contrast to   B as opposed to   C rather than   D in comparison to

120 The number of turtles on the island_____ by 70% over the last decade.

A has declined   B has been declining   C has been declined

D is declining

Cambridge English Unlimited Placement Test (Written Test) Student's Answer sheet

1) **A B C D** 2) **A B C D** 3) **A B C D** 4) **A B C D** 5) **A B C D** 6) **A B C D** 7) **A B C D**
8) **A B C D** 9) **A B C D** 10) **A B C D** 11) **A B C D** 12) **A B C D** 13) **A B C D**
14) **A B C D** 15) **A B C D** 16) **A B C D** 17) **A B C D** 18) **A B C D** 19) **A B C D**
20) **A B C D** 21) **A B C D** 22) **A B C D** 23) **A B C D** 24) **A B C D** 25) **A B C D**
26) **A B C D** 27) **A B C D** 28) **A B C D** 29) **A B C D** 30) **A B C D** 31) **A B C D**
32) **A B C D** 33) **A B C D** 34) **A B C D** 35) **A B C** 36) **A B C D** 37) **A B C D**
38) **A B C D** 39) **A B C D** 40) **A B C D** 41) **A B C D** 42) **A B C D** 43) **A B C D**
44) **A B C D** 45) **A B C D** 46) **A B C D** 47) **A B C D** 48) **A B C D** 49) **A B C D**
50) **A B C D** 51) **A B C D** 52) **A B C D** 53) **A B C D** 54) **A B C D** 55) **A B C D**
56) **A B C D** 57) **A B C D** 58) **A B C D** 59) **A B C D** 60) **A B C D** 61) **A B C D**
62) **A B C D** 63) **A B C D** 64) **A B C D** 65) **A B C D** 66) **A B C D** 67) **A B C D**
68) **A B C D** 69) **A B C D** 70) **A B C D** 71) **A B C D** 72) **A B C D** 73) **A B C D**
74) **A B C D** 75) **A B C D** 76) **A B C D** 77) **A B C D** 78) **A B C D** 79) **A B C D**
80) **A B C D** 81) **A B C D** 82) **A B C D** 83) **A B C D** 84) **A B C D** 85) **A B C D**
86) **A B C D** 87) **A B C D** 88) **A B C D** 89) **A B C D** 90) **A B C D** 91) **A B C D**
92) **A B C D** 93) **A B C D** 94) **A B C D** 95) **A B C D** 96) **A B C D** 97) **A B C D**
98) **A B C D** 99) **A B C D** 100) **A B C D** 101) **A B C D** 102) **A B C D** 103) **A B C D**
104) **A B C D** 105) **A B C D** 106) **A B C D** 107) **A B C D** 108) **A B C D** 109) **A B C D**
110) **A B C D** 111) **A B C D** 112) **A B C D** 113) **A B C D** 114) **A B C D** 115) **A B C D**
116) **A B C D** 117) **A B C D** 118) **A B C D** 119) **A B C D** 120) **A B C D**

Appendix 2 Pre-test

Choose the correct answer:

1. Cats and dogs are examples of these because they have **four feet**.
A) quadrupeds   B) bipeds   C) tripods   D) monocycle

2. The policemen used **handcuffs** to tie the man's hands. What does the word **handcuffs** mean?.
A) bracelets   B) manacles   C) helmets   D) robes

3. The people who are looking at the football match are happy. **The people who are looking at** are what of the following?
A) spectators   B) players   C) runners   D) drivers

4. The weather forecast **expects** it will rain tomorrow. What does the word **expect** mean?
A) accepts   B) predicts   C) denies   D) doubts

5. lightning **precedes** thunder.
A) comes after   B) comes before   C) comes with   D) comes without

6. This book has ten **sections.** What does the word **sections** mean?
A) parts   B) pages   C) pictures   D) charts

7. When a country **exports** olives , which of the following is true ?.
A) olives go outside the country   B) olives stay inside the country
C) olives grow in the country   D) olives

8. A weapon that is **sent out** to an enemy target can be a_____.
A) gun   B) knife   C) missile   D) stone

9. . When someone **writes** about his **life by himself**, this is called _____.
A) a film   B) an autobiography   C) a story   D) a song

10. The Dome of the Rock has **inscriptions** from the Holy Quran.To which of the following the word **inscriptions** can be connected?
A) writing   B) painting   C) drawing   D) reciting

