Vocabulary Acquisition in Reading

Electronic Glossary Versus Paper Dictionary

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By

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Electronic Glossary Versus Paper Dictionary

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To my parents who shaped my personality and encouraged my academic pursuits and to my loving sons who stood by my side every step of the way

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ABSTRACT

This paper reviews empirical research on vocabulary learning strategies and highlights the role of computers in EFL classes. As computers are introduced into schools in Lebanon, it is helpful to examine the effect of this tool on learning vocabulary. This study investigates the effect of electronic glossary and hypertext. Fifty students from the College Des Apotres-Jounieh were subjects for the study. The experimental group read the story, King Solomon's Mines, using a software which was designed to teach vocabulary through electronic glossary. They had access to understanding the meaning of the hyper linked words by simply clicking on them. The control group read the storybook and looked up the meaning of the italicized words in a monolingual paper dictionary. Data analysis of the post-test results shows no significant differences between the means of the two groups. Implications were drawn and suggestions for future research were made.

CHAPTER ONE

INTRODUCTION

Reading in a second language is an essential skill that students strive to improve so that they benefit from schooling in a society of bilingualism. Yet they are often unable to seek information or entertainment in reading materials because of limited language proficiency. Marlow Ediger (1999) reveals "one reason that pupils do not read well is that they do not possess a functional vocabulary for reading" (p. 7). If students are poor in the target language, they will find it very difficult to understand a text written in that language. Hence students should strengthen their vocabulary because it is the glue that holds ideas and content together.

One of the most difficult tasks of a language teacher today is to foster a positive attitude toward reading, with the intention of expanding on vocabulary acquisition. For several years researchers have advocated the importance of teaching vocabulary in reading comprehension. They consider it as the key element in learning a foreign language (Krashen 1989) and describe different strategies to help learners in the process of learning.

Therefore the review of literature in this paper compares between different theories from the Grammar Translation approach to Computer Assisted Language Learning. It highlights the way vocabulary was taught as well as the different approaches adapted. These approaches vary from drawing inference to using dictionaries, glossaries or computer and hypertext. Also motivation and storytelling are discussed because they are considered as contributing factors in learning vocabulary. The study is designed to find an appropriate

approach while using computer. Chapter three describes the methodology of the research, the instrument used, the subjects and procedure. The results, conclusion, implication and limitations are stated in chapters four and five.

The aim of the study is to investigate the effectiveness of a specific approach (using electronic glossary) to vocabulary acquisition and retention. It will test two types of words: (a) looked up words in a paper dictionary and (b) words with hypertext and glossary. In accordance, the following hypothesis is posed: subjects who use a computer in the reading session to learn the definitions of the highlighted words will acquire and remember more vocabulary words than subjects who intentionally look up the same words in a paper and monolingual dictionary. Consequently, the hypothesis of this study is that electronic glossary is better than using traditional monolingual dictionaries.

The methodology considered is the experimental design. This method emphasizes the use of comparative data as context for interpreting findings (Gay, 1996). The total sample size of the study consists of fifty students drawn from the first secondary classes of the Collège Des Apôtres. The students' age ranges between fifteen and sixteen years. They have all studied nine years of English as a second language. The material used for this study is a program which is specially designed to find out how computer may contribute to vocabulary learning.

The participants are randomly chosen (names from a box) so that evaluators can be assured that groups are truly comparable and that observed differences in outcomes are not the result of pre-existing differences. They will form two groups: a control group who will

read the storybook (King Solomon's Mines) and look up the meaning of the highlighted words using monolingual dictionaries, as they normally do, and the experimental group who will rather sit in the computer laboratory of the school and use the story's software. The experimental group will have access to learning the definitions of the same words by simply clicking on them. The hyperlinked words are attached to a glossary page. All participants are given the same time (one hour and a half) to read chapters one and two of the story. Then later, after two weeks of the reading session, all participants -control and experimental- sit for the same post test. Comparing the means of both groups, help in determining the effectiveness of computer on vocabulary acquisition and retention. Data is also collected and analysed after interviewing the participants of both groups.

CHAPTER TWO

LITERATURE REVIEW

While a growing number of schools in countries of the developed world are using computer, several countries such as Lebanon, are not as yet adept to the wide spread use of computer. The reason appears to be the dichotomy of opinions regarding computer in education. On one hand, there are those who are enthusiastic about the introduction of the computer into education, while on the other, stand those who are more reserved in their enthusiasm of the value of computer in language learning specifically vocabulary acquisition and retention.

In the past twenty years, there has been empirical research on vocabulary learning strategies. To Stern (1975) the successful language learners have their own special ways or strategies. Stern was probably among the first who brought up the idea of successful language learners to facilitate the learning process. His research has focused on the identification, description, and classification of useful strategies. These strategies like; using glossaries, dictionaries, relying on schemata to mention a few. In addition numerous studies have been conducted to compare the effects of different vocabulary presentation strategies while using computer on vocabulary acquisition. This can be clearly explained with CALL or computer assisted language learning. Building a large vocabulary is essential when learning to read in a second language. People with large vocabularies are more proficient readers than those with limited vocabularies (Luppescu & Day, 1993). Reviewing briefly the history of language teaching approaches and their effect on vocabulary acquisition reveals a spectrum of

theoretical positions ranging from highly cognitive approaches that stress the memorization of decontextualized lists, to highly naturalistic approaches that stress implicit, contextualized learning.

Historic Theories from Grammar Translational to Computer Assisted language Learning

In the sixteenth century Roger Ascham made specific proposals for curriculum reform and for changes in the way Latin was taught (Howatt, 1984). The approach adapted is known as the Grammar -Translation Method and reached its height in the period between 1880 and 1920. Howatt states that this approach is a way of studying the language through "detailed analysis of its grammar rules, followed by application of this knowledge to the task of translating sentences" (p. 53). In a typical Grammar -Translation text, a list of vocabulary items are presented with their translation equivalents and suitable exercises. This was thought to be too difficult for students, so there was an attempt to make language learning easier. Learning vocabulary through translation and explanation using the mother tongue was not effective. Translation attempts to provide an L1 or first language equivalent but falls short in addressing a word's manifold meanings, collocations, and usages. This approach fosters the idea that there is a simple one-to-one relationship between the two languages when in reality, this is not the case.

To Richards (1976), the linguists of the seventeenth and eighteenth centuries like Gouin, have found the above approach inappropriate because of an immense need for oral proficiency and opportunities for communication. Similarly, towards the end of the nineteenth century scholars, like Sweet (1899), have strongly criticized the Grammar-

Translation approach and believed that translation should be avoided. Sweet also advocates that vocabulary should not be taught through selections in reading texts, bilingual word lists, dictionary study and memorization. To Sweet words should be presented and practiced in meaningful contexts. They should not be taught as isolated and disconnected elements.

In the nineteenth-century, Gouin was one of the reformers to attempt to build methodology around observation of child language learning. Cited in Richard (1976), Gouin developed an approach to teaching a foreign language based on his observations of children's use of language. He believed that language learning was facilitated through using language to accomplish events consisting of a sequence of related actions. His method used situations and themes as ways of organizing and presenting oral language. Gouin established schools to teach according to his method. His emphasis was on the need to present new vocabulary in a context that makes their meaning clear, and the use of gestures and actions to convey the meanings of utterances, as in the Situational Language Teaching approach. Gouin's lessons or 'series' include sequences of sentences related to activities like chopping wood and opening the door. His school was quite popular for a time.

In 1929, the role of vocabulary was one of the first aspects to receive attention when designing a method. Coleman recommended this same year the reading of foreign language with a gradual introduction to grammar rules. The approach is referred to as the Direct Approach. According to Coleman a language could best be taught by using it actively in the classroom, rather than using analytical procedures that focus on explanation of grammar rules. Coleman adds that teachers must encourage direct and spontaneous use of the foreign language to enhance vocabulary acquisition. The learners were supposed to induce the

grammatical rules at a later stage and the teacher replaced the text book in the early stages of learning. Speaking began with systematic attention to pronunciation. Known words could be used to teach new vocabulary, using mime, demonstration, and pictures. He has justified this approach away from the analytical procedures that focus on grammar explanation.

Again vocabulary was one of the most important aspects in foreign language teaching between the years 1930 and 1950. During these years Palmer (1940) and Hornby (1950), developed the foundation of the Oral and Situational approach. Both structure and speech have distinguished this approach. Pittman (1963) has regarded speech as the basis of language and structure was viewed as the heart of the speaking ability. Also, Frisby (1957) agreed stating that "word order, structural words, and content words will form the material of our teaching" (p. 134). According to Frisby, the pupils should be able to put the words, without hesitation and almost without thought, into sentence patterns which are correct. Such speech habits can be cultivated by blind imitative drill. This reminds us of Bloomfield (1933) who set basis of a new approach referred to as the Audio lingual. The aim was a number of programs for the students to attain conversational proficiency in foreign language learning.

Audio-Lingualism follows a set order in which the new material is presented, such as a new sentence, and then the new sentence is memorized through drills. With every drill a single word changes and this does not lead to vocabulary enrichment. It was believed that performance or what the student can say in the language precedes competence or what the student knows about the rules of the language. The theory is no longer practiced because learning can be achieved in ways other than repeating or imitating what the teacher says. The reading teacher should not be content with merely increasing the size of learners' vocabulary

through such activities as repeating or making learners memorize from a vocabulary list. Instead, teachers should adopt activities that will help reinforce and recycle vocabulary to facilitate automatic lexical access. With the Audio Lingual Approach, the students became like parrots and unable to produce new utterances in real life. The repeated patterns and drills made the class boring for both the teacher and students. In addition, the choice (by the learner) of vocabulary is needed to permit individual control over the meaning of the information conveyed. When not permitted there is a danger that all that is being practiced is pronunciation. Drills which lean heavily on automatic responses without reference to appropriate contexts may give rise to little or no naturalistic speech (Bloomfield, 1933). Drills should contain a large proportion of vocabulary which meets learners' communicative needs.

Similarly, Skinner (1957) and the Behaviorists have stated that learning a second language involves learning a new set of language habits and that intensive drilling was the way to learn these habits. Behavioral theories of teaching assume that humans are conditioned to behave as they do. In other words, people respond to stimuli around them. Skinner (1957) and Brown (1980) have assured that human behavior is based on three elements; stimulus, response and reinforcement. They considered that language learning is a process of mechanical habit formation. Thorndike (1936) stipulated that responses that have rewarding consequences are strengthened or learned and "responses that have negative or aversive consequences are weakened or extinguished" (p. 94). Therefore, a person's behavior can be controlled through reward and punishment. In the classroom, this translates to: instruction can be designed so that learning can be controlled and measured. Teachers organize and directly transmit the information to students and strengthen the transmission

through repetition and positive reinforcement, or rewards. With the behaviorists, vocabulary learning took place through practicing drills. Unfortunenately these drills were most of the time meaningless and marked by lack of interaction. In reality the behaviorists minimized the role of understanding and focused more attention on structure and pronunciation.

Meanwhile the sociolinguist Firth (1957) stressed that language needed to be studied in the broader sociocultural context of its use, which included participants, their behavior and beliefs, the objects of linguistic discussion, and word choice. Firth (1957) and Halliday (1964) agreed on the creativity and uniqueness of language, so there has been a tendency to teach meaning more than structure referring to an approach known as Communicative Language Learning. From the 1970's onwards, the work of linguists like Wilkins (1976) and Johnson (1982) have given prominence to this approach. In fact most textbooks moved towards the methodologies concentrating on student interaction, humanistic values and authentic materials. Learners began to be viewed as individuals and learning theories reflected this with social and emotional factors coming to the fore. Moreover students were encouraged to use authentic reading to acquire vocabulary which had been almost completely ignored since the 1930's and with the Grammar Translation approach.

