

Enhancing EFL Learners' Vocabulary Through Incidental Acquisition via Reading: A Study in Saudi Arabia

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Abstract

This study investigates the effectiveness of reading to enhance learner vocabulary size in a second language. The study took place in Al-Khafji College, Saudi Arabia, with 36 female student participants. Participants were pretested on the vocabulary displayed in the texts, and then exposed to three different reading passages before sitting the same test again at a later time. The results show significant vocabulary size improvement despite the brevity of the reading passages given and the short amount of time that had elapsed. Also, there is a relationship was found between the students' vocabulary acquisition and the frequency of each word's appearance in the texts.

Keywords: Vocabulary Acquisition, Foreign Language, Reading, Enhancing, EFL.

1. Introduction

It is generally agreed by language acquisition researchers, working from a huge body of research, that significant amount of the vocabulary acquired when learning a second language is acquired incidentally when reading texts in the second language. Despite this, vocabulary acquisition is still not completely understood, and many questions can still be examined in this area. Debates around the mechanism of incidental acquisition, the amount of time needed, the amount of exposure to certain vocabulary required, the teaching strategies best developed to provide and deliver techniques to allow students independently determine the meaning of new words, and by no means least, the type of reading most effective in students' vocabulary acquisition are still ongoing.

Studies have found that reading, even with no clear instruction for vocabulary learning, can result in *incidental* vocabulary development (Day, Omura, & Hiramatsu, 1991; Krashen, 2004; Lehmann, 2007; Lee & Hsu, 2009; Ponniah, 2009). Each time a reader comes into contact with an unfamiliar word when reading, they acquire at least a partial meaning, and repeated exposure to it results in greater understanding of that word, leading over time to a significant acquisition of vocabulary. This process is considered a subconscious one, as the reader acquires the vocabulary during the act of reading, with their focus on the meaning of the text as a whole rather than each individual item of unknown vocabulary (Ponniah, 2011). Over the last the last two decades, studies have established the common belief that vocabulary can be acquired by such reading in a second language. Nevertheless, the same results also imply that incidental vocabulary acquisition is a time-consuming and unpredictable process and, thus, raise questions about how suitable the approach is for second language (L2) learners (Pigada & Schmitt, 2006).

Research on incidental vocabulary acquisition has strongly emphasized the role of reading in the vocabulary growth of both first, second, and other languages. However, these studies suggest only a small amount of acquisition. Pigada and Schmitt (2006) suggest that reading is inefficient for acquisition, compared to other studies, and therefore put this method at a disadvantage.

In addition, questions over the correlation between the repetition of a given word in a text and vocabulary acquisition have been widely addressed. An earlier study conducted by Saragi, Nation, and Meister (1978) drew attention to the relationship between knowing a word and the number of times this word occurred in the text they used, i.e. the relationship between proficiency and knowing a word. Horst, Cobb and Meara's 1998 study described a strong correlation between learning gains and the frequency with which each word was repeated in the given text, which they used to illustrate the dominant rule of the rate of vocabulary frequency.

This research will attempt to determine the effects of intensive reading on vocabulary

development by comparing students' performance in a pre-test given before a reading text with their performance in a post-test given afterwards, and using these results to find the extent to which vocabulary can be acquired incidentally from reading.

My professional interest in this subject comes from my own position as an English teacher from Saudi Arabia. This study will, in the first instance, provide supporting evidence and assistance to both myself and my colleagues by offering further insight into the problem of students' lack of vocabulary (as stated by the literature), as it is an important aspect of language which may affect the progress of the learners' other skills, as well as allowing the opportunity for scrutiny of the teaching system in my country, hopefully shedding light on possible ways to improve it.

The paucity of studies on vocabulary in Saudi Arabia was another factor leading to this study, as the field is considered to be a fairly new one. This study is intended to add to the sum total of knowledge in this area, as well as providing real benefit to both learners and teachers, particularly considering the fact that there are currently no similar studies that have been conducted on female learners.

This article will conduct empirical research, examining the main issues and attempting to answer some of the most pressing questions in this area. In order to obtain a full picture of research into vocabulary, including the history and literature, and to provide a context for the proposals of this research, the present study contains several parts, beginning with a review of the literature. This will shed light on important issues and provide a general examination of the literature on this topic (incidental vocabulary learning through reading), including what research has been conducted in the area, with especial focus on the Saudi context as it is where my study will be conducting.