11. What does **bio** mean in the word biography?
A) life   B) writing   C) self   D) around

12. What does **post** mean in the word **postscript**?
A) again   B) after   C) before   D) outside

13. What does **trans** most likely mean in the word **transport**?
A) across   B) around   C) path   D) writing

14. What does **biblio** most likely mean in the word **bibliography**?
A) book   B) life   C) self   D) writing

15. A word used to describe a **person who doesn't believe and trust** easily.
A) dangerous   B) incredulous   C) wonderful   D) active

16. What does the root **cardio** mean?
A) head   B) heart   C) hand   D) foot

17. What does **dis** mean in the word **disagree?**
A) not   B) half   C) over   D) believe

18. What does **in** mean in the word **incredible**?
A) not   B) within   C) after   D) outside

19. When something is **good,** which of the following is it ?
A) beneficial   B) dangerous   C) active   D) strong

20. Which of the following is another way to say a ***bad person***?
A) malefactor   B) benefactor   C) well-known   D) over-rated

21. What does the suffix- **or** mean in the words **benefactor** and **malefactor**?
A) a person who   B) apart   C) together   D) friendly

22. When doctors **try to bring life back** to a patient in emergency room, they try to_____
A) calm him   B) cover him   C) revive him   D) warm him

23. What does **geo** mean in the word **geology** ?
A) sea   B) land   C) forest   D) space

24. What does **re** mean in the words **rewrite** ?
A) again   B) within   C) after   D) outside

25. What does the root **fract** mean?
A) to bend   B) to break   C) to cut   D) to write

26. What does the root **flect** mean?
A) to bend   B) to break   C) to cut   D) to write

27. What does **circum** mean in the word **circumference**?
A) around   B) through   C) together   D) across

28. The wrist **connects** the hand to the arm, so it is _____
A) sticker   B) joint   C) link   D) bridge

29. What does **homo** mean in the word **homograph?**
A) similar   B) different   C) clear   D) hard

30. Taking **turns** to talk and listen to others is making _____
A) education B)   decision   C) organization   D) conversation

31. What does the root **port** mean in the word **portable**?
A) carry   B) fix   C) eat   D) leave

32. What does **sub** mean in the word **submarine**?
A) over   B) within   C) after   D) under

33. What does **pre** mean in the word **precede**?
A) after   B) before   C) apart   D) follow

34. let's use this _____ to **pull** this heavy thing.
A) tractor   B) traction   C) distract   D) abstract

35. When the Israeli Occupation destroys the Palestinian houses, The Palestinian people *build* them *again*. What does '**build again**' mean?
A) recollect   B) reconstruct   C) retry   D) return

36. What does **super** mean in the word **supermarket**?
A) over   B) under   C) after   D) before

37. The blanket that produces **heat** to keep people very warm is_____
A) electric   B) thermal   C) expensive   D) cheap

38. The_____ is used ,so that **low sound** can heard .
A) saxophone   B) microphone   C) gramophone   D) phonology

39. What does **ology** mean in the word **biology**?
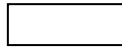A) person who   B) able to do   C) study of   D) sound
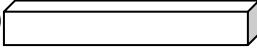
40. What does **mega** mean in the word **megaphone**?
A) large   B) small   C) sound   D) tighter
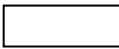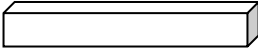
| **Post-test** |
| **Student number***: _____   **Gender: F, M**   **Age:** _____   **Class: 9th, 10th, 11th, 12th** |

Choose the correct answer:

1. The man in the circus is riding a **monocycle**. A **monocycle** has ………………………
A) two wheels   B) one wheel   C) three wheels   D) four wheels

2. Manicure is Looking after   …………………….
A) hands   B) feet   C) face   D) eyes

3. Pedicure   is Looking after   …………………….
A) hands   B) feet   C) face   D) eyes

4. This **centipede** insect has many feet. It has …………………
A) 10 feet   B) 50 feet   C) 80 feet   D) 100 feet

5. I like riding **quadbikes** . **Quadbikes** are ………………………
A) one- wheel bikes   B) two- wheel bikes   C) three- wheel bikes   D) four- wheel bikes