Vocabulary emerges again to be emphasized alongside grammar and phonology with the Communicative Language Learning. Littlewood (1981) states that the most characteristic feature of the Communicative Language Learning, is that it pays "systematic attention to functional as well as structural aspects of the language" (p. 12). Hilgard (1975) has described the same approach as learning by doing tasks since it is learner centered. The acceptance of this approach is attributed to the fact that it is based on language learning through

conversation. Learners learn vocabulary through using it to communicate in daily life situation. For this reason, Communicative Language Learning recommends that school syllabi be woven around tasks and procedures.

As has been highlighted in the previous section, vocabulary teaching has been differently treated. It was either ignored while grammar was highlighted or taught through drills and memorization of word lists. Eventually, the concept of teaching developed into learning through context and oral conversation. From 1985 onwards, more attention was given to vocabulary learning and it culminated in the publication of the Lexical Syllabus when Micheal Lewis (1997) highlights the role of the words and words' combination in the lexical approach. According to Lewis instructions "should focus on relatively fixed expressions that occur frequently" (p. 212). To Lewis students should be aware of the existence of chunks. Most learners equate 'vocabulary' with 'words', and there is a tendency among learners to translate any professional text word-for-word, i.e. they usually try to simplify most lexical phrases to separate words. The role of teachers is to raise students' awareness of the existence of lexical items like for example "to hold a knife to one's chest", "a crime has been committed", "He was shot dead by his partner" etc. One of the central activities in the Lexical Approach is to encourage students to identify language items in authentic materials. Another important point is that language units should be learned in context. Contextualized learning is preferable, because learning vocabulary is not a simple memorization of lexical phrases. They must be integrated into the learner's linguistic resources so that they are spontaneously available when needed.

Also Richards (1976) has interpreted the role of lexis to communicate the individual's needs. "They are the stock to be used and constantly enriched" (p. 77). The lexical approach, to Lewis (1993), is based on the idea that an important part of language acquisition is the ability to comprehend and produce lexical phrases. Lexis is misunderstood in language teaching, he adds, because of the assumption that grammar is the basis of language and that mastery of the grammatical system is a prerequisite for effective communication. Nattinger (1992), one of the lexical approach advocates, insists that grammar is not the basis of language and that mastery of the grammatical system is not a prerequisite for effective communication "language consists of grammaticalized lexis, not lexicalized grammar" (p. 62).

Likewise, Sansome (2000), when defining the key principle of the lexical approach, makes a distinction between vocabulary traditionally understood as a stock of individual words with fixed meanings and lexis, "which includes not only the single words but also the word combinations that we store in our mental lexicons" (p. 25). To Sansome, the language consists of meaningful chunks or gambits. The existence and importance of these lexical units has been discussed by a number of linguists. For instance, Willis (1990) argues that the existence of lexical units in a language such as English serves the needs of the English language learners who store and reuse them as they generate utterances from scratch. In addition Lewis (1993) suggests a taxonomy of "lexical items that starts with simple words to sentence frames and heads" (p. 85). Within the lexical approach, special attention is directed to collocations and expressions that include institutionalized utterances and sentence frames and heads. As Lewis maintains, "instead of words, we consciously try to think of

collocations, and to present these in expressions, rather than trying to break things into ever smaller pieces, there is a conscious effort to see things in larger, more holistic, ways"(p. 24).

In the lexical approach, lexis in its various types is thought to play a central role in language teaching and learning. Nattinger (1992) suggests that teaching should be based on the idea that language production is the piecing together of ready-made units appropriate for a particular situation. Comprehension of such units is dependent on knowing the patterns to predict in different situations. "Instruction therefore, should be centered on these patterns and the ways they can be pieced together, along with the ways they vary and the situations in which they occur" (p. 85). Activities used to develop learners' knowledge of lexical chains include extensive reading in the target language. Advances in computer-based studies of language, such as corpus linguistics, have provided huge databases of language corpora, including Bank of English Corpus.

Willis (1990) affirms that it was the most ambitious attempt to develop a syllabus based on lexical rather than grammatical principles. Willis has attempted to provide a rationale and design for lexically based language teaching and suggests that a lexical syllabus should be matched with an instructional methodology that puts particular emphasis on language use. Such a syllabus specifies words, their meanings, and the common phrases in which they are used and identifies the most common words and patterns in their most natural environments. Thus, the lexical syllabus not only subsumes a structural syllabus, it also describes how the "structures" that make up the syllabus are used in natural language.

Zimmerman (1997) suggests that the work of Sinclair, Nattinger and Lewis represents a significant theoretical and pedagogical shift from the past. They challenge a "traditional view of word boundaries, emphasizing the language learner's need to perceive and use patterns of lexis and collocation" (p. 87). To Zimmerman "language production is not a syntactic rule-governed process, but the retrieval of larger phrasal units from memory"(p. 88). The lexical approach to second language teaching has received interest in recent years as an alternative to grammar-based approaches. Lewis, (1993) explains "instruction focuses on relatively fixed expressions that occur frequently in spoken language, such as, "I'm sorry," "I didn't mean to make you jump," or "That will never happen to me," rather than grammatical rules in originally created sentences"(p. 82).

The mental lexicon is not only mentioned in the lexical approach but also in the design of CALL programs. Ellis (1994) proposes computer programs that build a sizeable mental lexicon to enhance language learning. CALL or computer assisted language learning programs have been actively applied to foreign language reading, however and despite its popularity there is still some uncertainty and skepticism with respect to using computer in classrooms. Researchers have tried to examine the usefulness of its courseware which provides a range of on- screen activities that give special attention to vocabulary. Ellis states that "CALL is linked with searching for the effective way to acquire vocabulary" (p.8)

In FL or foreign language learning, dictionary use is one of the key skills and strategies suggested by reading researchers (Nuttall, 1982). "Efficient dictionary use is a strategy in itself and crucial to reading with understanding. Students need to know when to use a dictionary (and which kind) and how to use it" (p. 133). Hence, FL readers are required

to know how to locate the meaning of an unfamiliar word by using a dictionary. The significant difference between paper dictionaries (conventional dictionaries) and computerized dictionaries (electronic dictionaries) is in presentation modality. Paper dictionaries provide printed information in sequence from beginning to end. Computerized dictionaries allow learners to get auditory and visual information presented by text, sound or graphics through diverse exploration paths. Nutall notes that electronic dictionaries can "start with essential data only and then allow users to progress from there to explore the lexical information in as much detail as they require and the lexicon can offer" (p. 77). As stated by Aust (1993), electronic references such as on-line dictionaries and glossaries represent "one of the most rapidly growing forms of electronic text" (p. 63).

Chun and Plass (1996) reported three studies of the effectiveness of multimedia annotations on vocabulary acquisition. Participants were second-year students of German at three universities. The students watched a video preview that gave an overview of a German short story and then read the story and looked up the meaning of individual words by freely selecting any of the different types of annotations available in the form of text, pictures, and video. They subsequently took a vocabulary test. In all three studies, the students were able to look up words that had been annotated in a multimedia program. For this, they clicked on the word and held the mouse button down, and then dragged the word to icons indicating the types of annotations available (text definition, picture, and video) and dropped it on the icon representing the desired annotation. All types of annotations accompanied by an audio component appeared on the left side of the screen. The results showed significantly higher scores for words that were annotated with pictures and text than for those with text only.

In addition several studies using computer-mediated texts with glossaries demonstrated the positive effects of electronic glossaries on vocabulary learning or reading comprehension. Rickman (1990) for example concluded that reading comprehension can be increased when computer-mediated texts are used to expand or to control options for acquiring information.

A similar approach was adopted for the current study. Leffa (1992), in a study accessing the effect of electronic glosses, found that a computer-mediated electronic glossary was more efficient than a traditional bilingual dictionary. To Leffa it allows the beginning level students to understand thirty eight percent more of the passages, using fifty percent less time. Eventually, CALL research in reading has tried to examine various factors of computer-assisted reading instruction to suggest ways in which students can improve their vocabulary acquisition and retention.

Reviewing the different approaches from Grammar Translation to Computer Assisted Language Learning, the aim was to examine vocabulary acquisition from both the teachers' and the learners' perspective to find out which approach can help to extend and enrich their vocabularies. With the Grammar Translation, the learners focused more on grammatical structures and translation than vocabulary learning. There was also a lack of oral proficiency. Then comes the Situation language teaching approach to foster the dependence on mimicry and memorization of set phrases. This for sure did not lead to vocabulary enrichment. Also the Direct approach did not achieve this goal although it encourages the spontaneous use of the foreign language. Lessons were presented in the target language and the mother tongue

was never used. With this approach there was a major fallacy to believe that a second language should be learned in way in which first language was acquired.

Similarly with the Oral Situational approach, language learning was supposed to take place through blind imitative drill and students act like parrots in front of their teacher just like in the Audio lingual approach where the teachers rely on repetition and positive reinforcement, or rewards to enhance performance through memorized dialogues. On the other hand, the learners in the Communicative Language Teaching were more involved in interacting with people. Fluency and meaning was a primary goal but this also demanded great effort to build school syllabi on specific tasks as well as to use authentic material such as magazines, newspapers graphic and visual sources around which communicative activities might be constructed (Hilgard, 1975). These communicative needs were also stressed by the Lexical approach which pays special attention to lexical phrases. But with the introduction of computer to language teaching, new programs were introduced like those of CALL or computer assisted language learning. These programs included electronic glossaries and computerized dictionaries to name only a few. .

Importance of Vocabulary in Reading

The question of this study is whether computer can be more helpful when different approaches from the past to the present had their various drawbacks. Research has greatly increased our understanding with respect to the role of computer, and vocabulary in acquiring a foreign language reading comprehension (Eskey 1988). To Eskey "people with large vocabularies are more proficient readers than those with limited ones since it enables them to rapidly and accurately decode the language" (p. 78). Similarly to Davis (1968) the factor that

correlated most highly with comprehension is knowledge of word meaning. Other researchers such as Beck (1982) stress the importance of vocabulary in reading comprehension. Foreign language vocabulary is viewed as a primordial factor in successful communication and, to a great extent in high-level reading ability and comprehension. However, they go further to suggest that simply improving a reader's vocabulary is not sufficient; comprehension depends not only on the sheer size of the reader's vocabulary but also on the facility with which a learner can access the known word meanings represented in memory. Daneman (1988) suggests that since words are the "building blocks of connected text, constructing text meaning depends, in part, on the success of searching for individual word meanings" (p.90).

To Marlow Ediger (1999) reading fluency and text comprehension necessitate vocabulary instruction. Ediger states "researchers have acclaimed vocabulary knowledge as the single most important factor in reading comprehension" (p.10). In addition to comprehension, vocabulary knowledge increases reading skills. Other researchers, such as Carter (1987), postulate that fluent readers automatically recognize most of the words they read. It appears that the "automatic lexical access frees cognitive space for constructing meaning from the text" (p. 47). In other words, good readers are good decoders.

