Chapter One

Introduction

1.0 Overview

Proficiency in reading comprehension is usually seen as important to the academic success of foreign language learners. In the Sudanese EFL context,the efficiency in reading comprehension is becoming increasingly significant to the students. The ability to read and understand textbooks written in English is needed to the tertiary level students to learn professional knowledge as well as strengthen their English proficiency. However, reading textbook written in English in the Sudanese tertiary level context has been considered a challenge for many undergraduates, especially those who are specialized in disciplines other than English. Many students have difficulty in decoding and understanding English words in different context.

In fact, reading comprehension, in both first (L1) and second language (L2), is affected by many variables, the most researched being background knowledge, reading strategies, and vocabulary knowledge.From both my personal learning and teaching experience, vocabulary appears to play a more important role and constitute more of a problem than people usually recognize. Many learners feel

that they cannot effectively comprehend what they read. One major reason accounting for this phenomenon is that learners have not perfectly mastered vocabulary knowledge.Research consistently reveals that vocabulary knowledge heavily relates to proficiency in reading comprehension than other factors such as grammar knowledge (Qian, 1999). Without understanding the meaning of words, second language readers may have a hard time developing comprehension. Consequently, vocabulary seems to be an important factor in reading comprehension (Richard & Rodgers, 2001). Moreover,it is indicated that the larger the vocabulary learners have the fewer the number of words that will appear to be “Deceptively transparent” to the learners. Deceptively transparent vocabulary usually means the word that readers think they know, but they do not know. In other words, vocabulary itself seems to provide some clues that readers can interpret correctly but actually does not. For example, the word ‘shortcoming’ looks as if it is composed of ‘short’ and ‘coming’ and is misinterpreted as ‘short visit’. Another word, ‘outline’ sometimes may misunderstood as ‘out of the line’. These words are called deceptively transparent. (Laufer, 1989). Deceptive transparency could be a serious problem in second language reading. Most researchers believe that second language learners have difficulty understanding reading texts because of the limited

breadth of their vocabulary (Richard & Rodgers 2001). It can be projected that the second language learners with large vocabulary sizes will process a reading text more efficiently and then the readers' abilities to understand word meanings will help them to achieve a higher level of reading comprehension.

So to achieve the success in language teaching learningprocess especially EFL, vocabulary knowledge proficiency is one of important factors to be taken into consideration.In this context, therefore, it seems that vocabulary knowledge proficiency and readingcomprehension have close relation. This study is carried out with the intention of finding some empirical evidence to the relationship between vocabulary knowledge and readingcomprehension performance of the Sudanese EFL learners. More specifically,it compares the relative importance of two aspects of vocabulary knowledge, the superficial, word-counting, or 'breadth' aspect, and the more complex, multidimensional, or 'depth' aspect, in the L2 (English) reading performance of Sudanese university students.

1.1Statement of the Problem

Vocabulary knowledge and reading comprehension are important components in the language and literacy development of ES\FL students, and have a profound effect on their overall academic achievement and language

proficiency. However, it is observed that the standard of English language proficiency among the Sudanese undergraduatestudents is rather weak, despite the fact that English is learned for seven years in the basic and secondary school levels. Students seem to have problems in all aspects of English skills, specially their reading skills. Their proficiency in reading skills is very poor. A large majority of them cannot access English textbooks prescribed in their syllabus due to lack of the required proficiency of reading skills in English.In fact, a reading knowledge of a foreign language is often important for academic studies, professional success, and personal development. This is particularly true of English as today so much professional, technical, and scientific literature is published in English. Reading ability is the most important skill needed by learners of English as a foreign language. Yet, despite this specific need for the foreign language, most of our students fail to learn to read adequately.Very frequently, students reading in a foreign language seem to read with less understanding than one might expect from them, and read considerably slower than they reportedly read in their first language. This issue has been a source of concern for researchers, teachers and parents for a long time without having a solution. While Sudanese EFL learners are suffering from such a problem, there is a need to investigate the

variables that may affect their reading comprehension proficiency. A large number of variables influence the way a learner comprehendsa reading passage, of which aredepth and sizeof vocabulary Knowledge. The significant role of vocabulary knowledge depth and size in reading comprehension has been well recognized in first language studies and this has appeared to be the case in second language settings as well (Nation, 2001 and Read, 2000). Researchers have suggested several models to describe the relationship between vocabulary knowledge and reading comprehension. According toNation (2000), the factors involved in these models include language knowledge (of whichvocabulary knowledge is a part), knowledge of the world (sometimes called background knowledge) and skill in language use (of whichreading comprehension is one result).

Though there are many studies conducted on the relationship between reading performance and different aspects of language proficiency, there is still an absence of studies exploring the relationship between aspects of vocabulary knowledge and reading among the Sudanese undergraduate students. This indicates the importance of running a research in this respect.Given that, the current research reports the results of an empirical study, addressing the extent to which the reading performance is associated with proficiency in vocabulary

knowledge. The study would beworthwhile enterprise in Sudan, not only forpedagogical purposes but also for the insights it affords into the cognitive processes involved in reading and vocabulary acquisition. Any research that attempts to do so may advance our understanding of the nature ofvocabulary knowledge and its relation to reading comprehension.

1.2 The Study Objectives

This study attempts to achieve the following objectives:

1 – Study the relationship between the students' vocabulary knowledge and their reading comprehension performance.

2- Help teachers in selecting authentic reading passages appropriate to the levels of the learners based on the percentage of known/unknown vocabulary.

3- Incite EFL teachers to consider vocabulary knowledge as important components of EFL syllabus to improve students' reading comprehension.

4-Help students plan to increase their vocabulary knowledge and improve their reading comprehension.

5- Provide textbooks writers with much precious insights for developing and promoting English texts as based on students' vocabulary knowledge and reading ability.

1.3 Significance of the Study

Reading comprehension and vocabulary development seem to be the most important and useful activities in any language class, especially for the students of English as a foreign language (EFL) in Sudan. In fact, most students learning English in such poor-input contexts compensate their lack of exposure to spoken English by engaging in reading comprehension activities. Studies on these two aspects can be of great value for education administration and even for universities.

Moreover, students' vocabulary knowledge allows teachers to set the language goals for the course within communicative language teaching. This study would be helpful because of the insights it offers for the cognitive processes involved in reading and vocabulary acquisition. Therefore, any research in line with these points may broaden our understanding of the nature of vocabulary knowledge and its relation to reading comprehension. With regard to the crucial role of vocabulary knowledge, little is known about how and what aspect of vocabulary knowledge can affect reading comprehension more effectively among Sudanese undergraduate students. The findings of this study may prove to be an asset for the Sudanese Ministry of Education and tertiary level instructors and material writers. This study also attempts to make

suggestions in the field of text and techniques selection. These suggestions give teachers a new and real insight into the ways by which they can help students.

1.4Study Questions

To carry out this study the following research questions have been formulated.

1. What correlation, if any, is there between Sudanese EFL learners' depth of vocabulary knowledge and their performance in reading comprehension?

2. What correlation, if any, is there between Sudanese EFL learners' breadth of vocabulary knowledge and their performance in reading comprehension?

3) How do scores on vocabulary size and depth of vocabulary knowledge arecorrelated?

4- Do high achievers (above 70%) and low achievers (below70%) in the VS test have significant differences on their performances on RC?

5)Whichof the two aspects of depth and breadth of vocabulary knowledge is a better predictor and indicator of reading comprehension performance?

1.5 The Study Hypotheses

This study attempts to test the following hypotheses:

1-There is a significant relationship between the Sudanese EFL learners' vocabulary breadth and their performance in reading comprehension.

2- There is a significant relationship between the Sudanese EFL learners' vocabulary depth their performance in reading comprehension.

3- Scores on vocabulary depth test and breadth test are moderately correlated.

4- The group with the higher scores on the vocabulary size test will be the same group which scores higher on the reading comprehension test.

5- Vocabulary knowledge size is more powerful predictor of Sudanese EFL university students' reading comprehension performance than vocabulary depth.

1-6 Limits of the Study

The present study has been conducted under the belief that it forms an important step in the process of understanding the complex relationship between vocabulary knowledge depth and size and reading comprehension in the Sudanese ES\FL learning contexts. The study does have several important limitations summarized in the following points:

2- This study primarily focuses on the relationship between vocabulary knowledge depth and size and reading comprehension in the Sudanese EFL context.

3- The treatment is only about vocabulary knowledge and reading comprehension; other skills such as, listening, writing, and speaking are barely

touched upon in order to avoid overgeneralization in connection with the findings.

4- Although all vocabulary dimensions are conceptually relevant in assessing the role of vocabulary knowledge in reading comprehension, only vocabulary depth and size are given a weighty consideration;

5- In the current study only the synonyms, collocations are examined in the depth of vocabulary knowledge measure. Other linguistic dimension such as lexical spelling, its morphological properties or its appropriateness in a given context are ignored and the study result may not represent the overalldepth of vocabulary knowledge of EFL learners.

6- The collocation knowledge meant in this study is only adjective + noun pairs, because collocations can be examined from different sides and this may be insufficient to truly reflect over all collocation competence of the learners.Collocations can be examined through lexical and grammatical perspective and each of them can be divided into many types.

7- Little consideration is given to other factors that may influence students' ability in reading such as oral acquisition of English.

8- Though the population of this study is limited to tertiary level students the findings can have implications for those working with the other levels.

9- The participants in this study are all English majors and consequently the research findings may not be applicable to other academic disciplines.

1-7 The Structure of the Study

This study is composed of fivechapters. The first chapter is devoted to highlight the general framework of the study. The second chapter discusses the research background and reviews the relevant literature on the relationship between vocabulary knowledge and reading comprehension. In this chapter, the influential hypotheses related to vocabulary knowledge and reading comprehension are examined. Recent findings from empirical studies concerning this themein the L2 context have also been highlighted, with a focus on correlational issues related to depth and size of vocabulary knowledge and reading comprehension. The role that vocabulary knowledge plays in reading comprehension is reviewed in the L2 research. The notion of depth and breadth of vocabulary knowledge is analyzed. This provides the conceptual framework for the present research. The third chapter presents an overview of the design and methods of the present research. The chapter also details how data required for the research werecollected and how pilot study were conducted to test the instruments before the main study got under way. It describes the procedures for the data analyses in the study. Chapter four is

meant to discuss and interpret the findings of the study. In drawing conclusions from the research, chapter fiveis devoted to present some conclusions, implications, and suggestions for future research and educational practice.

This chapter has begun with a background to the current study. The chapter has discussed the association between vocabulary knowledge and reading comprehension. It has also described the importance of the study and the practical need motivating it. Furthermore, it has presented the research questions and hypotheses that will guide this inquiry. Finally, it has given an outline about the organizationand the methodology adopted to carry out this study.

1-8 Research Methodology

As this study aims at examining, analyzing, and describing the relationship between vocabulary knowledge and reading comprehension, the descriptive method was employed to achieve the intended goals.

In order to assess the students' vocabulary and reading comprehension proficiency, three instruments were used; namely, Vocabulary Levels Test, Vocabulary Breadth Test, and the Reading Comprehension Test . Hence, 103 English-major undergraduate students at University of Nyalaand Comboni College of Science and Technology in Khartoumwere investigated in this

study.The data obtained were analyzed by using SPSS, to know percentages, frequencies, etc..

1.9 Definition of Terms

The following are the definitions of terms, which are used in this research and are defined according to the purpose of this research in order to assist better comprehension of the readers. The extended definitions are taken from the linguist points of view as follows:

• First language in this study refers to Arabic, which is generally a person's mother tongue or the language acquired first.

• Second language in this study refers to English, which one has learnt after learning the mother tongue; however, it functions as a recognized means of communication among members who speak some other languages as their mother tongue (Ellis, 1994).

• Foreign language in this study refers to English, which one has learnt after learning the mother tongue; however, it plays no major role in the community and is primarily learnt only in the classroom (Ellis, 1994).

• Vocabulary knowledge constitutes knowing a word in terms of forms (spelling, pronunciation), meanings (translation, synonyms), function

(morphological patterns, multiword units) and relation with other words (Nation, 2001).

• Breadth of vocabulary knowledge (vocabulary size) is the number of words the learners know in the target language (Nation, 2001).

• Depth of vocabulary knowledge is what learners know about a target word, e.g. meaning, register, and morphological, syntactic, and collocational properties (Nation, 2001).

• Receptive vocabulary is a form of word that is perceived while listing or reading (Nation, 2001).

• Word associates test is generally used in second language vocabulary acquisition research studies to measure the learner's depth of vocabulary knowledge (Read, 1993)

• Reading comprehension is the understanding of the contents of a written text after perceiving it.

Chapter Two

Literature Review

2-0 Introduction

In recent years, second language vocabulary acquisition has been an increasingly interesting topic of discussion for researchers, teachers, curriculum designers, theorists and others involved in second language learning. All see vocabulary as being a very important element in language learning.In this context, this chapter is devoted to review the theoretical backgroundon vocabulary knowledge and reading proficiency chain. Besides, some studies highlighted this relationship would be reviewed.By reviewing the literature, together with the results and findings of similar previous studies, a theoretical background to the study will be established and, hence setting the stage for the present study.

2.1CorrelationalProspective on Vocabulary Knowledge and ReadingComprehension:

The correlation between vocabulary knowledge and reading comprehension is well-documented in the literature (Stahl & Fairbanks,

1986).However, the relationship is rather difficult to unravel. There are four hypotheses offered in this regard labeled “instrumentalist”, “aptitude”, “access”, and “knowledge”, asanattempt to explain this correlation(Mezynski, 1983& Nagy, 2005).The instrumentalist hypothesis describes the connection as a direct one. Therefore, just knowing more words will result in greater text comprehension. It sees vocabulary knowledge as being a major prerequisite and causative factor in comprehension. Good vocabulary knowledge enables good comprehension.

The connection is described as a direct one by the instrumentalist hypothesis(Nagy, 2005). This hypothesis also sees vocabulary knowledge as a major prerequisite to reading (Anderson&Freebody, 1981) Therefore, just knowing more words willresult in greater text comprehension. The instrumentalist hypothesis does not comment on where vocabulary knowledge originates, but onlythat it directly impacts comprehension ability. In other words, The central idea of this hypothesis is straightforward: knowing the words enables reading comprehension. The pedagogical implications of the instrumentalist hypothesis are apparent: in order to improve students' reading ability. Vocabulary teaching should be regarded as a priority in the curriculum. The larger a student's vocabulary, the better he or she will understand a text.