The structure of this paper is as follows: section two is devoted to a discussion of the literature on this area, section three details the methodologies employed to conduct this research, and to check the reliability and the validity of the test used. The results of the study, and a discussion of them, will be provided in detail each in separate section. The final section offers a summary and conclusions of the findings, and the results of this

empirical study.

2. Literature Review

Vocabulary is fundamental to the learning of any language. With knowledge of words, people are able to convey enormous amounts of information, even if they lack specific grammar. Meara (1996, p.53) states that “lexical competence is at the heart of communicative competence”, maintaining that knowledge of a large number of lexical items is strongly related to linguistic competence. A single word is able to express strong feelings, emotions, responses and replies. Experts, teachers, and learners generally consider vocabulary knowledge to be the most basic element of learning a second language (Schmitt, 2008). Eyckman (2004) writes that learning vocabulary is of vital importance for second language learners, helping them develop their skills.

As the demand for English tuition and the EFL industry has increased, research studies into second language acquisition and finding new methods of learning languages have increased in tandem.

Researchers have postulated several ways to enhance vocabulary acquisition, one of the most effective of which is reading, both extensively and intensively. According to Powell (2005) the term extensive reading was first coined by Palmer (1968), in order to differentiate it from intensive reading. Intensive reading usually refers to the careful reading of short but linguistically complex passages in order to gain a full understanding of the text and achieve specific skills or practice, like finding pronoun referents, or in guessing the meaning of new words or extricating the main idea of a text from the detail. Extensive reading, by contrast, is the reading of longer texts with the aim of achieving a general understanding of the material, with little focus on individual words and sentences. Extensive reading is usually conducted outside the classroom, using students' own choice of materials.

Several studies into second language acquisition through reading, such as Coady (1997) and Bell (1998, 2001), have investigated how reading may help in the second language learning process, especially with regard to achieving better understanding,

acquiring knowledge, and widening vocabulary size. Grabe (2000) states that intensive reading in particular helps develop and reinforce EFL learners' vocabulary size and knowledge. Many researchers, such as Coady (1997) believe that students can acquire a lot of vocabulary incidentally while they are reading a text, and stated that such incidental vocabulary acquisition may have a better impact on both learning and understanding new words than using explicit vocabulary instruction, as reading is an active process that engages people's ability to seek out the structure of information presented to them. Coady contended that the learner being involved and effectively participating in their own learning in this way is highly more conducive to vocabulary acquisition than classroom teaching exercises.

Huckin and Coady (1999, p.182) wrote that "an approach consisting of two activities – vocabulary acquisition and reading – occurring at the same time is considered "pedagogically efficient", so intensive reading can be described in this way. Pigada and Schimtt (2006, p.2) stated that

This [two simultaneous activities] approach facilitates learner autonomy, can be very pleasant and motivating, provides learners with the opportunity to meet words in their context of use (Thornbury, 2002) increases sight vocabulary (Coady, 1997; Nagy, Herman and Anderson, 1985; Nation and Coady, 1988), and could theoretically result in substantial vocabulary learning, which seems difficult to achieve with explicit teaching during the relatively short period of time that L2 learners spend in the language classroom."

When all of these benefits are taken into account, it is clear that intensive reading can have a powerful effect on vocabulary acquisition.

This being said, however, the question of what incidental vocabulary learning is must be asked. The closest definition to my own view of incidental vocabulary acquisition is taken from Hulstijn (2001, p.271) which states that incidental vocabulary acquisition is the "learning of vocabulary as the by-product of any activity not explicitly geared to vocabulary learning", which must be clear and distinguished from intentional

vocabulary learning, defined as “any activity geared at committing lexical information to memory”.

The hypothesis of both incidental language learning in general, and vocabulary learning in particular, has been established primarily through research, one such study being that on first language acquisition by Nagy, Herman & Anderson (1985). Their research focused on how children acquire vocabulary in their first language, and concluded that the majority of vocabulary uptake is through repeated exposure to vocabulary in different contexts and situations. They found that in order for an item of vocabulary to be acquired, learners need to be exposed to it between 10 and 12 times. They also found that children (native speakers) from the ages of two to seven are able to learn 50 words a day from exposure to these words in their daily lives, but add that such instruction alone is insufficient for full vocabulary learning. They advised that teachers needed to supply students with sufficient and extensive reading materials because it increases the size of their vocabulary size as no other method could (Coady and Huckin, 1997).