Nuttall (1982), like Read (2000), recommends extensive reading because proficient readers can acquire vocabulary "incidentally" as well as "intentionally". Nuttal has differentiated between the intentional and incidental learning. Intentional vocabulary learning, by definition, is intended learning of vocabulary. Incidental vocabulary is learnt as a by-product of another activity, without the learner's conscious decision to learn the words. In a comprehensive review of research on incidental vocabulary learning, Krashen (1981)

concluded that incidental vocabulary learning, or "acquisition", achieves better results than intentional vocabulary learning. To Krashen the reading performance in a second language is largely shared with the reading ability in the first language. It transpires that L1 reading performance is an indicator of L2 or second language reading performance. Thus, the ability to read in one's mother language could be applied in attempts to read foreign language texts. According to Beck (1982), "people learn to read only once, whatever the language of their first literacy and learning to read a second language is an extension of that literacy" (p. 50).

On the other hand Wallace (1982) states that "the mother-tongue speaker learns to be content with approximate meaning. They are satisfied with a meaning which makes sense of the context." He compares this view of reading to the work of secret agents: In the secret service there is a principle called the 'need-to-know' principle. In other words, agents are not told more than they need to know in case they get caught and betray their comrades. "Perhaps in vocabulary learning the 'need-to-know' principle could also be applied" (p. 33). Students should not be told more about the meanings of words than they need to know. Wallace also believes that specific reading strategies may vary from language to language yet the basic processes of deriving meaning from systematized graphic shapes seems to be the same process.

Approaches to Vocabulary Learning

In fact, there is already evidence in recent studies of second language learners that a combined approach is superior to incidental vocabulary learning alone. Similarly, Zimmerman (1997) found that three hours a week of explicit vocabulary instruction plus some self-selected reading were more effective than reading alone. He also found that reading

plus explicit instruction led to superior gains over a period of three months. Sanaoui (1995) states that the ability to read successfully implies text comprehension and the knowledge of different reading strategies and skills. Developing students' strategies for handling unknown words is one of the principal challenges of English reading classes. These are defined by Sanaoui as "special thoughts or behaviors that individuals use to comprehend, learn, or retain new information" (p. 20). They are what learners do to learn and do to regulate their language learning. "They are actions, behaviors, steps or techniques students use, often unconsciously, to improve their progress in apprehending, internalizing, and using the L2" (p. 22). A parallel attitude is carried by Young (1997), who assert that there are certain strategies or clusters of strategies which are linked to particular language skills or tasks.

Read (1988) explains the three approaches to learning vocabulary; incidental learning, explicit instruction, and independent strategy development. The incidental learning of vocabulary requires that teachers provide opportunities for extensive reading (p. 85). Extensive reading refers to the less rigorously supervised reading that pupils will do both in and outside the classroom. The texts read will normally be those of their own choosing, even though the teacher's guidance will be crucial at the beginning. Likewise, Krashen (1981) argues that extensive reading will lead to language acquisition, provided that certain preconditions are met. These include adequate exposure to the language, interesting material, and a relaxed, tension-free learning environment. Second, it can enhance learners' general language competence and consolidate previously learned language. Moreover Read states that "explicit instruction involves diagnosing the words learners need to know and elaborating word knowledge" (p. 88). Similarly, Prince (1996) agrees that knowing a word means knowing more than just its translated meaning or its L2 synonyms. He identifies

various aspects of word knowledge such as knowing "related grammatical patterns, affixes, common lexical sets, typical associations and how to use the word receptively and productively" (p.104). Kelly (1991) also maintains that knowledge of roots can assist in vocabulary development in that it helps students "predict or guess what a word means, explain why a word is spelt the way it is, and remember the word by knowing how its current meaning evolved from its metaphorical origins" (p. 80).

Nation (2001) also asserts that teachers should create opportunities to meet recently learned words in new contexts that provide new collocations and associations. Exercises that can deepen students' knowledge of vocabulary include: sorting lists of words and deciding upon the categories; making semantic maps with lists either provided by the teacher or generated by the learners; generating derivatives, inflections, synonyms and antonyms of a word; making trees that show the relationships; identifying or generating associated words; combining phrases from several columns; matching parts of collocations using two columns; completing collocations as a cloze activity; and playing collocation crossword puzzles or bingo (Lewis, 1993). Vocabulary learning is more than the study of individual words. Lewis has observed that a significant amount of the English language is made up of lexical phrases, which range from phrasal verbs (two or three words) to longer expressions. Explicit instruction is particularly essential for beginning students whose lack of vocabulary limits their reading ability. Coady (1997) strongly recommends the study of the three thousands most frequent words until the words' form and meaning become automatically recognized. The first stage in teaching these three thousands words commonly begins with word-pairs in which an L2 word is matched with an L1 translation. According to Coady, the role of graded (i.e., simplified) readers is to build up the students' vocabulary and structures until they can

graduate to more authentic materials. Low proficiency learners can benefit from graded readers because they will be repeatedly exposed to high frequency vocabulary.

The third approach that Read advocates for vocabulary learning is the independent approach which involves practicing guessing from context and training learners to use dictionaries. Guessing from context is a difficult task but if regularly practiced may contribute to deeper word knowledge for advanced learners as long as they pay attention to the word and its context. In addition, training in the use of dictionaries is essential for learners relying on the independent strategy. To Knight (1994), compared to incidental learning, repeated exposure to words combined with marginal glosses or bilingual dictionary use lead to increased learning for advanced learners. In this study students use this approach as they use the electronic glossary in a tension free computer environment.

Drawing Inference from Context

Sansome (2000) defined vocabulary learning as a dynamic process involving "metacognitive choices and cognitive implementation of a whole spectrum of strategies" (p.58). Learning new words from context means to encode the new word in the context where it appears. Incidental learning alone is not enough in developing functional vocabulary in a second or foreign language. Similarly, the intentional and direct learning of vocabulary does not, and should not rule out contextual learning. Sansome believes that learning new words from context might well be only the "first step learners employ, and they should carry on, with metacognitive choice of words and treatment, to encode the new word together with the context where it appears" (p. 60). Most empirical studies on contextual learning have compared incidental vocabulary learning from context with other forms of vocabulary

presentation. In reading comprehension learners often use strategies like guessing. Rubin (1975) suggests that good L2 learners are accurate guessers; they focus on form by looking for patterns and analyzing them. To Ellis (1994), extensive reading offers qualitative gains with respect to newly learned lexis. Students can infer context-based meanings which are generally not found in dictionaries, such as connotations, collocations, or referential meanings. Moreover, every time a word is repeated in the text, it is in a slightly different context. This helps the learner develop a deeper and more accurate understanding of word meaning, and fosters vocabulary acquisition.

Grabe (1997) believes that the rapid and accurate decoding of language is important to any kind of reading and especially important to second-language reading. Good readers know the language. They can decode for the most part, not by guessing from context or prior knowledge of the world, but by a kind of automatic identification that requires no conscious cognitive effort. It is precisely this "automaticity" that frees the minds of fluent readers of a language to think about and interpret what they are reading. Honeyfield (1977) states that "guessing from context is a complex and often difficult strategy to carry out successfully" (p. 78). He believes that learning words in context and not in isolation is an effective vocabulary learning strategy. There are a number of different context clues which help a reader infer the meaning of a new word. In using morphology for instance, the students can derive word meanings by examining morphological features, like prefixes, suffixes, and root words, whereas identifying the referents of pronouns may provide a clue to the meaning of an unfamiliar word. Usually writers use synonyms and antonyms so that the reader can find the meaning of the new item in the same sentence. They also rely on alternatives, examples, hyponym and cohesion to facilitate comprehension. To Nation (1987) clues are not enough

since to guess successfully from context; learners need to know about nineteen out of every twenty words of a text. Kelly (1991) agrees on stating that "unless the context is very constrained, which is a relatively rare occurrence, or unless there is a relationship with a known word identifiable on the basis of form and supported by context, there is little chance of guessing the correct meaning" (p. 74). Proficient learners using texts that are not overly difficult can be expected to use this strategy more effectively than low proficiency learners. Guessing from context is initially time consuming and is more likely to work for more proficient learners. According to a study conducted by Knight (1994), a procedure for guessing from context begins with deciding whether the word is important enough. Knight states that "This decision is itself a skill that requires practice and experience" (p. 44). Teachers can assist learners by marking words, which learners should try to infer.

Schemata and Retention

Psychologists, linguists, and language teachers have been interested in vocabulary learning strategies for a long time (Carrell, 1987). Numerous studies have been conducted on vocabulary acquisition and retention especially in the last two decades. The hypothesis under this line of research is the belief that the vast majority of words in L1 come from extensive and multiple exposures through use rather than direct instruction, and therefore, vocabulary learning in a second language should follow the same route (Coady, 1997). A number of questions have often been asked: Does guessing lead to incidental vocabulary learning in a second language? How many exposures are needed to learn a word incidentally? Is incidental vocabulary learning better than intentional learning? Is relying on schemata a good strategy for EFL, or English foreign language students? The schema is the reader's preexisting

concept about the world and the text to be read. Into this framework, the reader fits what he or she finds in any passage. Carrell (1987) explains that if new textual information does not fit into a reader's schemata, the reader misunderstands the new material, ignores the new material, or revises the schemata to match the facts within the passage. One important metacognitive strategy to infer the meaning of unfamiliar words is by relying on schemata. Daneman (1988) suggests that simply improving a reader's vocabulary is not sufficient. "The reader should be able to access the known word meanings represented in memory" (p. 80). Research on human memory also has pedagogical implications on vocabulary teaching. It has been postulated that our experience of the world is stored in "scripts" or schemata (Rumelhart, 1980) of related events in the human memory.

Schema theory is relevant both to comprehension during reading and retrieval of what has been comprehended after reading. Rumelhart discusses two interrelated aspects of the process of comprehension related to different functions of schemata. He refers to these as "data-driven and concept-driven processing" (p. 58). In data-driven processing, incoming information activates relevant schemata in the process of decoding a text. These schemata in turn activate other possible schemata of which the first may be a part, that is, the larger concepts which may include the initially activated concepts. In turn, concept-driven processing concerns the use of these larger schemata structures to predict meaning. Once the high-level schemata have been activated, other sub-schemata are used to test the larger conceptual framework against further incoming data. This process is dynamic and occurring on a number of levels simultaneously. Rumelhart assumes that words are stored in semantically related networks.

Similarly Sinclair (1990) reports that research has shown that, individuals tend to recall words according to the semantic fields in which they are conceptually mapped. Sinclair finds that advanced students remember words that are stored in semantic clusters.

Reading is an interactive process between a reader and a text, a process in which the reader formulates meaning through a balance of top-down and bottom-up. To Nuttal (1996), there are approaches to the text, as understood by theories of mental schemata. When reading, students interpret the text in light of their previous knowledge and simultaneously modify their original schemata as new information is learned. From this perspective, there are two simultaneous and complementary ways of processing a text: top-down and bottom-up. In top-down processing, readers use their prior knowledge to make predictions about the text. In bottom-up processing, readers rely on their knowledge of language to recognize linguistic elements; letters, words, and sentence structure for the construction of meaning. According to Eskey, teachers should be cautioned not to neglect the essential bottom-up issues such as vocabulary knowledge and word recognition (Eskey, 1988). They should encourage learners to read for meaning. To Eskey vocabulary knowledge and word recognition are two sides of the same coin in the process of reading, that is, decoding the written word for comprehension of a text.