The aptitude hypothesis argues that the vocabulary –comprehension connection is due to an underlying third factor that can be described as general “verbal aptitude”. The verbal aptitude in this hypothesis has been conceptualized by different researchers as quick thinking ability, skill in inferring, or metalinguistic capacity. It sees vocabulary knowledge as one of many outcomes of having these abilities. Good reading comprehension is also one of these outcomes. Other outcomes might include the ability to understand oral explanation. This aptitude makes certain students better word learners, as well as better text comprehenders. (Mezynski, 1983; Nagy, 2005). Moreover, in this model, a large vocabulary is not considered making a direct contribution to better reading comprehension: A person with a larger vocabulary is better at comprehension because of his or her mental agility, and the large vocabulary this person has is just a reflection of superior verbal aptitude (Anderson &Freebody. 1981). Pedagogically implicatedthatthe aptitude hypothesis is rather discouraging: because individuals' abilities in reading are directly based on their verbal aptitude. Reward for vocabulary training will be very limited. Although it is possible to improve students' vocabulary knowledge through training (Mezynski, 1983). such training will not likely result in a significant

change in ranking in terms of students' reading achievements if all the students undergo the same amount of training.

The access hypothesis explains that vocabulary knowledge is useful to comprehension when words can be accessed quickly and easily.This hypothesis argues the importance of depth of vocabulary knowledge, as well as breadth. Automaticity of word knowledge is very important in this explanation. Access can be improved through practice. This access can involve several factors including fluency of lexical access, speed of coping with affixed forms, and speed of word recognition (ibid, 1983).

The fourth hypothesis is, the knowledge hypothesis, emphasizes the role of a reader’s background knowledge in comprehension. It sees vocabulary as an indicator of good world knowledge. A person with a higher score should have deeper and broader knowledge of the world than a person with a lower scores .This world knowledge supports reading comprehension because the reader must bring as much information to the text as the reader expects to get from it. It is difficult to read about astrophysics if you know nothing about it (Anderson &Freebody, 1981). In this hypothesis, knowing a word well implies that one knows other words and ideas related to the original word. This larger body of knowledge becomes crucial for understanding a text. The pedagogical

implication of the knowledge hypothesis is that vocabulary shouldbe taught in context and in respect to the acquisition of specific domains of knowledge. Specifically,as Mezynski (1983) puts it:

New vocabulary should be taught in the context of learning new subject matter.In this way, word meaningscan be related to one another, and where possible,to information already possessedby the learner. According to the knowledge position, if studentsare taught groups of words that are semantically unrelated,thestudents maylearn definitions but fail to learn where the word fits in with theirstore of related knowledge(p. 255).

Moreover, research onEnglish as a second language have shown, both a positive and significant correlation between learners' vocabulary knowledge and their reading comprehension (Qian,2002). According to Carr & Levy (1990), word-identification ability played a central role in successful reading in itself a complex process (Goodman, 1988&Harris & Sipay,1985). Readers comprehend and interpret a writer's message by using their linguistic knowledge and prior knowledge. According to Rumelhart (1977), reading was an interactive process in which readers construct the meaning by using their background knowledge and information provided by the text. In the process of

reading, the fact that vocabulary knowledge was instrumental in reading comprehension had long been accepted in the field of reading and vocabulary research (Nation, 2001 &Laufer, 1996). Although the more words a reader knows the better the comprehension in reading, Qian (1999) claimed that the knowledge of vocabulary depth was an important indicator to predict learner's performance in reading tasks. Since the crucial role of vocabulary in reading had been established by many scholars, it is significant to explore how learners' depth of vocabulary knowledge correlated to their reading comprehension.

To sum up, these hypotheses take different perspectives on the issue of how vocabulary knowledge relates to reading comprehension. The instrumentalist hypothesis; which regards good vocabulary knowledge as the primary factor in successful reading comprehensionsuggests that "what is important is the number of words taught"(Mezynski. 1983. p. 255). The aptitude hypothesis considers vocabulary knowledge and reading comprehension to be two unrelated outcomes of mental aptitude. The access hypothesis recognizes an important relationship between vocabulary and reading comprehension, given that the vocabulary is easily accessible through effective training. The knowledge hypothesis, based on a schema-theoretic and

constructivist perspective, sees vocabulary as indicative of world knowledge, in which case knowledge of individual word meanings is no longer the primary cause of successful comprehension; rather it is the underlying knowledge, normally referred to as background knowledge or world knowledge that leads to comprehension. In this context, one must be wary of accepting them as a package without screening. For instance, the excessive emphasis of the instrumentalist hypothesis on vocabulary knowledge as a direct factor in the causal chain in reading comprehension could prematurely reduce investigation of the possible effect of other factors as a result.

Another reason for the long-standing research interest in vocabulary is born out of the theory that reading results in anincrease in knowledge and a subsequent increase in access to more knowledge through the written word (Cunningham &Stanovich, 1998).This relationship leads to what Stanovich has termed the “Matthew Effect” (Stanovich, 1986) where proficient readers read more and therefore increase their reading competency.These readers increase their vocabulary knowledge, which in turn helps them to comprehend other texts in the future.Vocabulary is an important component in this description of spiraling competency.

The extensive vocabulary research base has resulted in us knowing a good deal about vocabulary learning.Word knowledge is complex and multifaceted.Words can be known either receptively or expressively, in oral language or written language (Baumann, Kame'enui, & Ash, 2003). There are several aspects of the complexity of word knowledge recognized by researchers.Word learning is incremental in nature. Words often have more than one meaning and are multidimensional. Words are also interrelated in a network with other words, and understanding a word's meaning can depend on what kind of word is being learned (Nagy & Scott, 2000).This complexity can make the word learning process a challengeIf words are learned incrementally (Stahl, 2003), then word learning is not an all or nothing undertaking. Readers, in multiple exposures to words, increase their understanding by developing a more complete knowledge of a word's decontextualized meaning.Research has shown that a combination of definitional and contextual information is most effective in teaching word meanings(Nagy, 1988&Stahl, 2005). That means that vocabulary instruction should not consist of simply sending students to look up definitions and write sentences for words.Deep processing of meanings makes vocabulary learning more effective. Active, deep processing takes place when new information is combined in some way with old information.

Students can be asked to discuss the meaning of the same word in different sentences, create scenarios using the word, or answer silly questions that contrast two or more vocabulary words (Beck, Perfetti, &McKeown, 1982). These methods help students become actively engaged in the learning, which helps them retain more of what they have learned.

Despite the large vocabulary research base, there has been little change in classroom practice over the years. This may be due to the perceived enormity of the task, or confusion about what words to teach, how to structure vocabulary teaching, and how to promote transfer of learning .All of these issues make it difficult for teachers to decide on the best way to integrate vocabulary teaching into their classrooms.Early vocabulary research looked at either direct instruction of words and strategies (Beck et al.1982) or wide reading (Herman et al. 1987) as the most effective means of increasing vocabulary knowledge.While each camp still has its supporters, the consensus in the field is that an effective program will contain both strategies (Nagy, 1988). Therefore, a powerful vocabulary methodology would combine direct instruction of vocabulary and practice with target words in context.The question is: What form should that text practice take? One of the agreed upon principles of vocabulary learning is that students need multiple exposures to

words for the incremental nature of vocabulary learning to have an effect (Stahl, 2003). Therefore, one could assume that repeated reading of a single text would be beneficial as a means of text practice after vocabulary instruction.Repeated reading has been found effective in increasing the reading fluency of students; this increase in reading fluency is correlated with increases in comprehension (Herman, 1985). The context variability hypothesis (Bolger etal. 2008) would help explain why contexts that vary promote word learning better than contexts that do not vary.However, these two methodologies have not been explored and compared as a follow-up strategy to vocabulary instruction.Recommendations to teachers about the most efficient kind of text practice to offer their students can only come as the result of research on vocabulary gains that take place in response to each of these conditions.

2- 2 Vocabulary inLanguageCurriculum

A feature of the English language literature on language learning and language teaching methodology over the last 60 years or so is the way vocabulary as a subject for teaching has been side-lined. It receives little attention in much of the literature on second language acquisition as a general process (e.g. Mitchell& Myles,2004; Lightbown&Spada, 2006). It is almost entirely absent from major books on the syllabus and theory of language

teaching (O'Dell, 1997). Wilkins (1972) suggests that this may have been a product of the development of structural approaches to linguistics after the Second World War and the way that, in these approaches, vocabulary could be reduced to the minimum needed to illustrate the structural content. However, the absence of vocabulary is notable even after structural approaches to language teaching became unfashionable and were replaced by communicative and other approaches. Definitive works in these areas either omit to mention the topic entirely, as in Littlewood (1983), or dismiss the subject as one which is unsystematic and incidental at best to language learning. The same sense is true in the Sudanese ESL teaching setting, the national English curriculum has emphasized thedevelopment of four language skills of reading, writing, speaking, and listening, with special emphasis on reading and writing.(Ismail, A., Sidig&Cuthert, H. 1997). This claim proves the entire negligence of vocabulary teaching\ learning in this context. However, an example of the prevailing attitude to vocabulary in pedagogy can been seen in the comment by Harris and Snow that "few words are retained from those which are 'learned' or 'taught' by direct instruction ... [and learners] extend their vocabulary through subconscious acquisition" (Harris & Snow, 2004). With this attitude, the explicit teaching of vocabulary, and the systematic organization of

vocabulary in the curriculum, is not a priority. In academic circles, the place of vocabulary in language learning has been significantly revised over the last decade and current academic thinking is very much at odds with much classroom and textbook practice. The task the language learner faces, therefore, is principally one of learning the vocabulary of the foreign language. This approach is reflected in the Lexical Learning Hypothesis (Ellis,1997) according to which vocabulary knowledge is indispensable to the acquisition of grammar. One of the outcomes of the recent academic interest in vocabulary has been the development of ways for describing and testing vocabulary knowledge, which are both principled and systematic. However, recently developed methods allow normalized data to be produced so the growth of a foreign language lexicon over the course of learning can be modeled. With this information it becomes possible to measure the contribution of vocabulary knowledge to language development and confirm whether the close relationship between vocabulary growth and language level exists in practice.

2.3.Vocabulary Knowledge Dimensions

In order to define what it means to know a word, second language (L2) vocabulary researchers have proposed various but complementary frameworks. Most researchers agree that lexical knowledge is not an all-or-nothing

phenomenon, but involves degrees of knowledge. They suggest it shouldbe constructed as a continuum, consisting of several levels and dimensions of knowledge. We could examine vocabulary in terms of various kinds of linguistic knowledge via phonetic, phonology, morphology, syntax, semantic and pragmatic. Different scholars had proposed different frameworks to examine vocabulary.To a large extent, their proposed theories were complementary and, by reviewing their studies chronologically, a number of their concepts overlapped. A well-known framework for vocabulary knowledge was identified by Richard(1976) in terms of sixassumption;

These assumptions of lexical knowledge are quite inclusive, as Richards not only incorporated morphological and syntactic properties into the concept, but also considered such aspects as word frequency and register characteristics. However, pronunciation, spelling, and collocations seemed to be the obvious missing aspects in the framework. His eight assumptions emphasize that to know a word, one should be aware of:

- its relative frequency in the language;
- its register characteristics, which may include social, temporal and geographic variations, and field and mode of discourse;
- the syntactic behavior associated with the word;

- its underlying form and the derivations that can be made from this form;

- the network of associations between that word and other words in the language, which may include such associative links as antonymy, synonymy. and subordinate, coordinate. and superordinate classifications;

- its semantic features and connotations; and

- the different meanings associated with the word (pp. 78-84).

Richard's framework was refined by Nation (1990) into four categories to define vocabulary knowledge in terms of form, position, function and meaning and he also divided the word knowledge into two aspects, receptive and productive process. First, word form involved the pronunciation and spelling of lexical items. Second, word position dealt with syntactic issues in regard to the usage of words such as the rules for word combinations. Third, word function was to discuss the proper way of using words in specificcontexts. Finally, word meaning referred to vocabulary depth and its associates. The abovementioned factors in a receptive process may play different function from those in the productive process. Therefore, knowing a word could mean being capable of recognizing and using these factors and applying words to meet different purposes.

Henriksen(1999) distinguished three dimensions of vocabulary knowledge, which are partial-precise, knowledge, depth of vocabulary knowledge and receptive productive.Recently, Qian (2002) developed four dimensions of vocabulary knowledge from the earlier frameworks, which are vocabulary size, depth of vocabulary knowledge, lexical organization, and automaticity of receptive-productive knowledge.

Using the ideas of partial-precise knowledge, depth of vocabulary knowledge, and receptive and productive knowledge, Henriksen (1999) generated three underlying assumptions to define vocabulary knowledge, and she also believed these three dimensions demonstrated an upgrading status of vocabulary learning. The first assumption was that lexical knowledge of a person should function as a competence to provide translation equivalents, to find the correct explanation in multiple-choice tasks, and to paraphrase target words. The second assumption indicated that the components of vocabulary depth should cover both paradigmatic and syntagmatic knowledge. The former involved a shift of the word meaning in an antonym, synonymy, hyponymy, and gradation, andthe later dealt with collocational restrictions of words. The third assumptionsuggestedthatwordknowledgeshouldconsistofareceptiveandproducti veaspect.Receptiveperformancestoodforreadingandlisteningabilitywhileproduct

iveabilitymeantwritingand speaking. Thereceptiveandproductivedomainthusechoedthestatementsofwordknowledgeprovidedby Nation (1990).

Later, the theoretical frameworks of Richard's (1976) and Nation's (1990) was refined by Oian (1998) to clarify the vital components of vocabulary depth including pronunciation and spelling, morphological properties, syntactic properties, meaning, register, and frequency as follows. Firstly, phonetically and phonologically, to be familiar with phonemes and their combination in words meant the ability to master the pronunciation of words. The concept of places of articulation, manners of articulation, the permissible combinations of phonetic inventory, and supra-segmental factors were all involved in this domain. The pronunciation of a word reflected its approximate spelling. The combination of phonemes was rule-governed, and it could not violate the phonotactic constraints. Secondly, morphology was to explore the formation of a word. The concept relative to word root, derivational and inflectional morphemes, and part of speech all belonged to morphological properties. Besides, the word coinages such as compounds, abbreviations, acronyms, blending, and conversion were related to the derivational combination of a single word. Thirdly, a syntax domain was to discuss the internal structure of a

sentence including word's collocability, its possible position in a sentence, and its syntagmatic relations with other words in a given context, so the concept of lexical constituent and grammatical category were the main focus. Fourthly, the concept of word meaning contains both semantic and pragmatic knowledge. In the semantic aspect, the meaning of a word and words' combination were discussed through componential semantics, lexical semantics, and sentential semantics. For example, the concept of polysemy, synonym and antonym were categorized in lexical semantics, while in the pragmatic aspect, the focus was on how to appropriately use a word with respect to its appearing context, which could be discussed from both a linguistic context and situational context. Fifthly, register and discourse features were to discuss the social and regional differences of language use and the application of a word. Hence, the social appropriateness of using a word was the main focus in this aspect. Finally, the concept of word frequency in language was to analyze the use of common and uncommon words in given contexts. That is, it was to concern the popularity of given words.