It is widely claimed that learners’ with a high level of proficiency in reading will acquire most of their vocabulary from their reading, not from explicit instruction (Coady and Huckin, 1997). In his *Input Hypothesis*, Krashen (1989) identified a strong relationship between learning and acquiring vocabulary and the act of reading. He stated that learners who receive comprehensive input while reading are able to obtain vocabulary and spelling more effectively. There have been several other studies conducted in the same area that confirm this strong link, such as Moore and Surber’s 1992 study, which examined different methodologies of vocabulary acquisition and concluded that the best method to learn vocabulary is through context and keyword methods.

Brown, Waring, and Donkaewbua (under review, cited in Pigada and Schmitt, 2006, p.4) “found encouraging amounts of incidental vocabulary learning in terms of word-form recognition and prompted-meaning recognition [with vocabulary acquisition

from reading], but far less in terms of unprompted meaning production. Moreover, the word-form and receptive meaning knowledge seemed relatively durable over time”. Similarly, a 2003 study by Waring and Takaki (2003) used 15 participants reading the graded reader *A Little Princess*, which they used to test the value of higher repetition rates. They employed three types of test: an immediate post-test, a test after a month had elapsed and another when three months had elapsed. They found that their subjects’ vocabulary knowledge had improved by 23.5% (25 words) after one month, using Paribakht and Wesche’s scale to measure vocabulary knowledge. After three months, however, the participants were able to remember some of the words, but most had been forgotten, suggesting that learning vocabulary from texts, or incidentally, is not enough for full acquisition. They found that half of the words, which have been acquired from reading, are forgotten after three months.

Many researchers do, however, admit that incidental vocabulary acquisition in a second language is effective for the first few thousand most frequent words in that language.

Despite the positive results found for the effects of reading on vocabulary acquisition, however, other research in this area (Elley and Mangubhai, 1981; Krashen, 1993; Laufer, 2009) has found that acquisition such as that demonstrated by Mangubhai is not necessarily to be expected, which makes such a topic controversial, requiring further in-depth research.

Our knowledge about the nature of the relationship between vocabulary acquisition and reading is growing, as more studies are carried out into determining the approximate vocabulary size needed in order to read comprehensively in a second or foreign language, examining the rate of vocabulary acquisition from reading in a second language, and the nature of word retention.

In addition, Rott (1999) study on intensive reading, found that new words were more successfully learned when readers participate in appropriate practice with the new words. Rott indicated that two to six instances of contact with a new word in a meaningful context can result in significant gains, adding these word to the learner’s

vocabulary. From a pedagogical perspective, this suggests that to have an effective reading program with the goal of increasing vocabulary learning, a course must afford the opportunity for repeated encounters of familiar and target words over reasonably short periods of time.

While frequency of contact with new words is largely considered beneficial for vocabulary uptake, the question of exactly how many times a word needs to be encountered before it is in any sense “learned” is, however, still controversial. According to Nation (1990) and Waring (2001), students need to encounter a word more than once to gain receptive understanding of it. “Receptive” vocabulary refers to words that learners are able to distinguish while reading or hearing, and “productive” vocabulary refers to the words learners can use when speaking or writing (Milton, 2009; Nation, 2001).

The following table (Table 1, below) illustrates a sample of highly cited research in the field of vocabulary acquisition from reading in a foreign language (Waring and Takaki, 2003, p.132):

Study	Population	Exposure	Material read	Type of test used	Vocabulary gains
Pitts, White and Krashen (1989) Experiment 1	35 EFL Learners	6700 words	2 chapter of Clockwork Orange with 123 Nadsat words	Multiple choice-test	6.4%
Pitts, White and Krashen (1989) Experiment 2	61 EFL Learners	6700 words	2 chapter of Clockwork Orange plus 2 scenes of the video	Multiple choice-test	8.1%
Dupuy and Krashen (1993)	42 EFL Learners	15 pages of text	French text plus a video	Multiple choice-test	6.6 words above control
Hulstijn (1992)	65 EFL Learners	907 words	Advertisement in Dutch	State the meaning of 12 words	1 of 13 words (7.6%)
Horst, Cobb and Meara (1998)	34 EFL Learner	21,232 words	A full native speaker novel	Multiple choice and a word association test	4,62 od 23 MC the words unknown before reading (20.0%) 1.8 of 13 (16%) of the word association

Shows that can gain vocabulary from reading, but only on average 11% (from the scores shown above) – not a particularly impressive gain.