6. One of the following is called a **rectangle.**
A) △   B) ▭   C) ◯   D) ▱

7. A **pentagon** is a shape that has…………………………….
A) three angles   B) five angles   C) four angles   D) six angles

8. How many years in a **century ?** it has ………………..
A) 10 years   B) 50 years   C) 100 years   D) 1000 years

9. A **dentist** treats your………………………...
A) hands   B) heart   C) feet   D) teeth

10. He wants to be a **cardiologist.** A **cardiologist** is a person whose   interest is in…………
A) head   B) feet   C) heart   D) eyes

11. What do we study about in **geology** ?
A) land   B) human beings   C) air   D) space

12. She likes **anthropology** because she wants to know about………………..
A) land   B) human beings   C) air   D) space

13. Ahmad has **a fear of water**. This is called …………………..
A) acrophobia   B) hydrophobia   C) claustrophobia   D) xenophobia

14. You should **write the names of the books** you read for you research. This means I need….
A) bibliography   B) geography   C) biography   D) photography

15. Some people have **acrophobia** because they feel afraid of staying at ……………………
A) high places   B) closed places   C) low places   D) dark places

16. They **write about his life** story. You can read his…………….
A) bibliography   B) geography   C) biography   D) photography

17. The baby is crying because he is ill. Let's **check** his **temperature** by the …………….
A) thermometer   B) telescope   C) microscope   D) microphone

18. In our school science laboratory, our teacher lets us use a **microscope** to **view**……….
A) big things   B) small things   C) white things   D) black things

19. To **view far off** stars in the sky, we used a………………………..
A) thermometer   B) telescope   C) microscope   D) microphone

20. Which of the following is another way to say a **good person**?
A) malefactor   B) benefactor   C) teacher   D) worker

21. He keeps **doing bad things** to other people. What he does is ………………………..
A) Malefaction   B) benefaction   A) malefactor   B) benefactor

22. A **megaphone** is used in the mosque so that people can hear *athan*. A **megaphone** makes
…................
A) Sound slower   B) sound smaller   C) sound faster   D) sound louder

23. Ali has fell and **broke** his leg. The doctor said Ali had a………………..
A) Fracture   B) flu   C) cold   D) cough

24. Be careful! This glass is **easily broken**. It is ……………………..
A) Ductile   B) moved   C) fragile   D) recycled

25. Archaeology is the study of…………………………
A) New objects   B) ancient objects   C) big objects   D) small objects

26. This is the **exit** of the building. Let's go ……………………….. it.
A) Inside   B) outside   C) upstairs   D) down stairs

27. Which of the following is a **triangle** ?

A) △   B) ▭   C) ◯   D) ▱

28. Lightning **antecedes** thunder. Lightning ………………..
A) comes before   B) comes after   C) stops   D) causes

29.   These words have the **same sound** so the words are which of the following? ………………
A) homophone   B) homograph   C) homogenous   D) autograph

30. These words are **homographs** because they have ………………………
A)   different writing   B) same pronunciation
C) same writing   D) different pronunciation

31. When something is **portable,** it can be………………..
A) carried from one place to another   B) eaten
C) drunk   D) destroyed

32. He has a **heterogeneous** collection of books. This collection has…………………………….
A) different books   B) similar books   C) boring books   D) interesting books

33. Ali **loves books** very much. He has a lot of books in his house. He is…………………
A) bibliophobia   B) hypothermia   C) bibliophile   D) hypothermia

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34. An **instrument** that is used to **measure air pressure** is which of the following?
A) thermometer   B) barometer   C) microscope   D) microphone

35. Postmortem is checking the body ……………..
A) after death   B) before death   C) during death   D) near death

36. Carrying people **across** a country by train, taxi, bus etc. is ……………………..
A) expatriation   B) exportation   C) importation   D) transportation

37. He studied **biology** in Hebron University. He wanted to know about …………….
A) space science   B) life science   C) land science   D) air science

38. Intracellular process is when something happens …………………..
A) between cells   B) outside a cell   C) inside a cell   D) around a cell

39. He is very ill. He has **low blood pressure**. In other words, **low blood pressure** is…………..
A) hypoactive   B) hypertension   C) hypotension   D) hyperactive

40. Hypothermia is the state of ……………..

A) high temperature   B) low temperature
C) low blood pressure   D) high blood pressure

Pre/post-tests Student Answer Sheet

Question number	Answer			
	A	B	C	D
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Appendix 4 Participants' report

Did you enjoy learning vocabulary using the meanings of roots and affixes? Explain your

answer.