It is logical to suppose that readers must understand the individual parts of the text before they can grasp the overall meaning; but in practice, effective readers continually adopt a top-down approach to predict the probable theme and then move to the bottom-up approach to check their assumption by reading details. This implies that in teaching reading, teachers

should also instruct students to start their reading by using a top-down approach and later switch between the two approaches, as each kind of interpretation supports the other.

Carell (1987) clarifies that the schema theory is based on the belief that "every act of comprehension involves one's knowledge of the world as well" (p. 73). Readers' mental stores are termed 'schemata'. Schema theory is a theory of knowledge, how knowledge is constructed, and how knowledge is used (Rumelhart, 1980). To Rumelhart, comprehension and learning can be seen as "melding new concepts with one's existing schemata, refining or elaborating these existing schemata, and at times, creating new schemata" (p. 80). During reading, existing schemata are activated by incoming data, allowing the reader to anticipate meaning. A schema is important because a text must first be comprehended to be remembered.

Rumelhart (1980) also states that the methods of facilitating comprehension during reading include the conscious monitoring by the learners. "Having learners outline texts in diagrams or graphically display, the relationship of sentences within a paragraph is one method of raising a reader's consciousness of these structures and relationships" (p. 25). The creative mapping strategy for example, helps in vocabulary acquisition and retention since they activate the students' background knowledge through pre-reading discussions and using graphic organizers to display information. Semantic mapping also helps students recognize the organization of information in content readings to promote memory development. In this method the teachers provide the students with the definition of the major vocabulary to help them discuss the topic and to create interest in the material read.

Also Hulstijn (1993) believes that the retention of information is determined by the way in which this information is processed. The more a learner pays attention to a word's features the more likely it is that the new lexical information will be retained. Such close attention to word features, which is often associated with performing a vocabulary task, has also been referred to as deep processing effort. Nation (1989) explains that retention of words attended to will happen regardless of whether vocabulary learning is intentional or incidental. Hence, effective incidental vocabulary learning is a conscious learning process. Yet "deep processing during the first encounter will not in all likelihood induce long term retention" (p. 36). There is evidence to show that repeated exposures to a new word in language input reinforce learning, though it is unclear how many repetitions are necessary for this. Nation suggests that the number is five.

Using Dictionaries

Nation (1989) also states that if "learning is dependent upon attention and quality of information processing, then effective teaching should include tasks which direct the learner's attention to the words targeted for instruction and require elaboration of the words" (p. 65). One such task is the use of dictionaries to look up the target words in a reading assignment. It has been found that the use of dictionaries or glosses can indeed contribute to small increments in vocabulary learning (Hulstijn, 1993). ESL, or English second language readers need a massive receptive vocabulary that is rapidly, accurately and automatically accessed. Carrell (1987) suggests using dictionaries as a "parallel" approach in which vocabulary and schemata are developed. To Goodman (1988), schema-theoretic applications do not always result in improvements in comprehension, particularly where they result in

"insufficient attention to textual detail, or where there is an increase in schema-interference by, for example, the activation of dominant or negative schemata" (p. 44).

Also, there is some evidence that the contextual and background information provided may not always even be utilized by the learners. As a result, dictionary use should be encouraged especially for low-level students, who have poorer inferential skills of guessing from context or those who do not activate their schemata positively. Nuttal (1996) encourages extensive reading where vocabulary is learnt intentionally. During a reading activity, words are looked up in a dictionary in order to understand the text and to perform a comprehension task. It has been shown that students who use a bilingual dictionary learn more vocabulary than students who read without a dictionary. However, when students turn to a dictionary for every word they do not understand, they "lose sight of the meanings within the text as a whole" (p. 78). Teachers and textbook designers have come to understand this, and the result has been a movement toward the "explicit instruction of fluency oriented learning strategies such as guessing from context" (p. 98).

During intensive reading, Baxter (1980) has noticed that guesses "were consistently checked against the dictionary" by the high achievers. In contrast, lower level readers "tended to rely more heavily on guessing from context (p. 70). Examining the different types of dictionaries, Baxter (1980) has noticed that most experts and teachers recommend using a monolingual, rather than a bilingual dictionary. He described one common problem amongst EFL students: not being able to access a word in speech and lacking the ability to circumvent that word by providing a definition in the target language. He attributed this problem primarily to students' use of bilingual dictionaries and strongly advocated the use of

monolingual dictionaries that would encourage conversational definition. In general, Baxter has reiterated the basic concerns of most language teachers, that bilingual dictionaries 1) encourage translation; 2) foster one-to-one precise correspondence at word level between two languages; and 3) fail to describe adequately the syntactic behavior of words.

On the other hand, Knight (1994) has found that the bilingual dictionaries lead to better results in vocabulary learning. According to him this kind of dictionary may have some advantages over traditional monolingual dictionaries. Since a combination of good features of both types of dictionaries is not impossible, there has been considerable interest in the last twenty years in the new bilingualised dictionaries, hybrid dictionaries that essentially provide translations in addition to the good features of monolingual dictionaries. Evaluation of the effectiveness of such dictionaries emerged mainly in the 1990s. Laufer (2000) compared monolingual, bilingual, and bilingualised dictionaries among 123 EFL. It was found that irrespective of the learners' proficiency level, the bilingualised version was either significantly better than, or as good as, the other two types in both comprehension and production tasks.

Scholfield (1982) believes that bilingualised dictionaries can do the job of both a bilingual and a monolingual dictionary. Bilingualised dictionaries include L2 definitions, L2 sentence examples, as well as L1 synonym. Comparing the three types the monolingual, bilingual and bilingualized, his study showed that the bilingualized dictionary is more suitable than the other two types for learners of all levels as a learning tool in comprehension of EFL texts. The use of this dictionary seems to be a solution that compromises the two views, that of supporting the FL monolingual dictionary (i.e., the teachers' view) and that of preferring the

bilingual dictionary (i.e., the students' view). However, in the last few years this preferred solution has given way to a serious competitor: the electronic dictionary, which is the second solution available nowadays for dictionary problems. The electronic dictionary, which is usually a bilingual dictionary, is now the EFL students' first choice because of its main advantage, which is speed.

Using Glossaries

Another way students can learn vocabulary is by using a glossary. This is the easiest, since it does not even demand the effort of searching and then choosing the appropriate meaning out of several possible ones. This study is an extension of earlier investigations on reading strategies like the one of Schmitt (1997) and Channell's (1988). Unlike Krashen (1989), who sees acquisition (incidental learning) and learning (intentional learning) in opposition, Channell considers them to be a dynamic aspect. To Channell, "learners should be encouraged to make their own lexical associations when they are actively learning new vocabulary" (p. 94). The associations created by the learner between form and meaning while attending to the unknown lexical items either during attempts to guess or checks of meaning in reference sources (glosses or dictionary) lead to successful L2 vocabulary acquisition. In fact the same was observed in this study. Channell believes that checking a guessed meaning in a dictionary brings positive reinforcement. The present study is concerned with vocabulary acquisition in a multimedia environment. Several fundamental research questions have been investigated regarding this issue. They include the effectiveness of electronic glossary via hypertext for vocabulary acquisition, as well as the attitude of students toward paper

dictionaries. Therefore, the present study may lend a hand at a time when technology is used in many EFL classes.

On the other hand Hulstijn (1993) doubts whether using a glossary leads to retention of word meanings in memory. He explains this shortcoming by proposing "a mental effort hypothesis, which predicts that the retention of an inferred word meaning will be higher than the retention of a given word meaning" (p. 78). The student who constantly depends on a glossary in order to be able to read a text is not likely to become an independent reader. Recent developments in computer have triggered a whole line of interest in online dictionaries or vocabulary glosses integrated into language learning software or web pages (e.g. Hulstijn, 1993; Knight, 1994). To Koren (1997), the online vocabulary glosses offer the learner a quick access to the information s/he needs and clicking on a hyperlink is a look-up strategy totally different from flipping through a bulky dictionary, locating the relevant entry, and finding the contextually meaningful information.

In the 1980s and early 90s, research mainly focused on categorizing the reading strategies found in the studies of the previous decade. Theorists, like Fry (1980), have focused on the student centered classes, where teachers become facilitators and students active thinkers who construct their own knowledge. In this same period, there has been an explosion of interest in using computer for language teaching and learning. Electronic texts have afforded a rich variety of help namely in defining words and phrases to readers. In a hypertext for instance, a word could be explicated with video, animation, sound, and text upon demand. As a result, computer in general and hypertext in particular can be helpful in EFL classes.

Computer and Hypertext

Nowadays, vocabulary learning through computers is clearly revealed with CALL (Higgins, 1984). It was evident that with the Grammar Translation approach, students learn a lot about the language rules through translation and memorization of vocabulary patters. Eventually, this did not result in the acquisition and retention of vocabulary in a foreign language but rather a huge reliance on dictionaries. With the oral situational approach, the teachers depend on the association of the target words to different situations yet; repetition caused boredom to both students and teachers. Similarly, the audio lingual approach focused on the memorized dialogues and very few written texts, so it did not reflect real life situations. On the other hand, when students used to deviate from the memorized script, they ended up thrown in confusion. In the communicative approach, the teachers strived to make students communicate their needs in a warm environment, but they did not provide enough time for correction which causes a barrier to learning a foreign language. While as with CALL, or using computer programs for language learning, the advantage is visible in the way the text is presented as well as in providing direct feed back to the users.

Higgins (1984) explains the benefits of computer as motivating sources. The multimedia systems attack two senses at the same time: sight and hearing. Videos, pictures, and sound presented by computer stimulate the above mentioned senses simultaneously. Computer is beneficial for language learning. Much of language learning involves repetitive drill and computer is excellent for that. "Self-paced drill, practice, and introduction of new words and concepts are handled very well in the computer environment" (p. 78). The language learning software today takes full advantage of the multimedia PC. According to

Higgins, the use of high tech equipment plays an essential role in the improvement of the teaching learning environment. Consequently computer can bring support to the learning strategies acquired by students.

Hypertext in computer is a unique application. Unlike many computer programs such as word processing, it has no parallel application in the real world. Hypertext is unique because it uses the technology to enable readers to pick and choose blocks of text by interacting with the machine. Theodore Nelson (1987) coined the term "hypertext" to describe nonsequential reading and writing displayed on a computer screen. Nonsequential reading, as defined by Nelson, is text that branches and allows the reader to pick and choose blocks of text by interacting with a computer. In describing his original concept of branching, Nelson envisioned an online system where all of the world's literature would be digitally stored on computer. Electronic links or branches would interactively connect the digital texts as the reader goes through them. The reader can easily move back and forth between texts to grasp the different author's ideas.

Similarly, Landow (1992) insists on the pedagogical role of hypertext. This program can be used during any lab session as a method of self-study. Students can use hypertext instruction beyond a single semester or an introductory computer course to reinforce skills and concepts. The benefits of learning to use hypertexts include providing the student with a more active role than is possible with traditional textbooks. Landow (1992) states: "a principle point is that the student is in control and may use his initiative dynamically" (p. 58). Students are required to make decisions about the information they are reading and accessing through the computer. They must be mentally active while they are interacting with the

information. Consequently, learning with hypertext becomes more student-centered since the emphasis of hypertext is on an active reader. Sengupta (1996) agrees that hypertext technology enables a quicker and more convenient access to the meanings. The availability of hypertext technology enables teachers to teach foreign language in an efficient manner. "These advantages cannot be achieved through the linear scanning or use of a textbook which usually demands reading linearly (from beginning to end), does not offer choices as to what or when to read" (p. 104).