This contention that reading can enhance vocabulary knowledge incidentally, but with small gains, does not in fact contradict results that have shown the significant impact reading has on developing vocabulary acquisition or word recognition of learners. Such reading influences word knowledge and vocabulary uptake in several ways at once, as Laufer (2003. p 583) points out: “reading can sometimes be the source of initial knowledge of words, it can help to expand the knowledge of already familiar words, or it can reinforce the memory of words not yet firmly established in the lexicon”.

While a few studies have taken place on vocabulary acquisition from reading in the Saudi Arabian context, these are too small in number to afford any real understanding of the situation of vocabulary uptake and the level of Saudi learners in the area of incidental vocabulary acquisition from reading. Further studies are needed in this area in Saudi Arabia (and the present study is intended to be one of them).

As a general background into teaching and learning in Saudi Arabia, the main method used is the grammar-translation approach, which depends primarily on teaching grammar and ignoring the other aspects of language. While grammar is a fundamental aspect of learning any language, not just English, other areas such as vocabulary should not be ignored: the possession of a reasonably-sized vocabulary is vital for communication. Some research that exists on this point has been carried out by Al-Okloby (2001), who discovered that Saudi learners are not able to acquire at least half of the vocabulary in their textbooks. There are several reasons for this, involving teachers, the books themselves, classroom situations, and curricula, which will explain in details later. However, Saudi Arabia, as a modern nation developing extremely quickly, now uses the English language everywhere, and the demand for English language is increasing, particularly considering the fact that most jobs now require proficiency in the English language as one of their major employment conditions.

It has been nearly nine decades since Saudi Arabia began introducing English

Language Teaching (ELT) into their public school curricula (Assah, 1969 dates it as having begun in 1927). Al-Hazemi stated in 1993 that the outcomes of learning English in Saudi Arabia are lower than predicted: according to the Ministry of Education (MoEd), learners are expected to complete high school with a vocabulary size of approximately 3000 English words. Studies such as Al-Hazemi's (1993) and Al-Bogami's (1995), however, have found that Saudi students in fact finish high school with a far lower vocabulary size than 3000 words, even after spending six years learning English in school. In Al-Hazemi's (1993) study the subjects scored between 800 to 2000 words in the vocabulary level test and the mean score was about 10000.

Al-Akloby (2001) explored these results with the aim of determining a reason behind the failure of Saudi public school students to learn English vocabulary. He concluded that there may be several factors, not least among which is the age that Saudi students begin their English lessons. Until 2012, students started learning English at the age of 13, at level seven (intermediate): this has now been lowered to 10. Further factors are that learners have no opportunity to use English outside the classroom; the Ministry of Education word list does not contain a sufficient amount of vocabulary, as it is below the amount needed for students to gain reasonable mastery of the language; and Saudi Arabian textbooks contain a large amount of vocabulary related only to the Arab world, such as the names of Arab countries and currencies (Masrai, 2009). Al-Akloby (cited in Masrai, 2009) goes on to mention the fact that the writers of teaching materials fail to give sufficient emphasis to vocabulary inside texts, which clearly affects uptake. Furthermore, he claims that teachers are one of the strongest factors affecting learners' vocabulary uptake: there is no doubt that the teacher's role is crucial, and they have the responsibility of facilitating the learning process for learners. In his study, wherein he observed classes, Al-Okloby found that the teachers participating in his study were not actually following the teaching methods they were supposed to. He also discovered that there were no dictionaries of any kind available to the learners or the teacher, and in any case, dictionary use was not encouraged, and that teachers did not link new vocabulary with the real world, or providing collocation of the vocabulary in use.

Finally, he noted that the majority of the learners themselves were not motivated to learn English.

According to Al-Hamoud and Al-Salloum (2012), extensive and intensive reading has a noticeable effect on vocabulary acquisition in second language learning. They conducted an empirical study designed to measure the effectiveness of both extensive and intensive reading on the improvement of 127 female learners of English as a foreign language. These participants were divided into two experimental groups, and a type of reading (intensive or extensive) was chosen for each. The groups were exposed to their type of reading for eight weeks, and at the end of the study, the researchers concluded that both the extensive and the intensive groups made similar vocabulary gains of 2000-3000 words in the Vocabulary Level Test VLT.