………………………………………………………………………………………………

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Appendix 5 Focus group's report

The results of the posttest showed statistically notable improvement in guessing the meanings of unknown words, depending on teaching the meanings of roots and affixes, with no significant differences due to gender or grade. How can you interpret these results?

Appendix 6

Table 6. 1Suffixes that Change the Grammatical Class of the Words they are Attached to

Noun-forming suffixes:	Adjective-forming suffixes:
v + ~ = n	**v + ~ = adj.**
assist + -ance = assistance	eat + -able = eatable
assist + -ant = assistant	reduce + -ible = reducible
confide + -ence = confidence	differ + -ent = different
signify + -ant = significant	confide + -ent = confident
permute + -ation = permutation	act + -ive = active
compete + -ition = competition	compulse + -ory = compulsory
attend + -tion = attention	
confess + -ion = confession	**n + ~ = adj.**
adhere + -sion = adhesion	fashion + -able = fashionable
employ + -ee = employee	response + -ible = responsible
work + -er = worker	magic + -al = magical
act + -or = actor	planet + -ary = planetary
beg + -ar = beggar	affection + -ate = affectionate
develop + -ment = development	disease + -ed = diseased
observe + -(at)ory = observatory	gold + -en = golden
close + -ure = closure	Burma + -ese = Burmese
break + -age = breakage	picture + -esque = picturesque
type + -ist = typist	peace + -ful = peaceful
survive + -al = survival	dictator + -ial = dictatorial
poet + -ic = poetic	
adj. + ~ = n	child + -ish = childish
young + -ster = youngster	tree + -less = treeless
industrial + -ist = industrialist	god + -like = godlike
crude + -ity = crudity	coward + -ly = cowardly
dry + -ness = dryness	poison + -ous = poisonous
free + -dom = freedom	quarrel + -some = quarrelsome
praise + -worthy = praiseworthy	
dust + -y = dusty	
Brazil + -ian = Brazilian	
Verb-forming suffixes:	
v + ~ = v	**n + ~ = v**
black + -en = blacken	beauty + -ify = beautify
solid + -ify = solidify	computer + -ize = computerize
length + -en = lengthen	

Table 6. 2 Prefixes that Change the Grammatical Class of the Words they are Attached to.

~ + n = adv.	~ + n = v
a- + bed = abed	be- friend = befriend
	en- + danger = endanger
~ + v = adv.	em- + power = empower
a- + sleep = asleep	
a- + singing = asinging	
	~ + adj. = v
	be- little + belittle
	en- + large = enlarge

Table 6. 3 Suffixes that do not Change the Grammatical Class of the Words they are Attached to

n + ~ = n	Meaning of Morpheme
.	
lemon + -ade = lemonade	
Mexico + -an = Mexican	
Africa + -ana = Africana	'collection of facts, objects, etc. related to'
discipline + -arian = disciplinarian	'practice of'
function + -ary = functionary	
director + -ate = directorate	
boot + -ee = bootee	'diminutive'
mountain + -eer = mountaineer	'person concerned with the n'
philosophy + -er = philosopher	'practicer of'
fish + -ery = fishery	'place where an action is carried out'
cook + -ery = cookery	'art of, practice of'
snob + -ery = snobbery	
rival + -ry = rivalry	'state, quality, character of'
journal + -ese = journalese	'in the (literary) style of'
n + ~ = n	
lion + -ess = lioness	'female of n'
cigar + -ette = cigarette	'diminutive'
usher + -ette = usherette	'female'
flannel + -ette = flannelette	'imitation'
hand + -ful = handful	'amount that fills'
boy + -hood = boyhood	'status, rank, condition of life'
mathematics + -ian = mathematician	'specialist in'
music + -ian = musician	
dog + -ie = doggie	'pet name or familiar name'
pig + -y = piggy	
hero + -ism = heroism	'showing qualities typical of'