The broadest framework can be seen in Chapelle (1994), who conceptualized vocabulary ability as having three components: the context of vocabulary use, vocabulary knowledge and fundamental processes, and metacognitive

strategies for vocabulary use. The first aspect, the context of vocabulary use, includes not only the linguistic context (e.g., sentences with the target word) but also the pragmatic context for example “Differences across generations [teenagers vs. adults] and between colloquial and more formal uses of words”(Read, 2000.p.31). The second constituent, vocabulary knowledge and fundamental processes, has four dimensions: (1) vocabulary size, (2) knowledge of word characteristics, (3) lexicon organization, and (4) fundamental vocabulary processes. The first two are described below. Lexicon organization is a way in which words are related to one another, whereas fundamental processes involve the automaticity in accessing and utilizing each word. The third component of vocabulary ability categorized by Chapelle (1994) is metacognitive strategies for vocabulary use.

Consequently, Nation (2001, p. 27) has developed more comprehensive framework of aspects of vocabulary knowledge can be seen in Table 2.1. One characteristic of this framework is that each aspect of vocabulary knowledge has a receptive and a productive dimension.

Table(2-1) Aspects of vocabulary Knowledge

form	Spoken	Rec	(a) What does the word sound like?
		Pro	(b) How is the word pronounced?

	Written	Rec	(c) What does the word look like?
		Pro	(d) How is the word written and spelled?
	Word part	Rec	(e) What parts are recognizable in this word?
		Pro	(f) What word parts are needed to express the meaning?
Meaning	Form and meaning	Rec	(g) What meaning does this word form signal?
		Pro	(h) What word form can be used to express this meaning?
	Concept and referents	Rec	(i) What is included in the concept?
		Pro	(j) What items can the concept refer to?
	associations	Rec	(k) What other words does this make us think of?
		Pro	(l) What other words could we use instead of this one?
Use	Grammatical functions	Rec	(m) In what patterns does the word occur?
		Pro	(n) In what patterns must we use this word?
	Collocations	Rec	(o) What words or types of words occur with this one?
		Pro	(p) What words or types of words must we

			use with this one?
	Constrains on use (register, frequency….)	Rec	(q) Where, when, and how often would we expect to meet this word?
		Pro	(r) Where, when, and how often can we use this word?

Note: From Nation (2001, p. 27) with minor modification in the title.

Rec =Receptive knowledge; Pro = Productive knowledge.

This table explains knowledge of the various forms of a word, the various aspects of meaning a word can carry with it, and the elements of use which are also part of word knowledge. Knowledge of form includes not just knowledge of the written and sound forms of a word but also knowledge of affixation, knowledge of the way extra parts can be added, or the ways in which a word can change, to reflect changes in its grammatical function or to add to its meaning. Knowledge of meaning includes not just knowledge of a core meaning, perhaps a link with a direct foreign language counterpart, but also the concepts, referents and associations, which a word may carry with. Some words like to occur in combination with other words, in particular idioms for example, and some words, like swear words, may be restricted in the occasions where they can be used appropriately, and this knowledge will also be needed

if the language is to be used fluently and skillfully. Each facet of knowledge is sub-divided into receptive and productiveknowledge.

This is a very useful and insightful list, and makes apparent just how much is involved in fully knowing a word. It is also clear that designing a test that can capture kno`wledge in all this diversity is scarcely practical. A single test could not possibly hope to encompass every aspect of knowledge described in this table.

2.3.1Depthof Vocabulary Knowledge

In order to define what it means to know a word, second language vocabulary researchers have suggested different but complementary frameworks. The multiple benefits of vocabulary knowledge are related to different types of interpretations of what it means to know a word. Traditionally, a dichotomy has been presented in the field of vocabulary testing regarding the nature of lexical competence: the distinction between breadth (size) and depth of vocabulary knowledge (Anderson &Freebody, 1998).

On the other hand, depth of knowledge focuses on the idea that for useful higher-frequency words learners need to have more than just a superficial understanding of the meaning. Based on the literature reviewed in Section 2-3 of “Vocabulary Knowledge dimensions”, particularly on the definitions

proposed by Ritchard (1976), Nation (1990) Henriksen (1999), Oian (1998) concerning what is involved in knowing a word, the following are considered main aspects of the depth of vocabulary knowledge:

- Pronunciation and spelling: This involves knowing how different forms of the wordare pronounced and spelled;

- Morphological properties: This involves knowing the word's stem, its capability of inflection, derivation, and other word formation devices. and its possible parts ofspeech;

- Syntactic properties: this involves knowing the word's possible positions and its syntagmatic relations, including collocational relations, with other words in a sentence;

- Meaning: This not only involves identification of the denotative meaning of a word in context, but also, where applicable, knowledge of connotations, as well aspolysemy, antonymy, synonymy and other paradigrnatic relations the word may have; - Register, or discourse features: These include possible adherence to a stylistic, social or regional variety, and the field, mode and manner of discourse concerning the application of the word;

- Frequency of the word in the language, or whether this word is a commonly usedword or a rarely used word only appearing in some specialized texts.

Moreover, There are two main approaches for measuring depth of vocabulary knowledge: a developmental approach and a dimensional approach (Read, 2000). The developmental approach uses scales to describe the stages of acquisition of a word. One scale that has received some attention is the Vocabulary Knowledge Scale,The dimensional approach, on the other hand, describes the level of mastery of the various component types of word knowledge. This approach has its roots in a seminal paper by Richards (1976), which sets out a number of assumptions required for mastery of a word.

Recent scholars have taken up Richard's idea, suggesting their own lists of word knowledge types. Researchers, teachers, and learners have gone beyond the size of the vocabulary and have focused on semantic relations between words. They haverecognized that full meaning of words is only displayed in discourse. For example, from the mere selection of the single word strong we cannot predict whether it describes a physical or a psychological quality (compare strong coffee with strong personality).In traditional approaches of language teaching, most of the attention has been focused on the size of the vocabulary.

2.3.2 Breadth (Size) of VocabularyKnowledge

Breadth of vocabulary refers to the quantity or number of words learners know at a particular level of language proficiency. It covers the number of words the students know, i.e. the size of their lexicon. The aim of studies in the area of vocabulary depth among native speakers has been to measure the number of words that they know in some absolute sense, while such studies among second language learners have had a different goal. Their aim has been to identify the learner's knowledge of items in a specified list of relatively high frequency words.There is a general agreement among researchers on the appropriate size according to the various levels. Knowing a large number of words is useful because the learner will be able to recognize most of the words used in a text. Nevertheless, it must be taken into account that being able to recognize a large number of words in context does not necessarily ensure the development of the complex knowledge of these words and the ability to use them correctly in a productive mode (Wesche, 2004). In her study about adult learners' approaches to learning vocabulary, Sanaoui (2001) discovered that L2 learners taking the TOEFL test often kept extensive records of word lists as well as tried to memorize important words. However, the ability to recall such words seem to decline after a period oftime when the word no longer becomes

part of the learners' productivevocabulary.McEnery& Xiao (2006) have shown that lack of awareness of the conditions of qualitative features of collocation, may block communication for second/foreign language learners.

Today it is widely attested that vocabulary plays an essential role in English as a second language acquisition and vocabulary development seems to be the most important and useful activity in any language class, especially for the students of English as a foreign language (EFL). According to Lewis' (2000), the most important task with which language learners face, is acquiring a sufficiently large vocabulary. Therefore, it is obvious that vocabulary learning constitutes a problematic aspect for EFL learners. With regard to the fact that breadth and depth are regarded as two interconnected dimensions of vocabulary knowledge, knowing a large vocabulary cannot help learners a lot if their knowledge is shallow and superficial. Therefore, while the size of vocabulary knowledge is an important factor in predicting success in reading comprehension, depth of vocabulary plays an important role as well.

2.3.2.1 Vocabulary Size of ESL/EFL Learners

The estimate of vocabulary size varied enormously due to variations in the methods oftesting. Nan(2009) cited studies showing that by 8.5 year of age, English speaking children had roughly 4.500 word families and it was

suggested that first language learners added between 100 to 200 word families per year to their vocabulary. The vocabulary size of 15000 -20000 word family of anative speaker is a possible and ideal goal for second language learner, but not all learners have to do that, even if the great number of second language learners do achieve near-native vocabulary size. It was also claimed that learners of EFL had between 1000-2000 word after five years of learning. In other studies reviewed by Nation(1990) found that the learner had about 260 - 300 words in his productive vocabulary after seven months of exposure to English. When a second language learners in the same school system with the native speakers of English, they need to much the rate of vocabulary learning and make up for the difference of vocabulary in English vocabulary that existed when the second language learner entered the system. It was also found that English vocabulary level of 5 to 7 years old children of New Zealand school system were two years behind their counterparts of English as a native language speakers. This may potentially suggest that these children continue to be about two years behind native speakers of English in vocabulary as they progress in the school.Therefore, the difference in vocabulary size of EFL and their counterparts would be very large. Although EFL learner may be able to reach the vocabulary size of native speakers, they need some special help to

overcome the difference in vocabulary size.The table bellowshows a summary of vocabulary sizes of EFL learners as reported in research studies. The table shows that vocabulary sizes of most EFL learners fall short of the size requirements of achieving 95% text coverage for perfect comprehension (Schmitt (2008)

Table(2.2) Vocabulary Size of EFL Learners:

Country Vocab. Size	Hours of instruction	Reference
Japan EFL University 2000	800–1200	Shillaw 1995
2300		Barrow et al. 1999
China English majors 4000	1800–2400	Laufer 2001
Indonesia EFL University 1220	900	Nurweni& Read 1999
Oman EFL University 2000	1350	Horst et al. 1998
Israel High school graduates 3500	1500	Laufer 1998
France High school 1000	400	Arnaud et al. 1985
Greece Age 15, high school 1680	660	Milton &Meara 1998
Germany Age 15, high school 1200	400	Milton &Meara 1998

Adopted from Schmitt (2008.p.332)

2.3.3 Threshold Vocabulary for Reading Comprehension

In the studies of vocabulary and reading, threshold refers to the size of vocabulary needed to deal with reading materials with acceptable comprehension. It was found that learners whose vocabulary size is below a certain threshold level struggled to decode the basic elements of a text, to the extend they found it hard to develop any higher level understanding of the content(Read,2000).

The estimates of vocabulary needed for effective understanding of authentic text may vary, depending on the purpose of reading task and reading text.

Haris and Nation (1992) started measuring how big a vocabulary is necessary for second language readers to achieve certain levels of reading comprehension. They indicate that learners might need around 5, 000 words to read a novel that had been written for English speakers. Put differently, for second language learners to achieve fluency in English, they need to gain at least 5,000 words, preferably 10,000 words. Nation (2001) explained that in order to understand 95% of reading content, readers have to know at least 4000 word families, including 2000 high-frequency words, 570 general academic words, at least 1000 technical words, and proper low-frequency word families.

He indicated that if a learner has crossed the threshold, then adequate comprehension may be possible for the reader. In another study, (Nation, 2001) states that for L2 learners who are willing to express themselves in their target language, an effective size of 2000 words is considered to be a realistic goal. For those who intend to read authentic texts, a vocabulary threshold of 3000 – 5000 word families is considered ideal For more difficult and demanding materials that include specialized vocabulary (such as university textbooks), learners would require knowledge of 10,000 word families.Hu&Nation (2000) investigated the relationship between text coverage and reading comprehension for non-native speakers of English with a fiction text. They found from the study that at 80% of the text coverage (that is 1 unknown word out of every 5 word)provided by the first 2000 word families, reading comprehension did not occur because reading skills and background knowledge could not be activated to make up for the luck of vocabulary knowledge. With the text coverage 90% (i.e. 1 unknown word in 10) then small minority gained adequate comprehension. With the text coverage of 95% (1 unknown word in 20) a few more adequate comprehension. At 100% coverage, most adequate comprehension. In the case of academic text knowing the meaning of 3000 word families covered a proximately 88% of a text. Another 4% of the text was

covered by proper nouns and another 3% by technical vocabulary. If readers new these words it was easier for them to infer the meaning from academic text.

Overall, the current study reveals that studying about the words in addition to getting toknow their superficial meanings is essential in vocabulary instruction, especially inrelation to reading comprehension instruction. Thus, focusing on vocabulary size and depth bytouching on the paradigmatic sense relations within contexts should be an important partof reading instruction, along with the efforts to increase the vocabulary size. Moreover, theability to utilize vocabulary depth with contextual clues can be a strategy to make up forthe deficits in English vocabulary knowledge among L2 learners as well and thus shouldbe taught and practiced. Although the literature reviewed in the present study highlights the great role of vocabularydepth and the importance of the paradigmatic aspects of words in reading comprehension,attention to other relevant factors such as semantic and syntactic knowledge as well assyntagmatic sense relations should be paid in future research in order to obtain a moreaccurate and complete picture regarding the role of vocabulary knowledge in readingcomprehension processes.

2.3.4Productive and Receptive Knowledgeof Vocabulary

We all have the experience of being able to understand a word when we see it ina text or hear it in a situation, but not being able to use it in producing language.This shows that there are different degrees of knowing a word. Receptivevocabulary knowledge means being able to recognize one of the aspects ofknowledge through reading or listening, and productive vocabulary knowledgemeans being able to use it in speaking or writing.Hiebert&Kamil, (2005) There are different definitions of receptive and productive vocabularyknowledge but finding a clear and adequate definition of these terms is likely tobe impossible. The problem is in defining the terms. In his doctoral dissertation,Waring (1999) provides four ways of describing receptive and productivevocabulary knowledge. These are: receptive and productive vocabulary processes,receptive and productive vocabulary abilities, receptive and productivevocabulary skills, and a receptive and productive vocabulary product. Receptiveand productive vocabulary processes refer to the subconscious mental processesthat learners use in the recognition, recall, retrieval, comprehension, andproduction of lexical items. Receptive and productive vocabulary abilities refer tothe abilities with which learners can understand or control language input andthe abilities with which they can control language. Receptive and productivevocabulary skills refer to the

receptive skills of listening and reading andproductive skills of speaking and writing. By receptive and productive vocabularyproduct, he means what learners know about their own receptive and productiveknowledge as viewed through language tasks.So, receptive knowledge is defined as being able to understand a word andproductive knowledge as being able to produce the word. Melka (1997) states thatit is not certainly clear whether receptive and productive knowledge should beconsidered as two separate systems independent of each other or one uniquesystem which is used in two different ways, receptively or productively. Shebelieves that this distinction should be interpreted as degrees of knowledge, thatis, the distinction should be redefined as a continuum of degrees of knowledge. Hence word knowledge is composed of both receptive and productive knowledge. Since reading is a receptive task, we deal with the receptive knowledge of the word knowledge. Considering the aspects of vocabulary knowledge (breadth and depth), which are investigated in this study, written form of the words and their frequency are considered as breadth of vocabulary knowledge; and the grammatical patterns, collocations, appropriateness, concept and associations that they have are considered as depth of vocabulary knowledge. All these dimensions are tested in Vocabulary

Size Test and Depth of Vocabulary Knowledge Test respectively, to see which aspectis

more correlated to reading proficiency of the study participants.