Another study, conducted by Al-Shamrani (2003), examined the attitudes and beliefs of ESL learners in terms of their vocabulary development through extensive reading of authentic materials. The subjects in this study showed a positive attitude to learning vocabulary through extensive reading of authentic texts, and the research indicated that extensive reading improved learners' vocabulary along with other language skills.

Al-Nujaidi (2003) found that Saudi EFL learners in their first-year at university have a vocabulary size of between 500 and 700 word groups and low reading capacity, which is behind the level needed for reading complex text in English. This emphasized the strong relationship between comprehensive reading and one's vocabulary size and knowledge, as students didn't read comprehensively, they have a low vocabulary. According to Laufer (1997), no more than 1 in 20 words should be unfamiliar for readers to comprehend texts in a second language, and in fact Laufer states that 3,000 word groups are needed for second language learners to achieve comprehension of most texts.

3. The Importance of Learning Vocabulary

“Without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (Wilkins, 1972, p.111).

Many researchers assume that a sufficient vocabulary size and knowledge improves many other language skills. Stæhr (2008), for example, has claimed that vocabulary expansion relates strongly to greater achievement and performance in reading, writing, and listening.

4. Significance of the Study and the Rationale

This study aims to investigate the relationship between reading and the incidental English vocabulary acquisition of students. The focus is on intensive reading, as the learners will be reading short texts in detail in order to accomplish specific tasks or hone specific skills in the classroom such as the use of grammatical structures and comprehension. Long and Richards (1987) maintained that intensive reading can involve several tasks, including “detailed in-class analysis, led by the teacher, of vocabulary and grammar points”.

This study meant to measure the students’ receptive vocabulary knowledge. Receptive knowledge usually indicates something learners receive from an outside source, such as the acquisition of vocabulary from reading or listening to any kind of speech (Nation, 2001; West, 1928; Crow, 1986, Palmer, 1921). Nation extends the definition of receptive knowledge to include not only the ability to recognise, hear, or read a word, but also the ability to recognise its different written and spoken forms, what it means in a given context, and to recognise the different parts the word consists of.

Many studies indicate that teaching productive knowledge of word leads to learning the receptive one and likewise, that receptive learning leads to productive learning. Usually, receptive knowledge precedes productive learning, coming as the first step which may or may not be followed by productive knowledge.

One of the main reasons to conduct this study is the growing interest in the effect of such reading on L2 vocabulary acquisition and size, of which Bell (2001) and Crawford Comicitoli (2001), two prominent researchers in this area, are examples. In the Saudi Arabian context, several studies have recently been carried out on the effect of extensive reading, but other types of reading, (including intensive reading) have been

neglected. Related research that includes an intensive reading element is often more focused on the effect of general reading, or have more interest in questions about the attitude of learners toward different types of reading or strategies of expanding vocabulary. Al-Hammad's 2009 study, for example, concentrated on how vocabulary can be improved through the use of extensive reading in textbooks that include more detailed exercises, and Al-Rajhi's 2004 study employed a qualitative approach and a focus on investigating Saudi EFL students' experiences of extensive reading through the Internet. In a similar vein, Al-Shamrani (2003) conducted qualitative research on the usefulness of extensive reading programs in vocabulary acquisition.

Only Al-Haysony (2012) has looked specifically at intensive reading in a study that examined vocabulary discovery strategies used by Saudi EFL students in an intensive English language learning context. The subjects of the study were 746 male and female students joined in an intensive English language programme in the foundation year at University of Ha'il in Saudi Arabia. He used a questionnaire as an instrument to collect information and measure the frequency of use of vocabulary discovery strategies (VDSs). The result of Al-Haysony's study indicates that the subjects were obviously aware of all the categories of VDSs and the VDSs actually represented in their English courses. In addition, he found that these courses were not actually preparing students to be aware of different vocabulary learning strategies. Therefore, the designers of the textbook should be aware that students lack certain vocabulary learning strategies, and that the instruction of vocabulary learning strategy should be introduced for learners in future.