Buddha + -ism = Buddhism	'specific doctrine, principle or movement'
drama + -ist = damatist	'agent of an –ize verb' (e.g.dramatize)
king + -dom = kingdom	'domain'
pound + -worth = poundsworth	'using the amount of'
tobacco + -ist = tabacconist	'person concerned with a specific activity'
Labor + -ite = Laborite	'follower, devotee of a person or organization'
pig + -let = piglet	'diminutive'
duck + -ling = duckling	'diminutive'
hire + -ling = hireling	'person connected with' (used dispairingly)
country + -man = countryman	'dweller in'
milk + -man = milkman	'somebody connected by a specific activity to'
fish + -monger = fishmonger	'somebody who deals in'
song + -ster = songster	'somebody connected with the n'
land + -scape = landscape	'a stretch of scenery'
friend + -ship = friendship	'a state of being, status, office'
musician + -ship = musicianship	'skill, proficiency as'
photograph + -y = photography	'system of'
adj. + ~ = adj.	
outer + -most = outermost	'superlative of adj., very'
two + -fold = twofold	'of (so many) parts'
red + -ish = reddish	'somewhat, near to'

Table 6. 4 Derivational Prefixes that do not Change the Grammatical Class of the Words they are Attached to

a-	'not, without': amoral; aseptic; atheist (n.).
ante-	'in front of': anteroom; 'before, previous to': antenatal.
anti-	1. 'opposed to, against': antisocial; antiseptic; 2. 'instead of': anti-hero.
arch-	'first, chief, head': archetype; archbishop.
audio-	'of hearing, of sound': audiovisual; audio-frequency.
be-	1. (~ + v = v) 'all over, all around, in all directions': bedeck; bespatter. 2. (~ + n or adj. = v) 'make, become': befriend; belittle. 3. (~ + vintr = vtr): bemoan; bewail.
bi-	1. 'occurring twice in a period': bi-monthly; bi-annual. 2. 'occurring once in a period of two': bicentenary; biennial. 3. 'having two': biped; bilingual.
by-, bye-	'of secondary importance; incidental': by-election; bye-law; by-product.
co-	'together, jointly, equally': cohabit; co-author; co-operate; co-education.
de-	(used with a v.) 'the negative, reverse, opposite of': depopulate; defrost; defuse.
dis-	(used with a v.) 'the negative, reverse, opposite of': disbelieve;

	disorder; disagree.
equi-	'equal, the same': equidistant; equivalent.
ex- \	1. 'out, out of, from': exclaim; extract. 2. 'former, at one time': ex-wife, ex-president.
extra-	1. 'outside, beyond': extra-marital, extrasensory. 2. 'very': extra-thin.
fore-	'before, in front of': foretell; foreground.
hyper-	'to a large or extreme degree': hypercritical; hypersensitive.
in-, il-, im-, ir-	1. (~ + v = v or n) 'in, on': intake; imprint. 2. (~ + adj. = adj.) 'not': infinit; illicit; immoral; irrelevant.
inter-	'between, from one to another': international; interplanetary.
intra- intro-	'inside': intravenous; intra-uterine; introspection.
mal-	'bad, wrong, not': maladjustment; malnutrition.
mis-	'bad, wrong, not': misconduct; misdirect; mistrust.
multi-	'many': multistage; multicolored.
neo-	'new, revived, later': neologism; neo-classical.
non-	'bit': nonsense; non-stop.
out-	1. 'located outside': outhouse; outpost. 2. 'surpassing to a greater extent': outnumber; outmaneuver. 3. 'with the various senses of out': outcry; outspoken.
over-	1. 'across, above': overland; overhead. 2. 'to excess, too much': overcharge; overwork. 3. 'with the various senses of
over':	overthrow; overpower.
pan-	'all, throughout': panchromatic; Pan-African.
photo-	1. 'of light': photoelectric. 2. 'of photography': photocopy; photogenic.
physi(o)-	'of the body, of living things': physiotherapy; physiology.
poly-	'many': polygamy; polysyllabic.
post-	'after': postcript; posthumous; post-graduate.
pre-	'before': prefabricate; premature; pre-recorded.
pro-	1. 'supporting, in favor of': pro-Chinese; pro-revolutionary. 2. 'acting as': pro-Vice-Chancellor.
proto-	'first, original, basic': prototype; protoplasm.
pseudo-	'false, fake': pseudonym; pseudo-intellectual.
psycho-	'of the mind': psychiatry; psycho-analysis.
quasi-	'almost, seemingly': quasi-serious; quasi-explanation.
re-	'again': re-echo; reinstate.
retro-	'backwards, behind': retrospective; retro-rocket.
self-	'of one's self, alone': self-taught; self-service.
semi-	'half, partially, midway': semi-circular; semi-detached; semi-final.
sub-	1. 'under': subway; subsoil. 2. 'secondary, lower in rank': sub-committee; sub-species. 3. 'not quite': sub-tropical; subnormal. 4. (~ + v) 'secondary repetition': sublet; subdivide.