2.4 Significance of Vocabulary Knowledge

Of all the language skills, it is widely acknowledged that vocabulary is a very important part in English language learning, and as mentioned earlier in the previous chapter that no one can communicate in any meaningful way without vocabulary.This is consistent with Nation (1990)who affirmed that learners also see vocabulary as being a very, if not the most, important element in language learning. Learners feel that many of their difficulties, in both receptive and productive language use, result from the lack of vocabulary knowledge.

Words are the tools used to think, to express ideas and feelings, as well as to explore and analyse the world around them. A limited vocabulary keeps them from expressing their thoughts and feelings. On the other hand, a large, rich vocabulary enables the use of right words at the right time. Kitajima (2001) stated that without words that label objects, actions, and concepts, one cannot express the intended meanings.There is no question that in a good language learning classroom, both vocabulary and grammar are essential, but when

compared vocabulary with grammar, vocabulary is much more important and should receive more attention than grammar. Allen (1983) indicates that in the best classes, neither grammar nor vocabulary is neglected, but vocabulary is more essential and should be taught before grammar. This is consistent with Lewis (1993) who also views the importance of vocabulary as the centre of language teaching and learning since language consists of 'grammaticalised lexis, not lexicalised grammar' and 'grammar, as structure, is subordinate to lexis'. That is to say, these scholars see that the words are preceded by the grammar. This confirms what we know from our own experience that one can understand others even if they pronounce words badly, and make grammatical mistakes, but without the mediation of words, any meaningful way of communication is rather impossible. To be precise, vocabulary seems to be the key to language learning, and thus, is accepted to be more important than grammar.

However , we can see the importance of vocabulary in that language learners with vocabulary knowledge can achieve a great deal of success in their classroom, their social life, and in their continuing acquisition of the target language. A large, rich vocabulary gives language learners the right words to

use at the right time, and also enables them to express their real thoughts, ideas, and feelings.

2.5 Language Ability

According to Bachman and Palmer's (1996) model, "language knowledge"consists of (a) organizational knowledge and (b) pragmatic knowledge. The first one is the knowledge to use a language in order to comprehend and produce grammaticalutterances, sentences, and discourse, consisting of grammatical knowledge (i.e.,knowledge of vocabulary, syntax, phonology, and graphology) and textual knowledge. The second one involves the knowledge to interpret and produce discourse byconnecting utterances, sentences, and texts with meanings and intentions, and isseparated into functional and sociolinguistic knowledge. Buck (2001) stated that "language knowledge" in Bachman and Palmer's model is composed of two types: declarative knowledge and procedural knowledge. Declarative knowledge is "the knowledge of facts" (Buck, 2001, p. 67). In contrast, procedural knowledge is "knowledge as ability to do something" (Buck, p. 67) and dynamic knowledge that is related to language performance and that leads to performance directly.Bachman and Palmer (1996) incorporated it into a broader category of strategic competence, or"a set of metacognitive

components or strategies, which can be thought of as higherorder executive processes that provide a cognitive management function in language use, as well as in other cognitive activities" (p. 70). It includes the ability to (a) set goals, (b) assess, and (c) plan. Various aspects of a speaking activity (i.e., speakingperformance) that is produced using language ability (especially speakingability) are described below, based on Bachman and Palmer's terms.Suppose that a female speaker feels hot and decides to ask her male friend if it is okay to open the window. This is a goal-setting activity of "identifying" and "deciding" on the appropriate message. Next, she "assesses what is needed to complete" her task of conveying her message (assessment 1) and her language"knowledge components" (assessment 2). She then "selects elements from the areas of language knowledge," both from organizational knowledge, such as vocabulary and syntax, and from pragmatic knowledge (planning 1), and chooses one of the "plans formulated for implementing these elements" to express her message successfully (planning 2). Lastly, she "assesses the correctness or appropriateness" of the expressions formulated (assessment 3)and says, "Would you mind opening the window?" (Bachman and Palmer, 1996).In Bachman and Palmer's (1996) models, vocabulary

knowledge, which is thefocus of this study, belongs to “organizational knowledge” in “language ability.”

2.6 Reading Comprehension

Reading, a complex process, can be defined in a number of ways based on the particular aspect of the reading skill examined. To read, is thea ability to identify words and comprehend meaning of words and language. For this study, reading is the fluent recognitionof words and clear grasp of implied meanings , by relating words and sentences to each other (Wieder and Bryant, 2001). Another definition is that reading is “the ability to draw meaning from the printed page and interpret this information appropriately.”Grabe&Stolar(2001) cited in Gilakjan&Ahmadi(2011 p.142)

In order to be successful readers we need to know not only what reading is, but also the factors that influence reading. Four dimensions of competences that affect reading, namely, linguistic competence, sociolinguistic competence, discourse competence and strategic competence.Linguistic competence refers to the readers’ knowledge of both grammar and vocabulary of a targetlanguage, whichhave an impact ongetting meaning. Sociolinguistic competence is the readers’ ability to use languageappropriately in various social contexts. Discourse competence refers to the knowledge ofacceptable

patterns in written and spoken language which can help interpret the texts.Strategic competence refers to the readers' ability to use a variety of language strategies whilereadingLundmark (2011). In this context, it can be indicated that vocabulary knowledge which is represented in linguistic competence plays a significant role in reading comprehension, and vocabulary knowledge is the central topic of this study.Moats &Tolman(2009)Explain more vividly the characteristics of a good reader:

A proficient reader appears to scan the print effortlessly, extracting meaning andsifting through it, making connections between new ideas in the text and existingknowledge, and interpreting according to his or her purposes. The proficientreader figures out new words and names very quickly and with minimal effort, consciouslysounding out new words if necessary. New words are decoded with minimal effort because the sounds, syllables, and meaningful parts of wordsarerecognizedautom -atically.If the good reader happens to misread a word or phrase or does not comprehend a word or phrase, he or she quickly adapts by reread - ing to make sense of the information and clarify what was unclear. As she reads along, the reader forms a mentalmodel, or schema, forthemeanings just extracted, linking new information to background knowledge.That schema, or mental construction, has a logical frameworkintowhich she files the information to remember. Reading is a complex mental activity!(p.48).

Besides, it is proposed that successful reading should be a combination of three persuasive models; namely, bottom-up decoding, top-downand interactive comprehension.These models interact with one another to compensate for breakdown in reading process. Consequently, it could be predicted that learners' vocabulary knowledge would play a different role in each model. This section reviews each model and how it correlated with vocabulary knowledge in terms of historical retrospective.

2.6.1Bottom-upProcessing and Vocabulary

This model is based on text- driven operations. The reading is seen as a process in which small pieces of text are absorbed, analyzed and gradually integrated with subsequent pieces of information until they become meaningful units. The reader constructs meaning from the letters, words,phrases and sentences. In the process of decoding, the reader goes from the printed words to some phonological representation of the printed stimulus or word recognition. Hence the reader may find difficulty running on this decoding without familiarity with vocabulary and grammar of the target language. In the process of comprehension, the reader derives meaning from the decoded message. As such, second or foreign language reading and reading

comprehension are concerned with essentially decoding problems and deriving meaning from print. (Carrel, 1995 sited in Puangmaliwan,2005).Boothe,et la(2009) Propose a part-whole concept showing that readers construct the meaning of the whole text or its main idea using their multidimensional vocabulary knowledge to decode the parts. In other words, the sequential order of the vocabulary knowledge proceeds from letters, words, sentences, paragraphs to text. Therefore, vocabulary development has been recognized as important in decoding the texts. Hence, the readers' vocabulary knowledge could influence their reading performance in the prospective of bottom-up model.

2.6.2Top-down Processing and Vocabulary

On contrary, top- down model is a concept driven process that focuses on higher level processing strategies. The readers make predictions about the text according to their prior backgroundknowledge or experience, and then read the text for confirmation of these predictions. Thetop-down reading model, stresses theimportance of the readers' background knowledge in reading comprehension. Therefore, the luck of insufficient background knowledge may lead to learners' reading problems.The readers make use of their readingstrategies as well as reading skills to infer what the writer means and

what information isintended. They also use contextual guessing to construct meaning at a deeper, more detailed level and to understand any unfamiliar words or phrases.The readers do not process a text by identifying and interpreting every letterandword in the text. Instead, they predict the meaning by taking advantage of their priorknowledge. Obviously, this model emphasizes the reconstruction of meaning rather thandecoding the single words or word phrases of the text. Gove (1983) cited in Boothe,etla(2009) proposes some features describing top-down approach to reading as follows:

1- Readers can comprehend without recognizing each word.

2- Readers should use grammatical cues to identify unfamiliar words.

3- Meaning is the primary objective of reading rather than mastery of words.

4- Reading requires the use of meaning activities rather than the mastery of a series of word-recognition skills.

5- The primary focus of instruction should be above the word level.

6- The most important aspect about reading is the amount and kind of information gained through reading.

In this model, the meaning of the word is elicited from its suited context. This is why the advocates of this model claim that the readers should determine the meaning from discourse level rather than from the word level. The decoding of

vocabulary in this model plays only minor role, because in meaning driven process readers could make prediction to the meaning of a reading passage without understanding each word. Background knowledge is fundamental and vocabulary knowledge is secondary in this model. Hence, vocabulary knowledge is only important to confirm the predictions of the reader.

2.6.3Interactive Processing and Vocabulary

This is a combination of both data-driven and concept- driven models of reading comprehension.Reading involves not only the readers and the text but also interaction between the readers and the text.The meaning of a text is gained by an interaction between the knowledge stored in the readers and the information implied in the written text. Readers are not passive information receivers, but they are aall of the various sources of knowledge, includingknowledge about the language patterns, syntax, vocabulary, semantics as well as context,come together to interpret what has been read.Lundmark (2011). Korea (2008) Puts it more vividly, he states: "The reader brings information, knowledge, emotion, experience and culture, that is, schemata to the printed word. Reading is only incidentally visual. More information is contributed by the reader than by the print on the page. That is, readers understand what they read because they are able to take the stimulus beyond its graphic representation and assign its membership to an

appropriate group of concepts already stored in their memories". This model recognizes other language factors, which are either taken for granted in the top-down model or are over emphasized in the bottom-up model. It also recognizes reader variables such as background knowledge, prediction, and other global reading processes which are either unaccounted for in bottom-up models or accounted for in top-down models for everything about reading.

Hence, vocabulary knowledge played a crucial role in this approach, as it has to interact with other knowledge forms to construct meaning. Since the interactive approach combined concepts from both top-down and bottom-up, it convincingly lent to understanding the reading process.

However, the three above motioned models embraced different view for examining reading process. No matter, which reading model readers should use, they have to develop various reading skills to effectively comprehend a text.

2.7Review of Previous Studies

Based on the related literature , the association between vocabulary breadth,depth and reading comprehension has been explored from different perspectives: Firstly, thisissue is linked with the question of how many words in a text a language learner needs to know so as to comprehend that text adequately. Secondly, more empirical investigations have been reported on finding the mere relationship

between the aspects of vocabulary knowledge; namely depth and breadth and reading comprehension. The studies chosen for review are those that mostly related to the present study and those that represent the majority type of research in the field. To my knowledge, so far, this study is one of the first studies investigating the relationship between vocabulary knowledge and success in reading comprehension in theSudanese EFL learning context; therefore, the review below focuses on relevant studies carried out in settings other than Sudan. In line with the abovementioned prospective, the following is a survey of some studies focusing on these variables and the correlation between them:

2.7.1 Vocabulary Knowledge and Lexical InferencingProficiency:

In order to examine the relationship between vocabulary knowledge and the ability to infer meaning from context, Liu and Nation (1985) investigated 59 ESL teachers attending a diploma course in New Zealand.The great majority of these teachers were ESL learners themselves. The study examined the relationship between text coverage, i.e. the percentage of running known words in the text, and reading comprehension for non-native speakers of English. Teachers were asked to infer the meaning of vocabulary in context under two conditions: One passage had a maximum of 96% vocabulary coverage for the participants, and the other passage had a maximum of 908 lexical coverage for the participants. The subjects

were divided into proficiency levels according to their success at guessing. Groups of learners at high proficiency levels could successfully guess 85% to 100% of the unknown words. The group of learners at the lowest proficiency level tested guessed between 30% and 40% of the unknown words. Hence, they consequently concluded that the density of unknown words in a text affected the success rate of guessing from context: the fewer the unknown words in a passage, the higher the success rate of guessing. This finding suggests that vocabulary size affects one's ability to guess from context, and that lexical guessing from a text of 95% lexical coverage should yield more satisfactory results than performing a similar task with a text of 90% lexical coverage.

They examined the relationship between text coverage, i.e. the percentage of running known words in the text, and reading comprehension for non-native speakers of English.

Farahani (2006) cited in Rashidi&Khosravi (2010) investigated the relationship between depth of vocabulary knowledge and Iranian learners' lexical inferencing strategy use and success. Her findings showed that there was a significant relationship between depth of vocabulary knowledge and the type of lexical inferencing strategy used. In other words, those who had stronger depth of vocabularyknowledge used certain types of lexical inferencing strategies

morefrequently than those who had weaker depth of vocabulary knowledge andthese strategies made them more successful in inferring the meaning ofunknown words.

2.7.2 Vocabulary Depth and Reading Comprehension

Qian and Schedle (2004) evaluated an in-depth vocabulary knowledge measure to find out whether it could be used as a basis to design appropriate and usefulitem types for assessing test takers' reading comprehension. The study was done on 207 international students attending an ESL program in a major Canadian University. The students were recruited from classes at the intermediate proficiency level and up. The participants were from 16 different first language backgrounds, the major L1 groups being Korean,Japanese, Spanish, and Chinese. Three instruments were used to collect the required information for this study; namely, TOEFL reading for basic comprehension majeure, vocabulary depth test and TOEFL vocabulary measure. The results showed that depth of vocabulary knowledge and TOEFL had the same difficulty level and both had similar relationships with reading comprehension tests. It was also found that the new measure had a similar difficulty level compared to existing TOEFL vocabulary measures, and also provided a similar amount of prediction of ESL test takers' reading performance.