The present study will therefore fill an important gap in the research on vocabulary acquisition in Saudi Arabia, by focusing on intensive reading as a means to acquire vocabulary. As mentioned previously, there is a lack of general interaction between Saudi EFL learners and the English language (due largely to lack of exposure), so intensive reading can serve as one way whereby student can be exposed to a variety of English, through the selection of different texts.

Over the last two decades, numerous studies have emphasized the belief that second language learners can gain vocabulary through reading. Many findings, however, have suggested that incidental vocabulary acquisition can take too much time, and is an uncertain process, which raises questions about its suitability as an approach for second language learners (Paribakht and Wesche, 1997; Zimmerman, 1997, mentioned in Pigada and Schmitt, 2006). Meara (1997), on the other hand, argued that many studies do not help in the understanding of the acquisition process, as they often fail to examine the factors that lead to word retention. There remains, therefore, a gap in the understanding of the process of incidental vocabulary acquisition (Paribakht and Wesche, 1997; Paribakht and Wesche, 1999; Schmitt, 1998 mentioned in Pigada and Schmitt, 2006), and as a result, it has not necessarily been fully or correctly taken advantage of by teachers and learners.

In order to gain greater understanding, this study will explore the relationship between incidental vocabulary acquisition and reading, with specific focus on a variable widely considered to affect the retention of words: a word's frequency of repetition in a given text (Horst, 2005 mentioned in Pigada and Schmitt).

This research is of great importance for a variety of reasons, chief among which is the demand for using the English language in Saudi Arabia, as it has increased dramatically in line with Saudi Arabia's growing status as an open country for economic and business opportunities (Mahib and Alhaisoni, 2013; Teaching English in Saudi Arabia, 2012).

This study will have two side benefits, for both learners and teachers. The results should encourage students to read in a foreign language in order to improve their language skills and vocabulary acquisition, as the study's hypothesis contends that incidental vocabulary acquisition is possible through intensive reading. Teacher will have evidence that intensive reading can be used to enhance the vocabulary size of students, and justify integrating an intensive reading program into EFL courses. This also applies to educators at university level, as such an intensive reading program in university

would be just as invaluable to student vocabulary uptake. Uniquely, this study focuses on female learners only, and no other studies of this kind have taken place in the Saudi context. The importance of this is somewhat specific to Saudi Arabia itself, as gender segregation is still the norm within the Kingdom, and the results of an all-female study such as this can also be compared and contrasted with similar all -male or mixed-gender studies in the future.

Furthermore, the study can serve as a starting point for other researchers who may be interested in the Saudi context to investigate other language skills that might be acquired if intensive reading programs are integrated with EFL courses.

5. Methodology

This section contains descriptions of my research approach, methods, and procedure, as well as information about the participants, the pre-test and post-test, and the ethics of the study.

A. Research Questions:

The main questions of this study are:

1. To what extent can students learn vocabulary incidentally as they are studying English in a foreign language context?
2. Can more frequently -occurring words be learned more effectively with incidental learning?

B. The Study Groups (Participants):

The group that will take part in this study is comprised of 36 female undergraduate students between 18 and 20 years of age, at the beginning of their first year of English language specialization at Al-Khafji College, Saudi Arabia. The students' English learning before this comprised one year of university preparation studies, which includes English, and seven years of compulsory English education at school. All of the participants are Saudi Arabian, with Arabic as their first language and English as a second language.

Part of the application for participants required information about whether they had studied at a state or a private school, to ensure uniform quality of prior EFL learning. I have excluded all participants who were studied in private school. This is necessary as private schools often have far more English classes than state schools, and EFL tuition begins earlier. The participants were also asked if they had spent time outside Saudi Arabia, in an English speaking country, and if they had entered any additional institutes for learning English. All applications were considered, and students selected accordingly to these criteria. Each student had 8 hours of English training weekly, and they were all considered to be at the same level of English, judgements made by the researcher from information provided. They are mainly beginner to intermediate level in English language.

C. Study instruments:

This study employs quantitative methods and analysis. The instruments used in this study consist of two tests, administered before and after the experiment. Both tests have been designed by the researcher and include common vocabulary from the given texts. The vocabulary is arranged according to frequency of appearance in the text, starting with the most frequent and finishing with the least frequent, as it appears in the text. The first test will be performed and then three different texts will be given to the students one at a time. They will then be asked to work in groups in order to understand the text. After three classes, the test will be delivered again to measure any incidental vocabulary acquisition. (See appendix G, H)

D. Ethics:

A written consent form in English was given to each student, explaining the aims of the study and the part they would play, before the test was conducted.