super-	1. 'above, over': super-structure; superimpose. 2. 'superior to, more than': superhuman; supernatural.
trans-	1. 'across': transatlantic; trans-continental. 2. 'to a changed state': transplant; transform.
tri-	'three': triangle; tricolor.
un-	1. (used with an adj. or n.) 'not': unable; untruth. 2. (used with v.) 'negative, reverse, opposite of': uncover; unpack.
under-	1. 'located beneath': undercurrent; undergrowth. 2. 'not enough': underestimate; undersized. 3. 'lower in rank, importance': undersecretary; understudy.
uni-	'one, the same': uniform; unisex.
up-	'to a higher or better state': uphill; upgrade.
vice-	'somebody who is next in rank to and may act for another': vice-consul; vice-president.
ultra-	'beyond; to excess': ultraviolet; ultra-liberal.
well-	(~ + pp. of v. = adj.) 1. 'fortunately': well-born. 2. 'properly, thoroughly': well-informed; wellworn.

Table 6. 5 Derivational Prefixes that Change the Grammatical Class of the Words they are Attached to

a-	1. (~ + n. = adv.) 'in': abed; 'on, at': afield; ashore. 2. (~ + v. = adv.) 'in the state of, in the process of': asleep, ablaze. 3. (old use) (~ + gerund = adv.) 'in the act of': a-running; a-singing.
be-	(~ + n. or adj. = v) 'make, become': befriend; belittle.
en-, em-	1. (~ + n. = v) 'put in, on': encase; endanger; enplane. 2. (~ + n. or adj. = v.) 'make into, cause to be': enlarge; enrich; empower.

Table 6. 6 Derivational Prefixes that are Attached to Bound Roots to Form Content Words.

ab-	'from, away from': absent; abduct.
ad-	'to, towards': advance; adjoin.
aero-	'of aircraft': aerodynamics; aeronaut.
ambi-	'both, double, two': ambiguous; ambidextrous.
an-	'not, without': anaesthetic; anonymous.
anthropo-	'of man; of mankind': anthroopoid; anthropology.
astro-	'of the stars, of outer space': astronomy; astronaut.
Biblio	'of books': bibliography; bibliophile.
bio-	'of life, of living organisms': biography; biology; biotic.
centi-	'a hundred, a hundredth': centigrade; centimeter.

chrono-	'of time': chronology; chronometer.
con-, col-, com-, cor-	'with, together': conduct; collaborate; combine; correlate.
contra-	'against; opposite to': contraception; contradict.
Demi-	'half, partly': demimonde; demigod.
di-	'twice, double': dilemma; dioxide.
dia-	'through, across': diameter; diagonal; diaphragm.
electro-	'concerned with, caused by electricity': electrocute; electromagnet.
geo-	'of the earth': geography; geology.
hemo-, haemo-	'of the blood': hemoglobin; hemorrhage.
hetero-	'the other, the opposite, different': heterogeneous; heterosexual.
homo-	'the same': homogenous; homosexual.
hydro-	'of water': hydrant; hydro-electric.
macro-	'relatively large; extending': macrocosm; macrobiotic.
matri-	'mother': matriarch; mat-ricide.
mega-	1. 'large': megalith. 2. 'one million': megaton.
micro-	1. 'relatively small': micro-film; microwave. 2. 'of examining or reproducing small quantities': micro-scope; microphone.
milli-	'a thousandth part of': milligram; millimeter.
mono-	'one, a single': monosyllable; monotone.
neuro-	'of the nervous system': neuralgia; neurology.
ortho-	'correct, standard': orthodox; orthopaedic.
paleo-, palaeo-	of ancient times': paleolithic; paleontology.
patri-	'father': patriarch; patricide.
phono-	'of sound': phonetic; phonology.
socio-	'of society': sociology; socio-economic.
sym-, syn-	'sharing with, together': sympathy; synchronize.
techno-	'of applied science': technocracy; technology.
tele-	'of linking across distances': telepathy; television.
theo-	'of God': theocracy; theology.
thermo-	'of heat, of temperature': thermostat; thermometer.