In anotherstudy, Kaivanpanah and Zandi (2009) investigated the role of depth of vocabulary knowledge in reading comprehension and its relation to grammatical knowledge. A TOEFL test and a measure of depth of vocabulary knowledge was administered to 57 EFL learners . The study concluded that although depth of vocabulary knowledge is significantly related to reading, grammatical knowledge explains the greatest amount of variance in tests takers` performance on reading comprehension tests.

2.7.3 Vocabulary Breadth and Reading Comprehension

Stahr (2008) investigated the relationship between vocabulary breadth and the readingskill, in addition to writing and listening with 88 Danish learners of English from lower secondary education whose language skills were assessed as part of the national school leaving examination. The participants completed two paper-and-pencil tests measuring their reading and listening comprehension in English and wrote a 450-word composition as a measure of their writing skills. In addition to these three tests included in the school leaving exam, the learners completed a vocabulary-size test which was administered to them about 2 weeks before the examination.Vocabulary size displayed a high correlation with reading comprehension, thus indicating the reading skill to be the most dependent on vocabulary size in that study. The researcher further found that the participants,

knowing the most frequent2,000 word families, obtained a score above average on reading and the other two skills, namely listening and writing while for those not mastering the most frequent 2,000 word families, "the picture was lessclear" (Stahr, 2008: 149).

Administering Vocabulary Levels Test (VLT), the Productive Version of the VLT, and a TOEFL test to 76 Iranian undergraduate students, Golkar and Yamini (2007) examined the relationship between active and passive vocabulary knowledge, and the learners' proficiency level and reading comprehension ability. The study also aimed at investigating the nature of the students' vocabulary knowledge with regard to their passive and active knowledge of the L2 words as a whole and at different word frequency levels.What is significant is that vocabulary size turned out to have a high and significant correlation with both proficiency levels and the reading comprehension ability. The correlation between their passive and active vocabularies and reading comprehension ability produced a high correlation, with the active vocabulary showing a higher index. The researchers attribute it to the fact that "passive knowledge takes much practice and experience in language to turn into active", and conclude that language learners "with a higher active vocabulary have had a higher amount of practice in reading texts, too; hence their better reading comprehension ability" (p. 101). It was also found that there was a

statistically significant difference between the English majors and non-majors. The High proficient group and the English majors had greater passive and active vocabulary knowledge than their corresponding Low proficient group and the non-majors.

Salah (2008) investigated the relationship between vocabulary knowledge and reading comprehension of authentic Arabic texts. Particularly, the study investigated the percentage of vocabulary coverage (known words) readers need to ensure reading comprehension of two reading passages from online Arabic news source. Data was collected from twenty-three learners at The Effect of Vocabulary Knowledge on Reading Comprehension of Iranian EFL Learners in Brigham Young University, who ranged from Intermediate Low to Intermediate Mid in both productive and receptive skills. Two reading comprehension tests, circling the unknown words in texts and a lexical coverage test for each passage texts were given to the subjects. A linear regression analysis of the data shows that there is a correlation between the percentage of known words and students' comprehension of the two reading texts. The results indicate that the subjects needed to know approximately 90% of running words to adequately comprehend the first passage and around 86% to comprehend the second passage.

2.7.4 The Relationship between Breadth and Depth of Vocabulary Knowledge

With regard to the relationship between depth and breadth of vocabulary knowledge,Ouellette (2006) distinguished between breadth and depth of vocabulary knowledge to better explain the role of vocabulary in various reading skills. Sample of 60 typically developing Grade students was assessed on measures of receptive and expressive vocabulary breadth, depth of vocabulary knowledge, decoding, visual word recognition, and readingcomprehension. The analyses revealed that each distinct reading skill was related to the vocabulary measures in a unique manner. Receptive vocabulary breadth was the only oral vocabulary variable that predicted decoding performance after controlling for age and nonverbal intelligence. In contrast, expressive vocabulary breadth predicted visual word recognition, whereasdepth of vocabulary knowledge predicted reading comprehension.

In conclusion, All studies reviewed above are evidence of the close relationship between vocabulary knowledge and successful reading comprehension.The most important point can be accounted, of all these studies, is that there are no conflicting ideas among them concerning vocabulary knowledge and reading performance chain. They have noted the important role of vocabulary as a

predictor of overall reading ability. Vocabulary load is regarded to be the most significant predictor of text difficulty. What these studies indicate is that the threshold for reading comprehension is, to a large extent, lexical. Lexical problems will, therefore, hinder successful comprehension.

However, no particular study has been reported investigating the relationship between vocabulary knowledge and reading performance inthe Sudanese EFL context. for this reason and to better understanding the significance of vocabulary knowledge on reading performance, this study is warranted to tackle this seemingly important issue with the Sudanese tertiary level students. It is hoped that the findings can generate useful implications for both learners and teachers of English language.

2.8Summary of the Chapter

This chapter has presented a review of literature concerning the relationship between vocabulary knowledge and reading comprehension. The literature has discussed vocabulary knowledge dimensions, correlational analysis of these dimensions from the prospective of differenttheories (i.e. behaviorist, knowledge, structural etc.) and explored the areas of overlap in their perspectives of vocabulary knowledge. It has shown that the nature of vocabulary knowledge is both complex and multi-dimensional.It has highlighted the nature of vocabulary

through examining a number of definitions of vocabulary. Although these definitions show inconsistency as each definition relied on a separate unit of counting, but they are complementary to a great extend. The proposed definitions contained various aspects of vocabulary knowledge. The chapter has also given in-depth explanation concerning depth and size of vocabulary knowledge, providing various interpretations of what it means to know a word. It has also examined the threshold vocabulary knowledge required of ELF learners. It has clearly proved that L2 learners need the first two thousand most frequent words of the English language and a sufficient number of academic word knowledge to comprehend and participate satisfactorily in academicdiscourse. Then again, knowing a large number of words does not automatically lead toproficient word use. Rather, L2 learners require both breadth and depth of wordknowledge in order to be fluent in reading comprehension. Fluency includes knowing the varioussenses of the word, being able to make appropriate word associations. The chapter has concluded with an overview of some studies investigated the relationship between vocabulary knowledge and reading comprehension proficiency in different contexts.

Based on the previous discussionof both theoretical and literature overview, the following chapter addresses the methodology followed in this research to answer the research questions.

Chapter Three

Research Methods and Procedures

This study aims at investigating howSudanese undergraduate sutednts' depth and size of vocabulary knowledge correlates to their reading comprehension. The present chapter gives a detailed explanation of methods and procedures undertaken to gather the required data.

3.1Methodology

The methodology developed for this research is both descriptive and analytical. It also combines quantitative approach of data collection technique. In order to assess the students' vocabulary and reading comprehension proficiency, three instruments are used for the data collection; namely, Vocabulary Levels Test, Vocabulary Breadth Test, and the Reading Comprehension Test. This was decided because using multiple measures where different types of data are collected can help validate each type and give more in-depth results. Using three tools of data collection was also to grantee the flaw of data from different sources, which would be valuable and resourceful for the present study. It also helps in finding detailed answers for the posited research question. On the other hand, Tests are also proved to be of great value in language testing. Seliger and Shohamy (1989) cited is Chen (2011) states that tests are generallyeffective tools used to collect data about the subject's ability or knowledge in second language

areas such as vocabulary, grammar, reading comprehension or general language proficiency. In this study, the focus is subjected on tertiary level students parly because Sudanese ESL learners usually acquire comprehension skills later than EL1 students due to less exposure to English, and partly because reading comprehension becomes more challenging in tertiary level , where students struggle to comprehend an academic texts.

3-2 Participants

The targeted population of this study was Sudanese tertiary level students studyingEnglish as a foreign language. The study investigated 103 third-year English majoring students at university of Nyala in southern Darfur state and ComboniCollegde of science and Technology in Khartoum state.The participants were male and female students between 21 to 40 years old. They are homogenous in more thanone sense; allparticipants had undergone academic English training at tertiary level for two years.They have had the same type of education as they received the same education before joining their college. Theyhad experienced Englishlearning for 7 years in the basic and secondary school levels. Therefore, their academic level is almost the same.English-majors were selected as sample of the study for three reasons: firstly, in regard to academic reading, most of their textbook are written in English, vocabulary Knowledge and reading

comprehension should play a critical role in their acquisition of content Knowledge. They are also supposed to have mastered vocabulary and achieved appropriate competence of reading comprehension asa result of two years study of English courses at university.This research design utilized vocabulary tests aimed for intermediate level English learners, which require high level of vocabulary knowledge. Therefore, third year English-majors are regarded to be concordant with the research design.

3.3Pilot Study

Before being administered to the 103 participants in the present study, the three language tests; RC, VS and DVK were piloted with 10 third year English and Frensh- majors at University of Nyala. The aim of the pilot study was to confirm quality and reliability of the study instruments. The pilot study wascarried out for three reasons:firstly, to examine the quality and reliability of the study measures;Secondly, to determine the appropriate time frame requiredby the participants to complete the tests;thirdly, to identify the potential problems in the design process such as incorporation of ambiguous or inappropriate items.Consequently, it is reported that the average time the subjects spent on the vocabulary knowledge tests was approximately 60 minutes and 40for the reading comprehension test. Besides, some items from the original version of VLT were

discarded with aim of reducing the length of the test to prevent subjects from fatigue, whichas noticed, negatively affected their performance in the test.

The overall components of the test instructions and items on the threelanguage tests seemed to be well designed without any ambiguity except some items were discarded from the VDK testbecause of a concern that some key answers to these items were considered ambiguous.

3.4The Study Instruments

In order to design appropriate tools of data collection for this study, many studies available in the field of EFL vocabulary knowledge and reading comprehension test were pursued. The researcher also surveyed some literature concerning language competence in general to have a deep insight a bought the knowledge related to this study. After a great deal of researchin the field of foreign language testing, along with knowledge derived from research methodology, references, and checking different types of measures, three instruments were employed including depth of vocabulary knowledge (DVK) measure, vocabulary size test and reading comprehension test to collect the required data.

3.5.1 Vocabulary Breadth Test

This is a test of receptive knowledge of English vocabulary has been used to measure the size of learners' vocabulary knowledge. The test was originally called

the vocabulary level test(VLT), designed by Nation (1983) an a diagnostic test by teachers (Appendix 1).

This test has been accepted by a number of L2 researchers as an appropriate measu re of vocabulary size (Nation,1990) The level test derives its name from the fact that separate sections measure learner's knowledge of the words from a number of distinct frequency levels. Therefore, it can provide a profile of a learners' vocabulary, rather than just a single – figureestimate of overall vocabulary size.The level addressed are 2000 word-family level, the 3000 word family level, the 5000 word-family level, the university word list level, andthe 10000 word-family list. The 2000 and 3000 word-family levels test include only high frequency words in English; the 5000 word-family level is a boundary level between the high frequency and low frequency levels; and the 10000 word –family level includes low frequency words. The university word list level contains specialized vocabulary needed for academic studies.For example, the words accident, jump and slow are from 2,000-word level, brilliant, charity, and prevail from 3,000-word level, blend, fragrant, and trumpet from 5,000-word level, andfroth, morose, and squint from 10,000-word level. This organization shows that the test begins with items most likely to be known. It is expected that for most test takers, the scores for each level in the test descend from high frequency level

to the lower one. The reason behind the expectation is that the frequency level is strongly related to the likelihood of a word being known, and in general, learners acquire more frequency words before less frequently ones. However, the last two levels were not included in the present study to reduce the length of the test, as the participants had to do two other tasks including VDT and RC test. At each vocabulary size level are three test items, each comprising three words and three definitions. The test taker is required to match the three definitions with three words provided by writing the corresponding number of the word beside its definition, as in the example below.

1 pencil ..……. part of a house

2 horse ……. animal with four legs

3 wall …….. something used for writing

The VST developed for the present study contains 75items, and each correct answer awarded one point. Scores obtained from the Vocabulary Levels Test were used as the vocabulary size variable in the analyses, to examine its relationship with the vocabulary depth, and reading performance.

3.5.2 Depth of vocabularyknowledge (DVK) test

The depth of vocabulary knowledge test (DVK) in this study was the Word Associates Test (WAT), developed by Read (1993)(Appendix 2). This test was

devised to measure test-takers' depth ofreceptive English vocabulary knowledge in terms of three elements: synonymy, polysemy, and collocation. That is, the WAT is intended to assess learners' depth ofvocabulary knowledge through word associations, which are the semantic and collocational relationships that a word has with other words in the language. The DVK developed for the present study contains 20 items.Some items in the original test were discarded because of a concern that some key answers to these items were considered ambiguous and to reduce the length of the test as participants had to take two others tests.Each item consists of one stimulus word, which is an adjective, and two boxes, each containing four words. Among the four words in the left box, one to three of them can be synonymous to meaning of the stimulus word, while among the four words in the right box, there can be one to three that collocate with the stimulus word.The instruction sheet for the test taker explains that there are always four correct answers in each item. However, these answers are not evenly spread. There are three possible situations:

· The left and right boxes both contain two correct answers.

· The left box contains one correct choice, while the right boxcontains three correct answers; and· The left box contains three correct answers, while the right

boxcontains only one correct choice. This arrangement effectively reduces the chances ofguessing. An example taken from the actual WAT is presented below:

Sound

a)Logical b) healthy c)bold d)solid	e)snow f) temperature g) sleep h)dance

The correct choices for this item are logical, healthy, and solid in the left box and sleep in the right box. In scoring, each word correctly chosen was awarded one point. The maximum possible score, therefore, was 80 for the 20 items. As shown in the above example, the DVK mainly measures two aspects of depth of vocabulary knowledge: meaning (synonymy and polysemy) and collocation, or the paradigmatic and syntagmatic relationships of words. Although the DVK measures only some components of depth of vocabulary knowledge, these components were important because they appeared frequently in discussions of vocabulary knowledge appeared to be an efficient instrument, since the test could be completed by intermediate learners within 30 min (Gain 2002).

In spite of this claim, the content of the DVK was partially modified to go with the context of the presents study.

Based on these considerations, the measure was selected for the research, and scores obtained from the DVK were treated as the variable of depth of vocabulary

knowledge in the data analyses, to examine its relationship with the other variables identified in the study.