Moreover, hypertext is best when all students are asked to adapt their speed to the average reader or to the teacher. Hulstijn (1993) describes the use of hyper-reference dictionaries: "The advantage of such on-line dictionaries is that they provide immediate access to adjunct information. They are quicker than any electronic dictionary and have a direct return path to the text" (p. 87). Hulstijn also made use of hypertext technology by using an on-line glossary in order to enable the subjects of his study get meanings of words while reading a text from the screen. Landow (1992) strongly supports this notion. He states that "the greater speed of making connections in hypertext permits the reader to make connections that would otherwise be difficult and time consuming" (p. 99). The only disadvantage Landow can see to using hypertext to provide definitions is that a student might not develop the ability to understand the meaning of a passage without knowing the definition of each single word.

Hypertext learning environments provide students with a new type of interactive learning and reading experience. Hypertext documents are different from printed texts in three ways. First it requires that students be familiar with computer and know how to access

the hypertext information. It uses icons that are not found in printed texts, such as arrows, buttons, and scrolling bars as a navigation tool to guide a student through the text. Landow (1992) states that "students are now experiencing a text as part of a network of navigable relations instead of a linear sequence of ideas" (p. 126). It is this characteristic of hypertext that creates an interactive style for reading textual information, and consequently is altering the form of reading. Therefore, hypertexts are fundamentally different from printed texts and they change a student's instructional experience with texts by requiring a student to learn interactive reading and text navigation skills.

Most people conceive of text as a collection of ideas that a writer has carefully selected, framed, and organized into a coherent sequence or pattern in hopes of influencing a reader's knowledge, attitudes, or actions. A key element in this conception of text, from the perspective of both writers and readers, is structure. Barrett (1998) has some important points to make about the rhetorical strategies of hypertext, i.e. structure, choice of links. In his study, students did poorly because of the structure that hypertext has. "The exit points and entrance points to information are different for each person, and thus each person's experience in a hypertexted document will be different" (p. 78). As Barrett points out, "Relevance is in the mind of the beholder and that the investigator's function is to inquire what connections might exist among various kinds of data and how their relative value might be evaluated" (p. 85). To Sengputa (1996), readers may or may not choose to follow links to nodes with definitions, examples or explanations but at least some students (those with particular cognitive styles or reasoning ability) may learn more effectively when they choose their own reading order "instead of following sequences imposed on them"(p. 78) by teachers or writers. Further, self-regulation forces readers to adopt more active reading strategies.

Using computer in ESL classroom is important for both teachers and learners. Computer can handle a range of activities and carry out programmed functions at amazing speed. Ambron (1988) states that an increasing number of students are interested in using computer for a wide range of purposes: to learn, to access a wide variety of information, to communicate with friends, family members, other students, or for entertainment and for the sense of control and power one can feel when using a computer and the Internet. Computers are most popular among students either because they are associated with fun and games or because they are considered to be fashionable. On the other side, Yaldon (1989) assures that many teachers are using hypertext to produce courseware for their classes today. "Finding out how other educators use the internet to enhance studies by sharing ideas, lesson plans and resources is a wonderful way to keep current with educational trends"(p. 25).

Role of Motivation

To Yaldon, motivation is an important contributing factor in language learning and students tend to like using computers, even when they may not make much progress. How successful a method is often depends on how motivated the learner is. Students perform more creatively when they do a task that they find interesting. When they think about the rewards for doing something, they are motivated to do it well. However, when they do something for the fun of it, it is rewarding in itself.

Norris (2001) distinguishes between intrinsic and extrinsic motivation. As the term indicates, intrinsic motivation stems from the student and is understood to be a personal willingness or desire to learn for the sake of learning (a hunger for knowledge); whereas extrinsic motivation is an outside factor such as good grades, teacher's approval or reward for

success. Since motivation affects the way learners learn, it follows that one teaching strategy will not be fit all students. Thus it can be said that the most important teacher role in language teaching is to provide a range of tasks suited to different learning styles. According to Sengupta (1996), learners of a language now are attracted to graphics, audio recording, playback and video. One of the great benefits in using computers for language teaching and learning is that vocabulary software are contextualized and incorporate different media elements at the same time. To Sengupta using the combined media help students to enhance recognition and recall of vocabulary.

Importance of Storytelling in Learning

One aspect that is crucial to motivation is interest. Interest may lessen or increase the motivation of the students to read. Williams (1987) claims "in the absence of interesting texts, very little is possible" (p. 42). He believes that teachers should use material which is selected by the students. Similarly, Nuttal (1982) who refers to interest as "suitability of content", claims that having texts that interest learners is "more critical than its linguistic level" (p. 29). Without motivation, it is exceedingly difficult to meet the aim of making students read outside the classroom. As part of the effort to find interesting material, Nuttall (1982) recommends that the teachers attempt to find texts that introduce new and relevant ideas which make them want to read for themselves. In this study the context for reading was chosen from an adventurous story "King Solomon's Mines'.

According to Ross (1980) storytelling is the original form of teaching and is a very interesting method to use with students. Ross confirms that "through a story, listeners experience a vicarious feeling for the past and a oneness with various cultures of the present

as they gain insight into the motives and patterns of human behavior" (p. 98). Stories have numerous affective benefits for social and emotional development since the cognitive enrichment is not the only aim of this art. Moreover, a story session is a time to share relaxed and happy feelings. Forest (1996) describes the process saying: "Storytelling brings to the listeners heightened awareness a sense of wonder, of mystery, of reverence for life" (p. 87).

Likewise, Holt (1994) speaks of a depth factor in language learning in which certain kinds of teaching can reach into the emotional and affective realms of students. Students often write about being moved by a story and sometimes shifting their beliefs after storytelling. To experience this kind of deep learning, it is crucial that learners first understand the story, and then have opportunities to share their reactions and perceptions with others. To Holt the language difficulty and content appropriateness are normally the first considerations when selecting which tales to use. The level of difficulty should be within the students grasp, yet a bit challenging. Holt insists that a good teacher examines the story text to see what "it lends itself to in terms of language, concept, and critical-thinking development" (p. 58). The teacher should introduce new vocabulary and reinforce old vocabulary. If the story is likely to be difficult he may decide to provide "enough language support and descriptive information for audience familiarity and comfort within the story environment" (p. 60). For this reason the software, 'King Solomon's Mines', used this study by the participants of the experimental group, includes an electronic glossary when those in the control group have access to use a monolingual dictionary.

CHAPTER THREE

METHODOLOGY

Significance of the Problem

Lebanese students in French schools come upon a number of difficulties in the English language class especially when it comes to vocabulary acquisition and comprehension. Knowing a word is a complex affair which takes a lot more time and effort than simply memorizing lists of word pairs. The teaching and learning of vocabulary has been receiving a great deal of attention in recent years. Teachers always wonder and try to find the best strategies for vocabulary acquisition and retention. Is it through using dictionaries or glossaries? Is it through intensive or extensive reading?

There are numerous approaches to teaching vocabulary. Hulstijin (1996) distinguishes between incidental and intentional vocabulary learning. Both approaches are practiced in foreign language learning. However when students fail to know the meaning of a new word, they usually have look it up in a dictionary or rely on a glossary that is provided with the course (Baxter 1990). Too much dictionary work may result in very slow and inefficient reading. This leads us to think of using glossaries. Koren (1997) believes that the recent developments in computers have triggered a whole line of interest in language software. Yet what impact does computer have if integrated into classes? What about relying on glossary and computer together in language learning? Can hypertext be of any help in this field? Does glossary leads to retention of word meanings in memory? .

Having all the above questions in mind this study seeks to investigate the effectiveness of two types of sources that provide word meaning. The words tested are either looked up in a monolingual dictionary or a glossary. They are low frequency words and chosen from two chapters in the story King Solomon's Mines (see Table One: Unfamiliar Words). The subjects in the experimental group were asked to read the text on the screen of a computer and learn the meaning of the unfamiliar twenty six words (highlighted) by using an electronic glossary. While the subjects in the control group were given the same text on paper and were asked to learn the definitions from a monolingual dictionary as they would have done in a normal language class. After task completion, both groups were unexpectedly tested on meaning recall of the target words by writing the definition of the words in English (see Appendix A: Meaning Recall Post test). Recall data were analysed to establish possible connections between retention and different strategies to acquire vocabulary.

Table One: Unfamiliar Words 1

Escort	Treasure	Monocle	Inquired	Drag
Expedition	Dwelling	Dare	Peak	Stuff
Legends	Witches	Assume	Confidential	Ancestor
Vast	Mines	Grave	Simultaneously	Cracked
Stout	Naval	Heading	Trader	Starving
Defeat				

According to Warschauer (1998), second language learners may improve their reading ability by using computers. Yet can computers be more helpful than traditional dictionaries in EFL classes? What sources will provide the researcher with information about student learning strategies?

The methodology considered to answer the above research questions is the experimental design. To Gay (1996), the true experimental design includes at least one created group and random assignment. It is especially useful in addressing evaluation

questions about the effectiveness and impact of programs. This kind of research emphasizes the use of comparative data as context for interpreting findings. It also increases the researcher's confidence that observed outcomes are the result of a given program or innovation. Moreover, it is only through random assignment that evaluators can be assured that groups are truly comparable and that observed differences in outcomes are not the result of or pre-existing differences. Without random assignment, what inference can we draw from findings that students using hypertext outperformed those who did not use it, if we suspect that their teacher was more qualified, innovative, and effective prior to the experiment? In choosing randomly, the result appears to be more effective and reliable since the alternative inferences are not warranted. Gay states that the experimental designs help us to answer questions as the following: Would adopting a hypertext program improve student retention of vocabulary? Can electronic glossary have a positive impact on student achievement?

The experimental designs are limited by the narrow range of evaluation purposes they address. When conducting evaluation, researchers certainly need to develop adequate descriptions of programs and with educational programs, they can rarely control all the variables, which are likely to influence program outcomes. For this reason, and in order to accept or reject the hypothesis of this study, all possible ways will be tried to detect the effectiveness of computer (electronic glossary) in learning vocabulary.

The subjects of this study are fifty students drawn from the first secondary class of the College Des Apotres, Jounieh. They are at the upper intermediate level with respect to their reading readiness and years (nine) of learning English as a second language. These students have also taken computer sessions and know how to run a simple program. They are

randomly chosen to form two groups. A control group (N=25) who will use the software "King Solomon's Mines" to read the story on the screen, and a control group (N=25) who will read the same two printed chapters of the story (see Table Two; Grouping of Subjects).

Table Two: Grouping of Subjects 1

Information	Number of Subjects
Experimental Group	25
Control Group	25

The participants of the experimental group will learn the meaning of the colored words (see appendix B: A Copy of The Software) from the glossary provided, and the control group will learn the definitions of the same targeted words by looking them up in a monolingual dictionary. The experimental group will have an instruction session of how to use the program. The two groups are equivalent on all variables except the independent variable. According to Gay (1996) the variables in any study can be dependent and independent. It is very important that the two types of variables are clearly defined or else it is difficult to determine whether the researcher has actually studied what he/she intended to study, and whether the results of the experiment are valid and reliable. The dependent variable is a measure of presumed effect in a study. It is predicted to change as a result of the

manipulation of the independent variable. In this study the dependent variable is the meaning acquisition (score after post test), while the independent variable is using the monolingual (with control group) or electronic glossary (with experimental group). The controlled variables are the age, level and background of all the subjects. Consequently the ability level is not expected to be a crucial factor in this study because the students are randomly selected from the same class.