Table 6. 7 Derivational Suffixes that do not Change the Grammatical Class of the Words they are Attached to

-ade	lemonade
-ana, iana	´'collection of facts, objects, etc.; relating to': Africana
-arian	'practicer of': disciplinarian; vegetarian.
-ate	directorate
-cide	'killing, killer': suicide; insecticide.
-cracy	'government or rule by, class characterized by': democracy; aristocracy.

-crat	'member or supporter of a –cracy': democrat; aristocrat.
-(a)cy	'condition, quality': accuracy; infancy; supremacy.
-ee	'diminutive': bootie; coatee.
-eer	'person concerned with the n': auctioneer; mountaineer.
-er	'practicer of': astronomer; philosopher.
-ese	'in the (literary) style of': journalese; officialese.
-ess	'female': lioness; actress; mistress.
-ette	1. 'diminutive': cigarette; kitchenette. 2. 'female': usherette; suffragette.
	3. 'imitation': flannelette; leatherette.
-fold	1. 'multiplied by': tenfold; hundredfold. 2. 'of (so many) parts':
	twofold.
-form	'having the shape or character of': uniform; cuneiform.
-gamy	'of marriage': monogamy; polygamy.
-gon	'angles, corner': polygon; pentagon.
-gram	'something written down or drawn': telegram; monogram; diagram.
-graph	'something written down, of writing': autograph; telegraph.
-graphy	calligraphy; orthography.
-ful	'amount that fills': handful; mouthful; spoonful.
-hood	'status, rank, condition of life': boyhood; brotherhood.
-ian	1. 'belonging to': Brazilian; Shakespearean. 2. 'specialist in':
	optician, pediatrician; mathematician.
-ics	'science or specific activity': physics; politics; athletics.
-ide	'chemical compound': chloride; sulphide.
-ie, -y	'pet name or familiar name': piggy; doggie; Susie.
-ish	'somewhat, near to': reddish; twentyish.
-ism	1. 'showing qualities typical of': Americanism; heroism. 2. 'specific
	doctrine, principal or movement': Buddhism; Communism.
-ist	1. 'agent of an –ize verb': dramatist; publicist. 2. 'follower,
	practicer of an –ism': industrialist; fascist. 3. 'person concerned
	with a specific activity or thing': tobacconist; motorist.
-ite	1. 'follower, devotee of a person or organization': Laborite. 2.
	'specific chemical substance': anthracite; dynamite.
-itis	'inflammation of': appendicitis; tonsilitis.
-let	'diminutive': piglet; booklet.
-ling	1. 'diminutive': duckling; fledgling. 2. 'person connected with
	(often used disparingly)': hireling; underling.
-log(ue)	'something spoken': dialogue; monologue; travelogue.
-logy	'branch of learning': biology; sociology.
-man \	1. 'dweller in': Irishman; countryman. 2. 'somebody connected
	by a specific activity to': guardsman; doorman; businessman;
	milkman.
-mania	'abnormal behavior, excessive enthusiasm': kleptomania; bibliomania.
-manic	'somebody affected by a –mania': kleptomaniac.
-meter	1. 'a means of measuring': speedometer; kilometer. 2. 'a part of

a meter': centimeter.	
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monger	
	'somebody who deals in': fishmonger; scandalmonger.
-most	'superlative; very': inmost; outermost.
-oid	'resembling in shape': asteroid; rhomboid.
-osis	'a process, change': hypnosis; metamorphosis.
-phile	'lover of something in excess': Anglophile; bibliophile.
-philia	'excessive love of': Anglophilia; bibliophilia.
-phobe	'fearer of': xenophobe.
-phobia	'excessive fear of': claustrophobia; xenophobia.
-phobic	'fearful in excess of': claustrophobic; xenophobic.
-phone	'means of reproducing a sound': megaphone; telephone.
-phonic	'relating the means of reproducing sounds': stereophonic.
-scape	'a stretch of scenery': landscape; moonscape.
-scope	'means of observing or showing': microscope; stroboscope.
-ship	1. 'a state of being, status; office': friendship; ownership; professorship.
	2. 'skill, proficiency as': musicianship; scholarship.
-sphere	'spherical, of a sphere': hemisphere; atmosphere.
-ster	1. 'somebody connected with the n': songster; gangster.
-tude	'condition': magnitude; exactitude.
-ule	'relative smallness': capsule; globule.
-worth	'using the amount of': poundsworth; daysworth.