3.5.3 Reading Comprehension (RC) Test

This test was a standardized multiple-choice reading comprehension test,taken from a form of the TOEFL reading test(Appendix3). The test was composed of two readingpassages with multiple-choice questions to measure reading comprehension.The reason behind choosing two passages is to avoid any bias that could affect the results of the study when using one reading comprehension passage. Each multiple-choice question in the two passages is based on the content of its corresponding passage. On the basis of what is stated or implied in the passage, the participants were asked to choose one best answer to each question from the four options provided after reading the passage. Sufficient context is provided for test-takers to analyze the written passage from different perspectives, including in both explicit and implicit modes. As for the reading comprehension questions, they focus on (1) the main idea or primary purpose of the passage, (2) information explicitly stated in the passage, (3) information or ideas implied or suggested by the author, (4) possible application of the author's ideas to other situations, (5) the author's logic, reasoning, or persuasive techniques, and (6) the tone of the passage or the author's attitude as it is revealed in the language used

Huang(2006). In other words, the reading comprehension questions are intended to assess test-takers' comprehension of the texts as a whole rather than the meanings of specific words. It was expected that this test would discriminate enough to pinpoint test-takers' general reading comprehension ability.

3.6 Validity and Reliability:

Validity and reliability are important factors of psychological research studies. They allow us to gain firm and accurate results, as well as helping us to generalize our findings to a wider population. Validity refers to the fact that the data and data collection techniques should test what they aim to test. Inother words, valid data should measure what it supposed to measure. Reliability, deals with stability of the scores of results of the data collection procedures. It tests to what extend the results or scores do not change when an experiment is repeated to the same participants in similar situations.Validity and reliability in this research have been discussed in the following section.

3.6.1 The Study Validity

Validity in this study has been discussed under three headings; face validity, content validity, and construct validity.

Face validity is concerned with the extent to which a test is subjectively viewed as covering the concept it purports to measure. It can be determined by showing the

test to some experts in the field of study. In this regard, the study measures were presentedto three EFL teachers at university of Nyala.They were given the first version of the instruments to comment on the clarity of items and suggest changes. They acknowledged the appropriateness of the instruments except for some few drawbacks; the subjects may not be able to understand some of the items in the vocabulary depth test. To overcome this problem, the researcher further replaced many of the items that could be unintelligible. Then the study instruments were also referred to the supervisor. He made very insightful and useful observations; that. The multiple choice answers in vocabulary size measure should be discarded into three options instate of six due to their challenging manner. In the light of contact with some experts in ELF teaching and testing, along with the supervisor, the researcher considered all the modifications and made them to the final draft.

Content validity measures the degree to which the test items represent the domain or universe of the trait or property being measured. In other words , the content of the test should accurately represent what is intended to measure. In this respect, the researcher consulted two English experts of EFL teaching and testing at Sudan University of Science and Technology to determine content validity of the study instruments; Namely,Dr. Mohammed El- Tybe and Dr. Mekki Mohammed.

Accordingly, they confirmed the appropriateness of the instrument content to the study.

Constructvalidity measurement was also used to prove validity of the study tools. Construct validitymeasure requires evidence including statistical analyses of internal structure of the study measures.SPSSpackageswere used to determine construct validity of the study measures. The study instruments validitywas measured by using test retest method. It was calculated according to reliability equation as follows:

$$R = \frac{\sum(X_i - \bar{X})(Y_i - \bar{X})}{\sqrt{\sum(X_i - \bar{X})^2(Y_i - \bar{X})^2}}$$

$$\text{Validity} = \sqrt{R}$$

The results have been shown in the table below:

Table (3-1) statistical results of the study measures validity.

Item	Validity
RC test	85
VDT	.79
VST	94

As shown in the table, the validity coefficient for all the study measures is greater than 50%. This result has determined the internal consistency of the study measures.

3.6.2 Reliability

Once the validity procedures were completed, the final version of the study measures were examined to assess its reliability.Since the reading comprehensiontest in this study was taken from the TEFL standardized test,the test items had already been through numerous pretests for reliability and validity for a general academic population. Also, both the vocabulary size and depth of vocabulary knowledge tests have satisfactory test reliability, and thus had been used by many lexical researchers. For these reasons, the primary purpose for pilot experiment was to confirm the appropriateness of the test materials to the Sudanese EFL context, the clarity of the instructions, the process of the administration, testing the study measures reliability and to determine the time that test-takers would need to complete the tests. However, to further ensurethe reliability of the study instruments, it was administeredto participants randomly selected from among the ones who hadparticipated in the mainstudy. Reliability in this study was calculated by using test retest method. It was calculated according to reliability equation as follows:

$$R = \frac{\sum(X_i - \bar{X})(Y_i - \bar{X})}{\sqrt{\sum(X_i - \bar{X})^2(Y_i - \bar{X})^2}}$$

The results have been shown in the table below:

Table (3-3) statistical results of the study measures reliability.

Item	Reliability
RC test	0.73
VDT	0.63
VST	0.89

As shown in table (3-2), the reliability coefficient for all the study measures is greater than 50%. These results indicate consistency of the study measures.

3.7 Procedure of Data Collection

Before conducting the research, trial version of the original VLT,VDT and the RCT were administered with 10 students who had similar profiles to the study subjects in order to check the appropriateness of the study tests. It was found that only few modifications were required to be made and revised for the VLT and VDT.

Based on the findings of the pilot study, The main study packets were administered by the researcher during class time. The researcher provided

participants with a brief explanation about the purpose of the study and how their confidentiality would be ensured. The researcher also helped students who struggled to understand the instructions on the tests by providing more explanations about the tests. students were informed that they were free to withdraw from the study at any time without penalty and that their responses to the tests would not affect their grades. As a result, out of the original pool of participants answering the study tests, not all of them were able to respond to all the study instruments; some did not turn up in the session on reading test for personal problems while some were unwilling to continue after answering depth and size tests. Still, some others were unable to answer all the items on the tests in due time. Besides, some more were regarded anomalous because the displayed obvious signsof pure guesswork or of performance incongruity among the three tests. For example, some participants answered only B or C throughout the 20 items in the vocabulary depth test. In addition, others are suspected of dishonesty because they got extremely low scores in the reading test but up normally high scoreson thevocabulary depth and size tests and vice versa. Therefore, all the invalid scores were excluded. In this regard, Gerry (2004) states "The likely hood of not being able to have enough informants accepting the test would remain inextricable specially in the case where the researcher cannot provide allurements,

tips,etc, to his subjects" p.101. After discarding papers withmissing data, the final 103students were selected for this study. The final test scores for the students participating in this study were identified to determine the nature and inter-correlation betweendepth, size and the reading performance of the participants.Several statistical techniques were employed for data analyses. Descriptive statistics (frequencies, means, and standard deviations) , correlation and regression analysis were calculated to summarize demographic information and describe students' performance in the three tests.

3.8 Summary of the Chapter

This chapter has presenteda detailed description of the research methodology of this study, including discussion of the procedures and processes of sampling and data analysis. EFL learners from a third-year at NyalaUniversityand Comboni College have been involved in this study.The chapter has provided a through description of instruments that have been used for data collection and how these instruments were administered to collect the required data of the study. The vocabulary depth test, vocabulary size test, and reading comprehension test were the primary instruments for gatheringdata. It has also described the procedures adopted to maintain validity and reliability of the study measures.Statistical results have shown high level of both reliability and validity of the study measures.

Chapter Four

Data Analysis, Results, and Discussion

4.1 Introduction

This chapter presents the statistical analysis and results of the study.The chapter reports the statistical analyses of students‟ scores on the three language tests

(Reading test, vocabulary size test and depth of vocabulary knowledge test).The first phase of the study answers questions on how scores on vocabulary size (VS), depth of vocabulary knowledge (DVK) and reading comprehension (RC) are intercorrelated. The secondphase of the study discusses the difference in performance between high group of participants (obtained 75% or above on VS test) and low group(obtained less than 75% on VS test). The third phase of the study discusses the analyses and results of which aspects of vocabulary knowledge; breadth or depth is a more powerful predictor of learners‟ reading comprehension. As mentioned in Chapter three, a quantitive approach of data collection technique was used in the study.

The data collected through the three tests. namely, theRC, VS, and DVKwere of an interval nature. Because the primary purpose of thisstudy was to find out: (a) the intercorrelations among the learners' scores on the readingcomprehension, vocabulary size, and depth of vocabulary knowledge, and (b) which aspects of word knowledge (VZ and DVK) is better predictor of reading comprehension scores.

The statistical procedures underlying data analysis of this study were a Pearson product-moment correlation , regression coefficient analysis and t-test. First, a two-tailed Pearson correlation was performed on the scores obtained from the

participants' performance on (VS), (DVK) and (RC) to determine the correlation between the three variables. Second, a t-test was carried out to compare the means obtained from two groups' reading performance with high and low breadth of vocabulary knowledge. For this step of dada analysis, participants were divided into two groups (High and low) according to their scores on the breadth of vocabulary knowledge test (VLT). To do this, a cutoff point had to be determined. Based on –Schmitt&&Clapham (2001).mastery criterion of 86% on an earlier version of the test, 75% was chosen as an appropriate cut off point in this study. Accordingly, participants were divided into two groups. Participants who scored at or above 75 % were classified high achievers and those who obtained blow 75% were classified as low achievers. This cut off point was chosen because the overall performance of the participants in this study was rather week; only 14 participants scored at or above 75%. Therefore 75% is considered a reasonable cut point for the purposes of this study. An independent-samples t-test was conducted to compare the scores of the two groups. Third, a regression coefficient analysis was run out to judge on contribution of both depth and breadth of vocabulary knowledge on predicting reading performance of the participants on one hand and the individual prediction of each variables on the other hand. In the regression analysis, the scores on RC were used as the dependent variable and those of VS,

and DVK as independent variables.Reading comprehension consisted of the learners' total scores onreading comprehension test; breadth of vocabulary knowledgeconsisted of the learners' scores on the vocabulary level test; and depth of vocabularyknowledge consisted of the learners' scores on the word associate test.

4.2Determining the Relationship among theStudyVariables (DVK, VS& RC)

The purpose of this phase of the analysis was to determine the correlations between the scores on the reading comprehension (RC), vocabulary size (VS), and depth of vocabulary knowledge (DVK). A two-tailed Pearson correlation analysis was conducted .To this aim, the relationship among the study variables were calculated at .05 level of significance.Theresults obtained from these computations are presented on thefollowing tables.

4.2.1 The Relationship between (VS) and (RC)

Table (4.1): Pearson Correlations between (VS) and (RC):

Variables		Mean	Std. Deviation	RC	VS
RC	Pearson Correlation	8.8544	2.63984	1	.450**
	Sig. (2-tailed)				.000
	N			103	103

	Pearson Correlation	56.7184	15.34915	.450**	1
VS	Sig. (2-tailed)			.000	
	N			103	103

* Correlation is significant at the 0.05 level (2-tailed).

As shown in Table (4.1)above the correlation between the two variables appear to be statistically significant at the 0.05 level (2-tailed). The table shows a positive correlation (.45) between the scores on the (VS) and (RC). This means that the RC increases as the (VS) increases. It further emphasizes the positive association and interconnection of these two measures.

4.2.2 The Relationship between (VS) and (DVK)

Table(4.2) Statistical Results of Correlation between Depth of Vocabulary Knowledge(DVK) and Vocabulary Size(VS):

		Mean	Std. Deviation	DVK	VS
DVK	Pearson Correlation	50.4951	12.10159	1	.239*

	Sig. (2-tailed)				.015
	N			103	103
	Pearson Correlation	56.7184	15.34915	.239*	1
VS	Sig. (2-tailed)			.015	
	N			103	103

Table 4.2 shows the correlations between breadth and depth of vocabulary knowledge scores to elucidate the strength of association between the two dimensions of vocabulary knowledge. Going through the table, one can see that the learners' VS was positively and significantly correlated with their DVK (r = .24), which is statistically considered rather weak correlation.

4.2.3 The relationship between (DVK) and (RC)

Table(4.3) Statistical Results of Correlation between Depth of Vocabulary Knowledge (DVK)and Reading Comprehension(RC):

Variables		Mean	Std. Deviation	RC	DVK
	Pearson Correlation	8.8544	2.63984	1	-.133
RC	Sig. (2-tailed)				.180
	N			103	103
DVK	Pearson Correlation	50.4951	12.10159	-.133	1

Sig. (2-tailed)			.180	
N			103	103

* Correlation is significant at the 0.05 level (2-tailed).

Statistics on table (4.3) above report the correlation between participants' RC and DVK. Significantly negative correlation (-.133) is found between the two variables. In other words, the correlation of two variables was not statistically significant at 0.05 level (2-tailed). Therefore, vocabulary depth and reading comprehension in the present study cannot be classified as having a correlation.

Table (4.4)Statistical t-test Results of High and Low Proficiency Groups

Group	N	Mean	Std. Deviation	df	T-test	Sig.(t-tailed)
Low	89	8.65	2.659	101	-1.993-	.049
High	14	10.14	2.179			

The above table (4.4) compares between high and low proficiency groups of the study participants on vocabulary breadth test and consequently their performance on the reading test. It compares between those who scored 75 % and above and their counterparts who scored less that 75% on VS test. It shows that the mean

score for high group is (10.14), and the standard deviation is (2.179). Whereas the mean for low group is (8.65) and the standard deviation is (2.659). The calculated t-test is significant at (0.05). It shows that the overall mean of reading success for high group significantly higher than that for low group. This indicates that the learners with higher and stronger breadth of vocabulary knowledge performed better in reading comprehension tests. Based on this finding , it could be argued that thedifference in reading comprehension scores of two groups(having high andlow depth and breadth of vocabulary knowledge) can be related to thedifference between the two in terms of their depth and breadth of vocabularyknowledge. Therefore, the scores on depth of vocabulary knowledge canimprove the prediction of reading comprehension levels.

4.3 Determining the Predictive Power of both DVK and VS on RC Performance of the Participants:

To determine which dimension of vocabulary knowledge, depth or breadth, made a more important contribution to reading comprehension success, a multiple regression analyses was carried out. In which reading comprehension was used as the dependent variable, and depth and breadth of vocabulary knowledge were used as independent variables.