Instrument

The material used for the hypothesis of this study is a program designed to know how hypertext and electronic glossary contribute to vocabulary learning, compared to conventional methods (refer to CD). The text is two chapters from the story King Solomon's Mines of Sir H. Rider Haggard. The story was adapted by the author to fit the level of the participants (see appendix C: A Copy of Two Chapters from the Storybook). King Solomon's Mines is of fairly general interest especially to young men who make the majority in the College Des Apotres. Before the experiment started, it was piloted with thirty students of the same level and who were not involved in the study. The same two chapters were given to them and students were asked to highlight all words whose meaning they were unsure of. Twenty six words were most frequently marked as unfamiliar and became the target words to be investigated in the experiment (refer to Table One; Unfamiliar Words). Although the templates of the program allow for linking any number of words to glosses, only those twenty six were glossed and could therefore be looked up. Other words in the text were of high frequency and did not present any problems in the pilot. The two chapters of the storybook, King Solomon's Mines, appear on paper with red unfamiliar words.

The users in the control group have to find out the synonyms of the difficult words by looking their meaning up in a monolingual dictionary. On the other hand, subjects of the experimental group use the software which starts with some music and animation for their motivation. The title and the author's name are displayed on top as well as an icon 'Click for Chapter List'. In addition, the menu of the software allows the subjects to 'Skip Introduction', choose 'Chapter One' or 'Chapter Two', 'Read' or go to 'Glossary' page .When the text is displayed, the subjects may click on the 'Next' bottom to carry on reading or the 'Back' bottom to go to the previous page. Moreover, all pages are numbered on top of the text (e.g. 2/8) with the chapter's number on its left. Clicking on the hyperlinked words (white), the page 'Glossary' is displayed with all the unfamiliar words of the same chapter and their definitions. Subjects may scroll up or down for a full screen. On this main page, all the page numbers are shown to enable the subjects to return to their reading activity. They may also use the 'Menu' bottom which takes them to the starting point. The research focused on the vocabulary section of the program; that is the words assumed that the students are not familiar with (refer to CD).

Subjects

The participants of this study were randomly assigned to a treatment experimental group (twenty five students using electronic glossary) and a control group (twenty five students using traditional dictionary). Then they were asked to read two chapters from the story King Solomon's Mines. The experimental group sat in the computer lab and read the assigned chapters on the screens using software that was designed for the purpose of the research. On the other hand, the control group read the same chapters in the classroom using

the storybook. They were not allowed to ask for the help of the teacher proctoring them. The meaning of the highlighted twenty six words was to be looked up in the dictionary or rely on any comprehension strategy they found appropriate. The experiment took advantage of the reading week in the College Des Apotres and neither group was told of the vocabulary test that was administered after reading. Consequently, the experimental procedure consisted of two stages, the treatment or tutorial stage and a post test.

Procedure

In the tutorial stage, the participants of the experimental group were asked to log in and to read the screen, which displayed the text King Solomon's Mines with the twenty six target words. Those of the experimental group were told that, in the course of reading, they are supposed to learn the definition of the highlighted twenty six words by clicking on them with the mouse. Students should do so since the words were relevant to text comprehension. On the other hand, the students in the control group were asked to sit in class, read the same two chapters and learn the meaning of the highlighted words by looking them up in the dictionary. Both groups were told they will sit for a comprehension test after reading but were not notified of the meaning recall that will follow.

On completion of the reading task in the classroom and computer lab, subjects in the control and experimental groups were given the unexpected vocabulary test (the post test of this study), where the twenty six items were listed. It took place two weeks after the experiment. The students were asked to write the meaning of the italicized (or hyperlinked with the experimental group) words in L2. When they handed in the sheets, they were given a

comprehension exercise with three questions on the text (see appendix D: Comprehension Test) as announced earlier.

Hypothesis

Based on the results of the conducted study, it was expected that the students who used electronic glossary in context would yield improvement in vocabulary acquisition, as mentioned in the hypothesis. The same degree of improvement was not expected to exist in the control group participants who used conventional ways like monolingual dictionaries. If the evidence suggested that this method is effective, then it could represent a viable alternative to the current teaching of vocabulary. For this reason, the means of the post test done by the experimental and control group will be compared.

In order to test the hypothesis of this study: "Students may improve the vocabulary acquisition and retention by using electronic glossary", the means of the post- test were calculated, compared and reported. The scoring procedure was straight forward. A correct answer received one point, an incorrect answer zero points. An answer on the post-test was considered correct if the learner provided a correct answer similar to the meaning given in the program. The correct answer did not necessarily require providing the exact words used in the glosses as long as it was semantically accurate. For example, the meaning given for 'trader' might be 'dealer' 'seller,' or 'merchant'. If the answer was semantically accurate but contained a minor spelling mistake which did not distort its meaning, it was considered correct.

CHAPTER FOUR

RESULTS and ANALYSIS

The focus of the study is on new software that enables vocabulary learning in a potentially more interesting way than conventional methods. It was hypothesized that the hyper linked words would be better remembered than the looked up words in a monolingual dictionary and that the students who used hypertext would succeed more than the students who used the paper dictionary. Eventually, there was no significant difference between the results of both groups (mean of experimental group is 10.5 and that of the control group is 10. see table Three: Results of the post -test).

Table Three: Results of Post test

Information	Post –test /20
Mean Experimental Group	10.5
Mean Control Group	10

After the subjects finished the post test, data and comments of the subjects about the reading session were gathered, compared and analyzed. It was observed that the subjects of the control group faced some difficulties in breaking the lexical items to parts. They sometimes drew guesses based on some information in the text or relied on their knowledge

of the French language. They reported how they understood some words like "expedition" and "confession". They also expressed their needs for a glossary to ease up the task and save time.

The control group subjects reported difficulties in comprehension for example they found it difficult to decide on the meaning of the word 'flatly'. They also complained about the time consumed in flicking through the dictionary pages and the subsequent disruption of the flow of reading. In fact there exist some studies that show how L2 readers often decide not to use the dictionary when meeting unfamiliar words in a text (Hulstijn, 1993). An electronic glossary may provide a good solution to this problem. The ease and speed of using it may encourage the learner to look up words and consequently increase the chance of acquiring vocabulary.

Moreover the students' comments remind us of Young's classification scheme of strategies mainly 'use of glossary', 'breaking lexical items into parts', 'using cognatesL1 and L2' and 'drawing inferences and conclusions'. For example some subjects reported that they understood the meaning of the word "trader" as related to trade and to understand the word 'expedition' they relied on the their French background. They also deduced the meaning of the word 'tribe' from the text (see Table Four; Comprehension Strategies). To Young (1993), reading strategies should be acquired in schools and exercised through the curriculum.

During the experiment observation, it was revealed that the control group asked several questions to clarify the meaning of the context in order to select an appropriate definition from the dictionary, whereas only two subjects of the experimental group asked

one question each with regard to the meaning of unfamiliar words. Questions were as follows: "Is *mines* a pronoun?", "Does *heading* mean a title?" This leads us to believe that though the difference between the two study groups was minor, yet the difference may be contributed to the effectiveness of computer use in language learning. The computer can mainly help in developing independent learners who need less teacher guidance.

Table Four: Comprehension Strategies

Local Strategy	*Definition*	*Sample Responses*
Expresses use of glossary	The reader expresses the need for a word glosses.	I did not know the meaning of the word 'escort' so I asked if we have a glossary.
Breaks Lexical items into parts	The reader breaks up words of phrases to figure out the word/phrase.	Now I understand the meaning of 'trader', sure it is related to trade
Uses cognates L1 and L2 to comprehend	The reader expresses ease of understanding because of words that look and mean the same in L1 and L2	I understood the word 'expedition' because I know it from French
Uses inferences or draws conclusions	The reader indicates that he/she guesses based on info in text.	I deduced that 'tribes' meant people living in the desert

In fact the software 'King Solomon's Mines' offers a range of multimedia aids like sound, graphics and references to glossary. All the mentioned applications serve to enhance the comprehension of texts. "They help to make the language come alive to students for whom it is largely a distant abstraction" (Warschauer 1998). Moreover, it is widely known that learners' learning styles and pace of learning can vary significantly. Computer encourages inactive students to try and become active, and hypertext in reading comprehension becomes particularly beneficial for learners regarding themselves as less able. The learner can no longer just passively listen to the teacher, as it happens during classes. Computer software has more interesting and involving activities than paper-based material. For the majority of students, this was the first time they had used such a program or courseware tool in the English class. The subjects in the experimental group commented favorably on it and recommended further development (sound features to pronounce the unfamiliar word). A similarly enthusiastic response was found with participants in studies by Ellis (1994). If a pedagogical tool is popular with the students, the chances are it will also be beneficial for learning. Comments were as follows: "It was very easy, fast and fun", "The instructions were very clear", "I didn't really need help and hope to have more of this".

The purpose of this study was to describe the effect of using electronic glossary and hypertext in EFL class. Analyzing the results, it seems that they have some potential for vocabulary acquisition and retention. The subjects who read the printed text on the screen were faster from those who used traditional storybook and paper dictionary (finished ten minutes earlier than their counterparts). In fact their result (the experimental group) was slightly better than the control group. This leads us to encourage using glossaries with

reading passages, mainly the electronic ones which can be customized to fit the students' needs.

The combined media motivates the learners to attend the input through its use of the different aids like television, tapes, overhead projectors, audio CDs and computers (Ambron, 1988). Nowadays, it is easier to use all of these approaches in a multimedia computer. To achieve this aim schools should give the teachers the proper training. According to Ellis (1994), teachers should not only get the appropriate training but also be capable of designing teaching units that would be of maximum benefit to the students. While using software in the lab, the teacher functions as a facilitator to guide and explain the different features of the program. In reality, the role of computers in this study seems to be more significant when compared to textbooks, but this does not mean to ignore the role of the monolingual dictionaries which encourages contextualized meaning. Therefore, teachers should assign, from time to time, the task of looking up specific words so that learners access different kinds of lexical information. It should be noted that with glossaries students check the meaning of the unfamiliar words only since there are no examples of usage or any lexical specification.

CHAPTER FIVE

CONCLUSION

The aim of this study is to suggest a computer methodology suitable for vocabulary acquisition, as well as to investigate its effect compared with traditional methods like using paper dictionaries. The novelty of the methodology lies in offering learners new option in accessing lexical definition rapidly and accurately. Research wise, this means that vocabulary learning becomes interesting and compatible to the learners' life style. The results of this study suggest that using hypertext and computer may be more favorable than using paper dictionaries although the result was not a significant one. The experimental group (used electronic glossary) did not surpass the control group. The difference between the two means was very slight (m= 0.5) (refer to Table three: Results). Thus, based on this study, we conclude that using electronic glossary and hypertext is not much more efficient than using paper monolingual dictionary. Second, it was not clear how much time the subjects in the experimental group spent on occupations (trouble shooting or technical problems with computers) other than actually reading the text on the screen and its definitions. Such lost time must have affected the scores negatively. Here the question imposes itself, why bother with computer if it is time consuming and not very efficient for vocabulary learning? It is because engaging the students in the activity of learning, while using motivating tools like computer, can be a reason for better results.

This study's findings confirmed Yaldon's (1998) ideas about the role of motivation as a fundamental factor in language learning. This motivation through using multimedia in computer might explain the slight difference between the results of the two groups. On the

other hand, the use of a monolingual dictionary with the control group, though shown to be beneficial by several studies like Knight's (1994) and Hulstigin's (1993), is still a controversial topic. One of the main problems with dictionary use (particularly paper dictionary as it was in this study) is that it can become boring for the L2 students (as was reported by the control group) and for this very main reason, difficult to apply consistently. Using an electronic glossary was a tool to overcome boredom and divert the attention of the students from a monotonous task to a more adventurous experience with sound, pictures and quick access to word meaning. In addition, context plays a high important role in language learning as was reported earlier by Nuttal (1982) and Williams (1987). Both groups in the present research studied words in the same context. That is, they took full advantage of the contextual information with regard to the target words.

On the other hand using a paper dictionary did not allow the subjects (in the control group) to disregard the context in which the target words were presented. Therefore it seems logical to draw conclusion on the beneficial role of context in L2 vocabulary acquisition. Some other factors may have influenced the better recall of words like 'doubts', 'ammunition', 'confession', 'expedition' and 'confidential' since these words are partial cognates with the French 'doute', 'munition', 'confession', 'expédition' and 'confidentiel'. Students may have benefited from their closeness to the French words and therefore these words had a better chance of being remembered (Refer to Table Four; Comprehension Strategies).

Pedagogical Implications

The primary pedagogical implications based on the preceding discussion can be first to present all vocabulary in context which is of interest to learners. Second, teachers should plan to integrate newly learned vocabulary items into future lessons through exercises. Research reported by Read (2000) has demonstrated that learning and revision of vocabulary is much more effective when distributed over a period of time. Thus, teachers should provide periodic review of words in the form of vocabulary exercise. These exercises could be designed for language programs utilized in a self study environment. Teachers should also encourage students to use dictionaries because it makes them consider the context while looking for the unknown content words. Practice exercises are of paramount importance because they lead to better retention. These exercises were practiced in the Middle Ages when teachers concentrated on the intensive reading, as opposed to the extensive reading which had been trained from the nineteenth century till our days (Palmer, 1940). With intensive reading, every single sentence was translated, especially in the Grammar Translation method, which was later criticized for misusing the English idioms and expressions. Also Krashen (1981) reveals that the lack of practice may result in the reduction of understanding. This might be the logical explanation to the low scores in both groups. However this factor, practice, is beyond the scope of the study.

The aforementioned findings also have some pedagogical implications for vocabulary learning with computer. These direct our attention to important principles when developing instructional multimedia materials. This study showed that exposing learners to material with printed text, pictures and sound produce a nice learning environment which can leave a good

impact on the learners. The software 'King Solomon's Mines' mainly include a glossary. However assuming that students are not accustomed to this kind of glossary, it is important that instructors spend some time explaining to them the efficacy of using computer and encourage them to click on every word they consider as unfamiliar. Also programmers should develop the sound and visual material that motivates the students to use the software. According to Warschauer (1998) the design of the multimedia instruction affects the degree to which the learners engage in the cognitive processes required for the meaningful learning. Presenting the text with combined media can capture the learner attention and consequently help in retrieving stored information in memory.

Limitations

I have demonstrated conclusively that a particular lookup behavior like using computer in vocabulary learning yields a slightly better result but not a significant one. The results suggest that using electronic glossaries for lexical information tends to be associated with better retention. Yet, it should be noted that the number of times the word is looked up during the experiment was not checked. The software use for the purpose of the study was not designed to tell if the words were checked even once during the current experiment. This can bear some direct relation to words retention and to the results in the post test. Consequently, there is no way to tell if the study is absolutely internally valid. With respect to the internal validity, the observed differences on the dependent variables are a direct result of the manipulation of the independent variable (using electronic glossaries in this study). Since the study does not focus on the number of lookups, this becomes one of its limitations. Moreover, both the control and experimental group could have tended to utilize a variety of

strategies in combination (like relying on inferring from the text instead of looking up the word in the glossary or dictionary). Recent research (Sanaoui, 1995) indicates that a variety of approaches to vocabulary acquisition may be more potent predictors of success than individual vocabulary learning strategies. Repetition for instance plays an essential role on retention of definition. In fact, one problem that could have associated this study is time. The subjects (both in the control and experimental group) were not exposed to the new words except once.

Consequently, we can deduce that the treatment has not been given a chance to work. Another factor can be distraction resulting from working on computer that students either operate skillfully or find as a frustrating task to manage. In addition, the nature of the post test must have affected the results since it was not contextualized (see appendix A; Meaning Recall Post test). Students might have made a good use from the context to remember the targeted words and consequently got better results (see appendix D; Comprehension Test).

Moreover, the cause effect relation was not reconfirmed with other groups in other settings with similar conditions (with other first secondary students in a different section for instance). Thus, the external validity was not maximized. The same thing can be said about the ecological validity since other researchers did not replicate the results. Fortunately, history, which is another thread to validity, was not a problem. The experiment did not take more than it was scheduled. History in the experimental design refers to the occurrence of any event, which is not part of the treatment but may affect the performance and the dependent variables. Similarly, maturation, which refers to any changes like anxiety, motivation or age that occur over a period of time, did not affect the result.

Despite the popularity of story reading, stories may not always function as intended. Context may not have improved recall in the current study providing that the students' schemata were not activated. It has been seen that schema-theoretic applications do not always result in improvements in comprehension (Carell, 1987), particularly when there is insufficient attention to textual details. The contextual and background information provided may not always be utilized by the learners. To Carrell, building up absent schemata and activating resident schemata can improve L2 reader comprehension in many situations. Therefore, it would seem sensible for teachers to employ some reading activities but not to blindly assume that the expected effect is actually occurring. In other words, teachers should take the time to verify the usefulness of the activities they use and pay attention to possible schema-interference or non-activation. Talking about the importance of context, the in story 'King Solomon's Mines' deals with adventures in the wilderness, thus it can be of more interest to males than females. Gender is an independent variable that was not controlled in this study and might have affected the result. I suggest a future study, which includes gender motivation.

Recently, there have been some studies about the effectiveness of electronic glossaries for vocabulary acquisition. (Lomika, 1999).Yet, necessary comparative and evaluative studies are apparently still lacking. For instance, research needs to address the effect of on-line texts and glossaries particularly in foreign language classroom situations where materials need to be integrated into the curriculum of the language course. In addition, I would like to make some suggestions with respect to this research tool, 'King Solomon's Mines'. First, the program may not only provide an electronic glossary for a number of targeted words but also link them to an on line dictionary with sound features. Second, a log file can also be built in

order to register the number of times the words were looked up. Furthermore, the program can include special vocabulary exercises which consist of a variety of input and output oriented tasks designed to reinforce the retention of the looked up words. The reinforcement exercises could be investigated to ascertain whether they can better aid retention. The study could also be replicated with larger samples where the strategies that students relied on be more accurately detected. For instance, different kinds of dictionaries can be provided to the subjects of the control group (not only monolingual ones), since this can be compatible with individual look up preferences and allows the user to select the kind of lexical information, with which s/he feels most comfortable. It is highly important to postulate that learners' ability to select the type of information, they consider most appropriate for the task and feel most comfortable with, may well contribute to retaining more looked up words.

In conclusion, this study tested retention two weeks after the reading and lookup task. Yet, learning in real life requires retention of information long after the task performance. The relationship between learning strategies, look up behavior, reinforcement exercises and long term retention of vocabulary, may well be the most important follow up of our research. This attempt may help researchers and scholars find an adequate relationship between electronic glossaries and retention of vocabulary. Also attitudes toward computer will change over time, as teachers and students begin to use them more frequently as an effective learning tool.

Computers, computer software and computer tasks are, and will remain, tools nothing less and nothing more. The software and task described in this study have some impact on language acquisition and use. Until some twenty years ago, empirical research in this domain

was restricted to the observation and measurement of language input and output. Nowadays and with the computer aided tools, the researchers have the means to get closer to the processes of language acquisition and use. Yet these tools, even the most sophisticated ones, remain tools. They do not explain phenomena for us. Explanatory theories are developed and formulated by humans, not methods. However new theories may lead to the search for and invention of new methods and tools. The main emphasis in this study has been mainly on the method (using electronic glossary) and not on the theories. The experiment was carried out to determine which of the two methods of learning new words (using paper dictionary or electronic glossary) is more efficient in the sense of yielding good retention results. Retrieval of a word from the mental lexicon requires using combined strategies and not only one. This view is shared by Zimmerman (1997), who claims that systematic vocabulary instruction, in addition to learning through reading, is a more successful approach.

It is hoped that the survey given here will encourage people interested in second language acquisition research to explore new methods and tools in the world of computer. Moreover a test which asks testees to simply recognize a word and give its meaning is unsuitable since the learners might face difficulties in expressing themselves in the second language.