4.3 .1 Determining Contributions of VS versus DVK to RC Success of the Participants:

This section aimed to know the weight of any one of the independent variables on the variance in the dependent variable, that is, to indicate which factor (breadth or depth is a better predictor of reading comprehension. Table (4.5) indicates the results.Table(4.5) Regression analysisof predictive factors of RC; VS versus DVK:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	R	R Square	t	Sig.
		B	Std. Error	Beta				
1	(Constant)	4.465	.898		.450[a]	.202	4.974	.000
	VS	.077	.015	.450			5.064	.000
1	(Constant)	10.320	1.117				9.241	.000
	DVK	-029-	-1.349-	-.133-	.133[a]	.018	-1.349-	.180

Predictors: (Constant), DVK, VS

Dependant variable: RC

Table 4.5 reports the results of regression coefficient of predictive power of VDK versus VS in reading comprehension. The table reveals which one of the two aspects of vocabulary knowledge is stronger predictor of reading comprehension of the study participants. It indicates that VS appeared to significantly predict language proficiency of the learners at $p<0.05$ while DVK does not. The correlation coefficient between the RC and VS is(.45), the value that was higher than that ofRC and DVK ($r = .13$). This result reveals that VS predicted (0.45) or 45%of the reading comprehension scores. This means that there was an increase in reading comprehension scores by (.45) for every extra point in the level of vocabulary breadth.The table also indicates that depth of vocabulary knowledge did not explain any significant amount of variance in reading comprehension of the participants at $p<0.05$, as the Sig. index is (.180). A look at Beta indices reveals that depth of vocabulary knowledge predicted only (0.13) or (13%) of the reading comprehension scores. This means that there was an increase in reading comprehension scores by .13 for every extra point in the level of vocabulary depth. This level of effect (0. 13) accounted for by depth of vocabulary knowledge is very weak and not considered significant according to statistical measures.

To sum up, the results of multiple regression analyses indicate that VS was individually predictor of RCWhile DVK does not. VS alone accounted

significantly for 45% of the explained variance in RC, but DVK accounted only for 13% of the variance, which is extremely week variance and not considered statistically significant. Hence, one can state that VSis a more powerful predictor of RC than DVK of the study participants.

4.3.2 Determining the JoinedPredictive Power of both DVK and VS on RC Performance of the Participants:

This section is intended to find out to what extent the EFL learners' knowledge ofreading comprehension was accounted for by the combination of the two factors of depth and breadth of vocabulary knowledge. Results are shown below:

Table(4.6) Regression Analysis of Predictive Factors of RC; VS and DVK:

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	R	R Square	t	Sig.
	B	Std. Error	Beta				

(Constant)	6.680	1.158				5.771	.000
SIZE	.088	.015	.511	.514[a]	.264	5.783	.000
DEPTH	-.056-	.019	-.255-			-2.887-	.005

Dependent Variable: RC

As shown in Table (4.6.), there is a significant relationship between the two independent variables (VS and DVK) and the dependent variable (RC). Overall, these two variables, jointlyaccount51.4 % of variance in reading comprehension. It is noteworthy that the combination of the two variables i.e. VS and DVK led to an increase in the percentage of explained variance by 6.4 % points above the variance accounted for by VS a lone (see table 4.5). It can be concluded that when the vocabulary knowledge dimension are combined together, it provides greater predictive power than individual variable does.

4.4 DISCUSSION

This section discusses the study findings and links them to the literature reviewed earlier.

A) Relationship amongthe three Variables(VS, DVK, and RC) of the Study:

According to the statistical results in (table 4.1), VS and RC show a correlation of (.41) .This finding suggests that students' reading comprehension was associated with their vocabulary knowledge. In other words, if students have more vocabulary knowledge, then their reading comprehension test scores may be higher. The account for students' level of vocabulary size to effect their reading comprehension were that learners with larger vocabulary sizes had a better chance to infer the meaning of unknown words from sufficiently rich contexts and more cognitive capacity available for higher level language processes and fluent reading. On contrary, students with smaller vocabulary sizes may pay so much attention to recognize or guess unknown words in a text that they had little cognitive resources left for developing high level of understanding of the reading content Nan (2009). With smaller vocabulary size, the readers may be burden by unknown word in the text and fail to deal with higher- level process while reading. With a larger vocabulary size, fluent readers are able to deal with law-level process more automatically and are allowed to go into higher order cognitive process. In other words, students with higher vocabulary size have more chances to engage in both high and low level processes in reading. Moreover, while taking

reading task, capable readers with an outsized vocabulary breadth can put up with small amount of unknown words in a text without interruption of comprehension and can be able to infer the meanings of unknown words from adequately rich context. However, proportion of unknown words is too high comprehension is disturbed. Carver (1994) cited in Nan(2009). This finding of the current study is in agreement with other studies in both ESL and EFL contexts (e.g.,Mezynski, 1983& Nagy, 2005, Hu & Nation 2000; Anderson&Freebody, 1981) which reported strong correlations between vocabulary size and reading comprehension. For instance, Hu & Nation link a connection, between the percentage of running words in a text and reading comprehension. That is, the more vocabulary the readers know, the more running words in a text will be familiar to them. This proficiency, in turn, leads to a better processing and comprehension of texts. Since the passages in TOEFL (this measure is used as a reading test in the current study) reading cover a range of texts, some of which are more or less similar to thosefound in novels and newspapers, then here it might seem proper to link the currentstudy outcome to a number of the other findings. Theresearch on vocabulary estimates thata vocabulary of 8,000 to 9,000 words is needed to read a novel. Also the most common 4,000 words plus proper nouns account for about 95% of the running words in a page of a newspaper. Thus,to gain an unassisted

comprehension of newspapers, i.e. 98% coverage, a vocabulary of atleast 8,000 words plus proper nouns is needed , Hu & Nation 2000. Additionally, the correlation between vocabulary size and reading comprehension was the most noticeable finding in the current study, indicating that vocabulary size seemed to play a fundamental role in reading comprehension in EFL classrooms. This observed relationship corroborates the instrumentalist hypothesis (Anderson &Freebody 1981) but this finding should be interpreted with caution. This is because this hypothesis indicated that knowledge of more words is the direct cause of better reading comprehension; however, the current study did not examine the issue of causation, i.e. investigating the role of vocabulary knowledge as the direct causal factor in reading comprehension.

On the other hand, statistics on table (4.2) shows a correlation between DVK and VS of the study participants($r = .24$). This result indicates that these two aspects of vocabulary knowledge are interrelated, that is, those learners who had a large vocabulary size had a deeper knowledge of the words, too. Moreover,the correlation between these dimensions of vocabulary knowledge leads us to suppose that the development of breadth and depth of vocabulary knowledge is closely interrelated and may even be interdependent. This appears plausible, for one would not normally have vocabulary size knowledge without also acquiring

depth knowledge.Therefore, the development of the two dimensions is indeed interconnected and interdependent. This result is in congruence with earlier research (Qain 2000) which found that the correlation coefficient between vocabulary size and depth of vocabulary was r = .70. However, other studies (Mehrpour, S. & ela2011 andRashidi. N., &Khosravi, N. (2010)) reported higher correlation coefficients (r = .83, r = .81 respectively) than did the present study.

This discrepancy in findings might be due to the fact that the current study participants are exposed to a less-varied language input in comparison to that in other contexts, the process which may negatively effect on their performance.Another possible explanation for this discrepancy might be because these studies used otherbreadth and depth tasks in their procedures. Another concern involves the DVK test used in this study; since the VDK test used for EFL at large, it level sequence and design of the test may be different from the custom of vocabulary learning and testing in Sudan.On the other hand, the correlation between DVK and VS scores may be attributed to the partial overlap of the two measures. The VS measures the primary meaning of words, while the DVK measures knowledge of synonymy, polysemy, and collocation. Although the DVK tests more and deeper aspects of vocabulary knowledge than the VS, primary meaning is, in certain cases, part of knowledge of synonymy and polysemy, and

knowledge of word meaning sometimes has an impact on knowledge of collocation. Moreover, results of the study indicate that there is a statistically significant difference between the reading comprehension scores of two groups as having high and low breadth of vocabulary knowledge. This means that how learner's breadth of vocabulary knowledge relate to the degree of reading comprehension. This result identify deficiencies in learner's vocabulary knowledge as a hindrance to comprehension. Besides, they ascertain that the growth in vocabulary knowledge matches more reading comprehension. Thus, differences in vocabulary knowledge are salient in explaining the perceived differences in reading comprehension.

Additionally, the study results reveal that the learnerswith higher and stronger breadth of vocabulary knowledge performed betterin reading comprehension tests. Acknowledging the correlation between vocabulary knowledge and reading comprehension. These results identify deficiencies in learner'svocabulary knowledge as a hindrance to comprehension. Besides, theyascertain that the growth in vocabulary knowledge matches more reading comprehension. Thus, differences in vocabulary knowledge are salient inexplaining the perceived differences in reading comprehension.Overall, the results indicate that there is a statistically significantdifference between the reading comprehension scores of

two groups ashaving high and low breadth of vocabulary knowledge. This meansthat how learner's breadth of vocabulary knowledge relates to thedegree of reading comprehension. In other words, vocabulary breadth is valid and powerful in predicting reading performance. Hence, it is noteworthy to state that learners need to have a good knowledge of highfrequency words along with adequate additional vocabulary to read and comprehend efficiently.

B) Vocabulary Knowledge Tests as Predictors of Reading Comprehension:

Going through the three tables (4.1,4.2,4.3) one can observe that the correlation between RC and VS (r = .41) was higher than that between the DVK and VS (.24) and between RC and DVK (r = -.13), which indicates negative correlation of these two variables. This indicates that the scores on vocabulary size was more strongly associated with the test-takers' reading comprehension performance than the score on their depth of vocabulary knowledge. This further suggests that vocabulary size appeared to be in a stronger relationship with reading comprehension than vocabulary depth. This finding is in disagreement with other researchers' results (Rashidi. N., &Khosravi, N. 2010, &Mehrpour, S. & et la. 2011)who concluded that depth was a more powerful predictor of reading comprehension than breadth. This discrepancy in findings might be due to the fact that these studies and the

current study employed different test designs and recruited participants from different backgrounds. A key question needs to be raised here: why vocabulary breadth performed better than vocabulary depth in the regression analysis?. One possible explanation for this was that the vocabulary size test measured 2000, 3000 and 5000 word, which are regarded to be unchallenging words whereas the vocabulary depth test has no criteria for choosing words. Therefore it may include words from different levels, including words from rather difficult levels. Another possible explanation was that the reading comprehension texts used in the current study procedures might have been difficult enough to discriminate between breadth and depth. Despite the fact that the DVK explores more and deeper aspects of vocabulary knowledge, the synonymy and polysemy that the DVK attempts to measure is actually the basic word meaning that the VS requires, and the knowledge of collocation is more or less affected by knowledge of individual word meaning.

The study reveals that DVKdid not explain a significant proportion of RC variance without the effect of VS or when it was correlated alone with RC(see table 4.1). The finding that the DVK measure made small but independent further contribution of (6.4) is similar to Huang, H (2006). The further contribution the DVK measure made in his study was also not statistically significant. These

results suggested that both VS and DVK contributed significantly to the prediction of reading comprehension. When comparing the unique contributions they made together, however, on table (4.1)the analysis yielded results that the VS alone accounted significantly for 41.0% of the variance in RC, while table (4.2) shows only 13.3% of the variance in RC was explained by the DVK measure which is not significant according to statistical measures . In other words, it turned out that vocabulary size is a more powerful predictor of reading comprehension.

Despite the fact that the VS explores more and deeper aspects of vocabulary knowledge, the synonymy and polysemy that the DVK attempts to measure is actually the basic word meaning that the VS requires, and the knowledge of collocation is more or less affected by knowledge of individual word meaning.

To better understand this finding, a closer comparison with Mehrpour, ela(2011) related finding may be useful. In contrast to Mehrpour, et al's results; unlike the present study they reported very strong intercorrelation between RC and vocabulary dimension of breadth and depth.This discrepancy might also be due tothe differences in the participants' language proficiency and age.

What is striking in the present study is that depth of vocabulary knowledge did not make a noticeable independent contribution to the prediction of reading comprehension beyond the prediction afforded by vocabulary size.In spite of

that,DVK added some slight variance in RC jointly with VS (see table 4.6). This indicates thatvocabulary size and depth ofvocabulary knowledge are good predictors of reading comprehension when they co-exist. The result also reveals that (although breadth and depth of vocabulary knowledge may be discussed separately on the theoretical basis) the two variables are actually inseparable and interrelated in practice. In addition, in terms of the importance of vocabulary to reading generally, the results showed that scores on the breadth and depth ofvocabulary knowledge measures jointly accounted for 51.4% of the variance in reading comprehension scores. Although another 48.6% of the variance remained unexplained and unidentified in the present study, the major share of the variance in reading comprehension was already explained by vocabulary knowledge.

It can be concluded that when the combination of the two variables (DVK and VS) is selected, it provides greater predictive power on reading comprehension thanindividual variables alone. This finding indicates that, in terms of validity, accuracy, and efficiency, vocabulary assessment will probably benefit more from using a combination of question types based on the concept of vocabulary size and depth than from using a single item type. Since the empirical results have now shown that vocabulary size and depth measures are jointly powerful in predicting reading performance, it would make sense to give equal weight to the two

components if a combination of vocabulary size and depth items were to be used in a reading assessment. More empirical research, however, is needed to further determine what weighting between the two components would be most appropriate for this purpose.

4.5 Verification of the Hypotheses:

Hypothesis 1: There is a significant relationship between the Sudanese EFL learners' vocabulary breadth and their performance in readingcomprehension.

In light of the results of the Pearson correlation analysis, scores on reading comprehension and breadth of vocabulary knowledge tests are positively correlated. The intercorrelation were moderate (r=.45), which indicates that the score on vocabulary size was moderately associated with the test-taker's reading comprehension performance. This result means the hypothesis one was accepted.1.

Hypothsis2: - There is a significant relationship between the Sudanese EFL learners' vocabulary depth and their performance in reading comprehension.

According to the statistical results of Pearson correlation between reading comprehension and depth of vocabulary knowledge tests, there was a negative correlation (r= -.13) of the two variables. This result means the hypothesis two was rejected.

Hypothsis3: Scores on vocabulary depth test and breadth test are moderately correlated.

The study results reveals that the two variables, vocabulary size and depth of vocabulary knowledge, are themselves correlated (r=24). This leads us to suppose that the development of breadth and depth of vocabulary knowledge is closely interrelated and may even be interdependent. This appears plausible, for one would not normally have vocabulary size knowledge without also acquiring appropriate depth knowledge. The result above supports hypothesis3.

Hypothesis 4: The group with the higher scores on the vocabulary depth test will be the same group which scores higher on the reading comprehension test.

The statistical results of t-test reveals that the mean of reading achievement for high group significantly higher than that for low group. This indicates that the learners with higher and stronger breadth of vocabulary knowledge performed better in reading comprehension tests. Thisresult proves that the scores on depth of

vocabulary knowledge can improve the prediction of reading comprehension levels. Accordingly hyposis5 was accepted.

Hypothesis5: Vocabulary knowledge depth is more powerful predictor of Sudanese EFL university students' reading comprehension performance than vocabulary size.