Appendix A: Meaning Recall Post Test

Meaning Recall Test

I. Based on the story King Solomon's mines, give the meaning of the words below in English.

Escort

Expedition

Legends

Vast

Treasure

Dwelling

Witches

Mines

Naval

Stout

Monocle

Dare

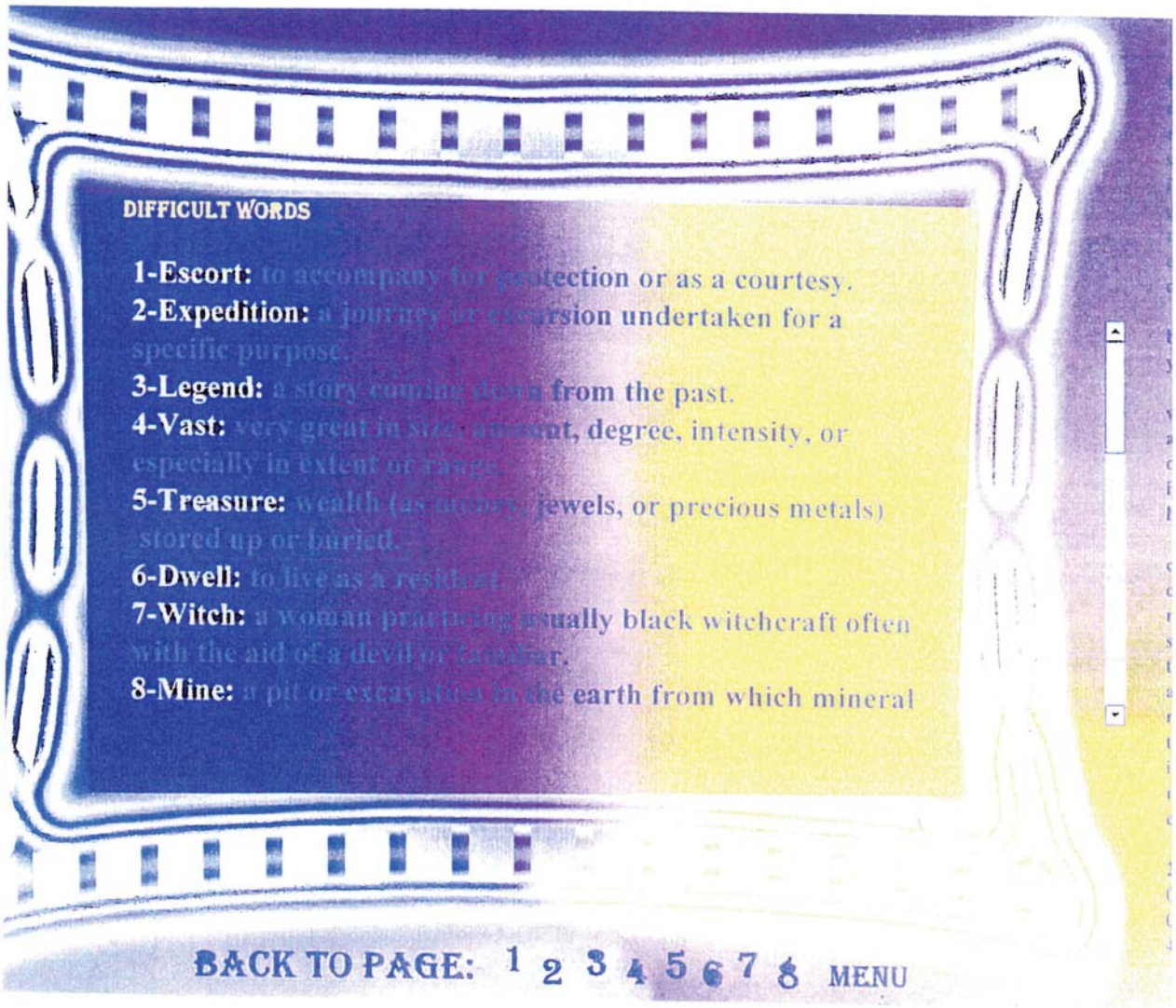
Assume

Grave

Heading

Appendix B:A Copy of The Software

B: A Copy of The Software



Appendix C: A Copy of Two Chapters from the Storybook

Chapter One

The Legend of King Solomon's Mines

It was really strange how Sir Henry Curtis convinced me to escort him in the most difficult expedition I have ever known. We were both sailing on the same ship along the African shore. I said farewell to Bamangwato and couldn't wait to be at home again in Durban. My elephant hunt was not that successful, especially when I broke my *elbow*. I was badly in need of a long rest.

At first, I admired his looks; tall, well - built and about thirty years of age. He also talks as a gentleman. The most interesting part of our conversation was mainly concerned with Solomon's mines and its 'bright stones'. According to several *legends,* these mountains could be the source of King's Solomon's vast wealth. Some people do believe that Solomon is the Arabic Suliman. I myself had once heard the story about the diamond treasure, from an old woman dwelling in the Manica country. She described the villagers, a branch of the Zulu, as very big men. Among these villagers, exist the *witches* who protect the secret of the mines.

Sir Henry was not alone. He was accompanied by his naval friend Captain Good. The Captain was short and stout clean shaven and always wore a *monocle* .This is not to mention the set of false teeth. I didn't dare ask about the reason for such a loss .I assumed it took place in one of the many adventures at sea.

Primarily, I was sitting at the same dinner table with these gentlemen, just like any other passenger on board. While talking about elephant hunt, the subject attracted the attention to my identity, so I heard my neighbor stating loudly, "Hunter Quartermain is the best in the field." With a great surprise on his face, Sir Henry asked with a low and deep voice, "Is Allan Quartermain your real name?" and I confirmed it. After the dinner was over, Sir Henry and the Captain invited me to their cabin for a brandy and a cigar. There, Curtis began, "Sir, you were camping in Transvaal two years ago, and I'd like to ask you what the name Neville means to you?" In fact, the name not only rang a bell but it also brought a sad memory to life again. Sir Henry continued, "Neville is my brother George who left the house after a *grave* quarrel over the family *inheritance*. To be honest, I terribly regretted my behavior and wish to make up with my only relative in the world. In other words, I'd *willingly* give my life to finding out what happened to him." Hearing this, I was deeply touched and found myself saying: "I see your point Sir, but how can I be of any help?"

"By telling me all you know about this matter, from A to Z."

"Very well, as far as I know, Neville, or your brother George, was heading to the *interior* with a guide called Jim. I met them near my tent arranging their things. They intended to sell all their equipment and continue their trip on foot." There was a short pause interrupted by Sir Henry who inquired, "Did you ask Neville about his purpose?"

"They were starting towards Solomon's *mines* in the high mountains. I saw once the *peaks* of them; however there was a hundred and thirty miles of desert in between." Now it

was Captain Good's turn to question me, "Why do you think these mountains were of any good to them?"

"Well, if you promise to keep it *confidential*, I might reveal something of importance to you pals".

"Certainly" They said *simultaneously*. "Our word is that of honor, Mr.Quartermain."

"Some years ago, while I was in the *woods* with an *expedition* team, I met a Portuguese trader. He was tall, thin and had curly black moustache. I made him a few favors at the time, so we became friends. Forbidding me goodbye, he promised to pay back with diamonds. I laughed at the joke at the time and wished him luck. After a *fortnight,* with the early hours of the morning, I was *stunned* to see his shadow again. The poor guy, Jose Silvestre this was his name, was dragging his towards my place. His face was almost black and could scarcely drink or talk.

I realized he was at his last breaths; however, I tried hard to save his life. Sylvester felt his own death very close and decided to pay his debt, by giving me a piece of torn cloth. It was very well hidden in his pocket. He explained that the stuff belonged to his *ancestor*, one of the first Portuguese in Africa. Before dying in Solomon's mountains, his grand father drew the map to the diamonds mines with his own blood. He hoped his slave would give it to the king. Sylvester wished the king would fight the tribes first, if he desired to become the richest one ever. I covered his *cracked* lips with some drops of water, so he went on.

"After several years, I had the text translated to English. Take a look at it.

I read, "I am Jose Sylvester, *starving* in a cave in this year 1590 with a piece of bone in my hand. My aim is to write on a piece of cloth the map to the treasure chamber. My only wish is that my servant finds me and delivers it to the king, but first, his army should *defeat* the Kukuana's people and kill the dangerous witch Gagool. She almost took my life.

Chapter Two

We Meet Umbopa

I finished reading, so I handed the papers to the gentlemen to show the map drawn by the dying old Sylvester. They were *astonished,* and Captain Good commented with some hidden *doubts,* "This is a little bit weird and *incredible* Mr. Quartermain."

Feeling his *suspicions*, I stood up, but Sir Henry *rushed* to rescue the situation, "We are quite sure that you are not fooling us and would very much like you to guide us in this trip, through the Solomon's mountains. The treasure you know about will be yours and Good's only. I only want to trace my brother in the *wilderness* and know his fate. I will pay you whatever it costs and half of it in advance, if you wish so."

The offer was extremely generous, and I found myself saying *flatly*, "No man came back alive from those mountains Sir, neither Sylvester nor his *descendant* twenty years ago. You should be *aware* of the high risk we're about to take. I 'm afraid I should give this matter much thought since I have a son to take care of."

Saying this, I threw a look at Sir Henry's face which didn't change at all "We must take our chance," he said. "Consider the matter well, because with my money, you will secure your son's future, too. I need to know the answer before we reach Durban."

I promised I will and left to sleep. That night was the longest, the tale was *haunting* me. Every minute that we were sailing up to Natal, I was thinking over Sir Henry Curtis's offer.

Our last night on the ship was a *marvelous* one. The most beautiful evening that we *witnessed* on board. Pillars of foam were hitting the rocks as the moon shined silver over the sea. It was drawing challenging shapes. We started to see the deepest green of the *patches* growing on the coast. Doubtlessly the scene was that of Eden, as if a garment of peace was thrown over everything around.

Bringing our meal to an end, Sir Henry started the ball rolling, "Did you make up your mind about my proposal, Mr. Quartermain? Are you going to give us the pleasure of your company to the Solomon's Mines?" I rose and *knocked out* my pipe of the extra tobacco before I answered "Yes, gentlemen. But I need to make some financial arrangement before we *set out*. In case we meet some disaster, I want to feel good about leaving my son, Harry, who is studying medicine in London, in good care. One of my terms is to be paid L500 for my services on the trip before we set off, I'm undertaking to serve you faithfully Sir Henry till we succeed or....You might be *wondering* about terms or consent. To be *frank* with you, I am a poor man. For many years I have hunted and *traded*, but I have never made a fortune. If I were to die in this business, Harry will be set up for five years, and I need to worry no more about him."

"Mr. Quartermain," said Sir Henry, who had been giving me his complete attention, "I trust you more after this *confession* you made. Believe me, God will tell what he has on

mind for us. I'll *fulfill* your wishes generously in return for your experience and knowledge. My only condition is to continue till the end. No turning back except if we had the same *fate* of Dom Sylvester." At this moment, Captain Good *interfered,* "The three of us have been accustomed to facing danger and since we are of the same mind, why don't we start planning right away?"

With the first sun *rays*, we reached Durban and set a big tent to gather our tools. Basically, I managed to *purchase* a *wagon* and a number of oxen. I took my time on this. The wooden part was not very new yet had iron *axles*. It was strong and light at the same time. Then I bought a beautiful team of twenty Zulu oxen to pull the wagon on the hot sand. Sixteen oxen is the usual number for a team, but I took four extra to allow for *casualties*. I needed strong and young oxen to bear the severe conditions.

Next came the matter of medicines, one which required the most careful consideration. Fortunately, it turned out that Captain Good is a bit of a doctor. He had to take the MED courses before he became a Captain and had a traveling medicine chest. Two further important points for consideration were that of the men and arms. I took my notebook and put down what we need-the heavy guns, rifles, *revolver* and black powder. We had to buy some, and I intended to take those I personally own. I had thoroughly relied on them in the most dangerous situations. In brief, a proper supply of guns and *ammunition* guarantee the success of our mission. Afterward, I made a list of the bravest men I knew among the Zulus. Unfortunately, I found four out of five. Tom and Goza were good in *handling* the wagon and taking care of the animals, whereas Ventvogel and Khiva were reliable *trackers*. Khiva had the *merit* of speaking English fluently. Conveniently, the fifth man came along by himself

when we had done dinner: A well-built young man, very light-colored for a Zulu, and overconfident. I did not rush the conversation but waited for a few minutes then I started:

"Well, what is your name?"

"Umbopa," he answered in a slow, deep voice.

"I have seen you before, haven't I?"

"Yes, I am of the Zulu people but not one of them .I served as a guide in one of the Zulu wars Fortunately, I left the camp to change the wagon one day before the battle in the Isandhlwan." I remembered to have seen him in one of the wars. He proved his cleverness in various circumstances. The man needed the job for only his seat and meat. After I translated his words to my friends, Sir Henry looked at him admiringly and gave me a sign to take him on. Honestly, I found no reason to disagree. I knew that he is a man who can keep his eyes open all the night.

Appendix D: Comprehension Test

Comprehension Test

I. Choose one suitable word to fill the blank.

vast legends age interesting looks source

At first, I admired his……..; tall, well - built and about thirty years of ……..The most ……..part of our conversation was mainly concerned with Solomon's mines of 'bright stones'. According to several……., these mountains could be the ……of King's Solomon's ……wealth. Some people do believe that Solomon is the Arabic Suliman.

II. Explain each expression in your own words.

a. It rang a bell_____

b. I'd willingly give my life_____

c. From A to Z_____

III. Answer true of false, and justify your choice with a quotation from this chapter.

a. Sir Henry had taken the MED courses before, and had a traveling medicine chest.

b. Tom and Goza were good in handling the wagon and taking care of the animals, whereas Ventvogel and Khiva were reliable trackers.

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