Among the intercorrelations of the three tests, it is intriguing that the correlation was the highest between the scores on the VS and DVK (r = .45). This indicates that the score on vocabulary size was more strongly associated with the test-taker's reading comprehension performance than the score on their depth of vocabulary knowledge and the two dimensions of vocabulary knowledge. The relationship between breadth and depth of vocabulary knowledge shown in the study is found to be consistent with the results ofprevious studies (Ouellette,2006). The correlation between DVK and VC shown in the study leads us to suppose that the development of breadth and depth of vocabulary knowledge is closely interrelated.

Hypothesis 5: Vocabulary knowledge size is more powerful predictor of Sudanese EFL university students' reading comprehension performance than vocabulary depth.

In the multiple regression analysis, the results suggested that both VS and DVK contributed significantly to the prediction of RC when joined together.

The results further suggested that combining the two dimensions of vocabulary knowledge in vocabulary development is more beneficial than keeping them apart. When comparing the unique contributions they made, however, the analysis yielded results that the VS alone accounted significantly for 45.0% of the variance in RC, while only 13.3% of the variance in RC was explained by the DVK measure. In other words, it turned out that vocabulary size is a more powerful predictor of reading comprehension performance than depth of vocabulary knowledge. This is a finding that runs against the original hypothesis. It was initially hypothesized that depth of vocabulary knowledge would be a more powerful predictor of reading comprehension performance than vocabulary size. Thus, Hypothesis 5 is rejected. Nevertheless, due to the stronger correlation with reading comprehension that vocabulary size shows in this study, this result does not seem surprising at the moment. Although the finding in the present study appears contrary to that of Qian's (1999,2002) study, the patterns shown in Qian'sstudy and the present study are in fact more similar than different. The one that had a stronger relationship with reading comprehension (as shown in the correlations) would be the more powerful predictor of reading comprehension. In this study, the results suggest the salient role of vocabulary size in reading comprehension.

Chapter Five

Summary, Conclusion, and Implication

In this chapter, the major findings of the study will be summarized and presented in the first section. Additionally, some educational implications will be addressed

in terms of second language perspectives. The chapter concludes with some recommendations for further research.

5.1 Summary of the Study Findings

The current study reveals a number of empirical findings. The results of the study, demonstrated that there was a positive moderate correlation between participants' vocabulary size and their performance in reading comprehension. Many ESL/EFL researchers and teachers, as reflected in chapter two, regard vocabulary knowledge correlated with reading comprehension proficiency. The results give statistical evidence to this stance.When students had larger vocabulary sizes they gained better reading comprehension. This result proved that vocabulary size is important part of comprehending reading text .The result stresses the relationship between this aspect of vocabulary knowledge (breadth)and reading comprehension which was reported in the current study literature review. To facilitate their reading, it is worthwhile for students to continually increase their vocabulary size.Another finding of this study was that VDK seemed not positively correlated with the reading comprehension of participants. Although vocabulary depth did notturn out to be correlated with reading comprehension, it slightly accounted (see table 4.6) for explaining reading comprehension abilities when joined with VS. Moreover, based on study findings, it could be argued that the difference in reading

comprehension scores of two groups(having high and low breadth of vocabulary knowledge) can be related to the difference between the two in terms of their breadth of vocabulary knowledge. Therefore, the scores on breadth of vocabulary knowledge can improve the prediction of reading comprehension levels. As a result it is noteworthy to state that learners need to have a good knowledge of high frequency words along with adequate additional vocabulary to read andthus, in short, the findings from this study demonstrate that vocabulary size plays a relatively more important role in Sudanese EFL learners' reading comprehension compared to their vocabulary depth.

With regard to the predictive power of vocabulary knowledge on reading comprehension, there wasa positive predictive power of VS on reading comprehension of the participants. This finding is in line with a large body of previous studies highlighting the importance of general vocabulary knowledge in both L1 and L2 reading (Richard & Rodgers 2001,Stahl & Fairbanks, 1986 Mezynski, 1983& Nagy, 2005, Liu and Nation 1985 and Salah 2008). However, the findings from this study indicates that vocabulary knowledge should not be subsumed under other skills and that it makes distinctive and independent contribution to reading comprehension of Sudanese EFL learners. In this study, vocabulary depth alone was not identified as a significant predictor of reading

comprehension, while vocabulary breadth was. This finding is in line with some of the previous studies with English language learners (Ouellette & Beers, 2010; Tannenbaum et al., 2006) cited in Kang, Y. et la (2012). This discrepancy might be due to lack of vocabulary depth among Sudanese EFL learners. Cautions should be made against generalizing the findings to the Sudanese EFL learners in general, as the participants in this study were limited to students selected from only two universities, despite the diverse English abilities represented among them. Thus, further studies that ensure more diversity among the participants with different educational, regional, and other socio-economic backgrounds are called for. Nevertheless, the findings from this study yield important implications for vocabulary teaching in relation to reading comprehension.

5.2 Implications of the Study

The findings of this study pointed out some important issues deserving our attention as educationalists. More specifically, it highlights some pedagogical implications for teaching and learning of vocabulary. This study found that Sudanese EFL learners luck vocabulary knowledge depth, as it has not added any variance in their reading comprehension. The study also found that vocabulary breadth (although it was moderately correlated with their reading comprehension)

of participants were below the level of expectation as it was only moderately accounted 45% of variance on their reading comprehension.

As general vocabulary knowledge plays a crucial role in successful reading comprehension, the need to increase the proportion of effective vocabulary instruction in English classes is highlighted. In fact, as this study shows the importance of vocabulary knowledge, increasing vocabulary instruction is of great significant in EFL class. Despite this fact, it is noted through experience that Sudanese EFL teachers do not and can not deal with vocabulary in class sufficiently due to the pressed need to focus on other areas such as grammar ,reading and writing teaching. This is confirmed by Ritchard (1976) who states "The teaching and learning of vocabulary has never aroused the same degree of interest within language teaching as have such issues as grammatical competence, contrastive analysis, reading, or writing, which have received considerable attention from scholars and teachers" p.77.Since both depth and breadth of vocabulary knowledge have strong influence on reading comprehension of Sudanese EFL learners, For students with limited vocabulary size, the vocabulary learning goal is to build larger and deeper vocabulary knowledge; an explicit instructional approach which focus directly on developing the high frequency target words can be effective. It is important that teachers use suitable teaching

strategies to direct students to the appropriate vocabulary; otherwise, students may waste time memorizing less frequent words and be destructed from the most frequent words that they should first spend more time engaging in. As for advanced students whose vocabulary sizes have already reached a above the requirement level, the learning goal is to enrichcontextual knowledge of high and low frequency words and implicit of learning vocabulary through extensive reading could be most beneficial(Schimmit 2008 cited in Nan2009). Learning words through experiencing them used in context rather than memorizing their definitions as isolated items may benefit students with larger vocabulary size to acquire broader aspects of vocabulary knowledge and farther promote their reading proficiency. Students are also in need to be helped to acquire full and accurate understanding of the target words by building semantic network among words using paradigmatic relations such as synonyms, antonyms, hyponyms, and hyponyms and collocations. Teachers have to rise the vocabulary knowledge proficiency of learners by leading them broaden their vocabulary size. They should selectteaching material that contains high coverage of high frequency and a void inappropriate low frequency and unfamiliar words that borden students. Constant and careful considerations of the reality of mix- proficiency class is prerequisite to help students develop vocabulary proficiency. Teachers need to

tailor the way of teaching rather than stick to any inflexible pedagogy so that they can help students increase vocabulary knowledge in the best way. Studying all these factors about the words in addition to getting to know their superficial meanings is essential in vocabulary instruction, especially in relation to reading comprehension. Thus, focusing on vocabulary depth by touching on the paradigmatic sense relations within contexts should be an important part of reading instruction, along with the efforts to increase the vocabulary size. Moreover, the ability to utilize vocabulary depth with contextual clues can be a strategy to make up for the deficits in English vocabulary knowledge among L2 learners.. However, there are a lot of activities and materials that focus on less intensive vocabulary instruction, and most of these involve providing definitions, translations, pictures, synonyms/antonyms, all in some extent of context. Such activities are useful, particularly for the few high-frequency words and the small number of medium frequency words that students may get more repeated exposure to inside and outside of the class. Repeated exposure to and use of these words in reading, writing, listening, and speaking helps add depth as well as contextual and conceptual knowledge to the definitional knowledge that students gain through these less intensive vocabulary activities and materials. The need for systematic,

integrated vocabulary instruction for second language learners has been instructional activities which serve as a good first step to such instruction.

1. Planned/Unplanned. Teachers need to consider both planned and unplanned instruction. Planned instruction involves deciding what lexical knowledge you will teach. What are the content-obligatory lexical items to be taught? What are the content-compatible items which could be taught? What is the linguistic objective? Do you want them to reach the productive stage? Will you teach related words—which ones? Also, teachers need to plan for enriching the input, which will serve as a constant supply of synonyms for the students. Extensive planned instruction needs to be developed, but teachers also need to be open to unplanned lexical instruction which naturally arises from student need and interest.

2. Systematic/Haphazard. Instances of systematic instruction are weekly word lists, routine ways of increasing the depth of knowledge of new lexical items, and systematic activities to move students from the receptive to the productive stage.

3. Written/Oral input. There is a need for both forms of input during instruction. This dual input increases the likelihood of reaching different learning styles, but also addresses important sociolinguistic aspects such as differences in register.

4. Building on prior knowledge in L1 and L2. It is required from teachers to plan how to recycle previously studied vocabulary to teach new items and reuse words

in a variety of contexts. (Thematic-based instruction lends itself to this strategy.) They can conduct metacognitive discussions about L1/L2 differences.

5. Focus on meaning/Focus on formal features of words. Plan to teach multiple meanings of words and how various words fit together are of great value for developing indepth knowledge of vocabulary.

In the Sudanese FFL setting, some teachers who use traditional teaching methods such as Grammar-translation method or Audio-lingual method still encourage their learners to learn English vocabulary by memorizing its Arabic translational equivalents. In other words, vocabulary memorization in English education is still prevailing in Sudan. Although such ways of English teaching may broaden learners' vocabulary size, it may not improve their vocabulary depth a lot. Regular refreshing courses and seminars should be organized to equip EFL teachers with the latest methods of teaching English in general and vocabulary in particular. A word normally appears in context rather than in isolation, and as such can take on different semantic interpretations in different contexts. The concept of depth of vocabulary knowledge thus should be emphasized and with an emphasis on understanding both synonyms and collocations learners at the tertiary level in Sudan have to read a lot of academic textbooks written in English. Reading those textbooks for some of them could be effective because there are too many

unknown words or lexical combinations disturbing their understanding. In order to strengthen learners' overall vocabulary knowledge, teachers can instruct their learners how to examine a word from different linguistic perspectives such as the spelling, the pronunciation, the word formation, and the lexical combination. As for the learners, they have to realize that learning a word requires more than mere memorization of the translational equivalent. Learners can improve their receptive performance by constructing a quantity of ready-made lexical chunks and familiarizing themselves with the multidimensional knowledge of a word with a consequent improvement. They must learn to recognize it as a word and enter it into their mental lexicon. However, there are several lexicons specialized for different channels of input /output. To understand speech the auditory input lexicon must categorize a novel sound pattern (which will be variable across speakers, dialects, etc.); to read the word the visual input lexicon must learnt to recognize a new orthographic pattern (or, in an alphabetic language, learn to exploit grapheme-phoneme correspondences in order to access the phonology and hence match the word in the auditory input lexicon); to say the word the speech output lexicon must tune a motor programme for its pronunciation; to write it the spelling output lexicon must have a specification for its orthographic sequence. Students must learn its syntactic properties. They must learn its place in lexical

structure: its relations with other words. They must learn its semantic properties, its referential properties, and its roles in determining entailments (for example, the word ‘give’ is only properly understood when we know that it relates a giver, a gift, and a recipient). They must learn the conceptual underpinnings that determine its place in our entire conceptual system. They must learn the mapping of these input/ output specifications to the semantic and conceptual meanings. There is no single process of learning a word. Rather these processes are logically, psychologically, and pedagogically separable Ellis (1997).

5.3 Conclusion

The present research investigated the association between vocabulary knowledge and reading comprehension of Sudanese EFL learners. It examined the extent of intercorrelations among the three language tests: vocabulary size, depth of vocabulary knowledge and reading comprehension. It also examined whether breadth or depth was a stronger predictor of reading comprehension. This study employed a quantative approach which investigated 103 EFL learners with a similar linguistic background from two universities with almost the same proficiency levels. The data collected from the three language tests were analyzed by using t-test, correlational and regression analyses. Subsequently, the current study results were discussed in light of the research questions and hypotheses

posed earlier in chapter one. The research findings have revealed the importance and value of breadth and depth of vocabulary knowledge in reading comprehension in EFL classrooms. In spite of the fact that the results of the current study cannot be generalized to other contexts, the study has some pedagogical implications for second language teaching. Not only vocabulary breadth but also vocabulary depth should receive much more attention from teachers, practitioners and testers than has been previously thought. Teachers should also focus on designing a wide range of both vocabulary breadth and depth tasks in order to help learners increase their vocabulary knowledge and understand written texts. Furthermore, teachers should look at teaching vocabulary in two ways: widening and deepening learners‟ vocabulary. To conclude, the current research has empirically indicated that learners‟ vocabulary size should be increased; yet developing their depth of vocabulary should not be ignored. For this reason, combining both vocabulary breadth and depth in assessing reading comprehension seems to be beneficial. The study has been an attempt to examine the link between only two components of vocabulary knowledge in reading comprehension. Future research could look into other components of vocabulary knowledge in reading. Hopefully, educators, curriculum designers, teachers,

practitioners and testers will consider the roles of depth and breadth of vocabulary knowledge in reading comprehension of ESL learners.

5.4 Suggestions for Future Research

There are many external factors that should be further controlled in future research. The increase of the number of participants in future research may strengthen the reliability of the results. Investigating other Sudanese EFL learners from different language proficiency levels should be considered in the future research. The present study highlighted only the predictive power of vocabulary size and depth in reading comprehension. In order to obtain a more accurate and complete picture regarding factors add efficiency on reading comprehension attention should be given to other relevant factors. Vocabulary knowledge has been regarded as a continuum consisted of several levels of knowledge such as semantic and syntactic knowledge, knowledge of written form, morphologicalknowledge as well as syntaxmatic sense relations. In order to have a thorough understanding of the relationship between the whale construct of vocabulary knowledge and reading performance further studies should be conducted to measure the other components of vocabulary knowledge and to examine the interaction effect of these vocabulary knowledge components on reading comprehension.

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Appendixes