Students were asked to join the study only if they were interested in taking part, and both teachers and students were given an information sheet stating their role in the study.

Data from the study is stored securely in a password-protected document in a password-protected computer.

6. Data Collection

The study uses an experimental research design to collect the required data for analysis (Larsen-Freeman and Long, 2014). An experimental research design involves a researcher manipulating one variable while controlling or randomizing the other factors (Ellis, 1994). I have asked one of my colleagues working as a tutor in the college to give me the final 20 minutes of each of her weekly, 2-hour classes over 6 weeks to conduct this study. In the first class, the pre-test was conducted before the texts were introduced to the participants. Then the teacher identified three reading texts or passages, selected from the internet based on their readability and appropriateness to intermediate-level learners. The three passages selected can be found in appendices D, E and F.

The participants were divided into groups that would henceforth read and discuss the texts by the teacher, and participants were advised to explain the text to each other. The following three weeks were devoted to reading the texts, with a different passage given each week. The fifth and sixth involved testing the participants again to determine how many words they had incidentally learned from their reading.

I have selected 36 words (used in both the pre- and post-test), I have randomly chose these words, from my experience in teach in the collage I suggest that these words would be unfamiliar to learners of their level. In the post-test, the words were clustered into four groups (A, B, C and D) according to their frequency of appearance in the reading texts. Category A comprised 9 different words, each appearing 4 times in the text. Category B comprised 9 different words, each appearing 3 times. Category C also comprised 9 words, each appearing in the text twice. Finally, category D comprised 10 different words that appeared in the text only once. In each category, the choice of words by the teacher included nouns, verbs, adjectives and adverbs to ensure variability in understanding the learners' range of vocabulary acquisition. Ensuring variability

during selection of words equates to random sampling, as postulated by Boruch (1997), and hence reliability and validity of the results obtained from data analysis (Gersten, et al., 2005). The following tables summarize the four categories of words used in this study.

Table 2: Group A (words appearing 4 times)

English Words	Arabic Translations
1. Slaves	عبيد
2. Sponsored	برعاية
3. Groom	عريس
4. Advantages	مزايا
5. Grew up	نشأ
6. Assassination	اغتيال
7. Improve	تحسن
8. Method	طريقة
9. Surrounded	محاط

Table 3: Group B (words appearing 3 times)

English Words	Arabic Translations
10. Concentrated	مركز
11. Maximize	تعظيم
12. Abroad	في الخارج
13. Mountains	الجبال
14. Home-made	محلي الصنع
15. Traditional	تقليدي
16. Certainly	بالتأكيد
17. Couple	زوجان
18. Realized	أدرك

Table 4: Group C (words appearing twice)

English Words	Arabic Translations
19. Screaming	صراخ
20. Wedding	زفاف
21. Guests	الضيوف
22. Declared	معلن
23. Costumer	مصمم الأزياء
24. Amendment	تعديل
25. Difficult	صعب
26. Obvious	واضح
27. Slower	أبطأ

Table 5: Group D (words appearing once)

English Words	Arabic Translations
28. Viable	قابل للتطبيق
29. Exception	استثناء
30. Recently	حديثا
31. Wonderful	رائع
32. Delicacies	شهية
33. Orientated	الموجه
34. Ceremony	حفل
35. Reception	استقبال
36. Bride	عروس

The words in Groups A and B were tested on the same day (in week five), whereas those in Groups C and D were tested on the following day of research (in week six) to avoid overloading the learners. They were asked by the English teacher to write out the meaning of the words in their first language (Arabic). For each correctly defined word, a score of 1 was allocated to the learner, and later the total scores were calculated out of the 36 words. This means that if 20 students correctly defined a word, a score of 20 was assigned to the item (see table 5 below). This process was repeated both before and after the reading experiment, which means that the research resulted in two score variables: one for the pre-reading experiment and the other for the post-reading experiment. There was also the third variable that was used to categorise the 36 words based on their frequency of appearance in the text, as mentioned earlier.

The pre-reading and post-reading scores were on the ratio level of measurement (Egghe and Rousseau, 1990), whereas the grouping based on the frequency of appearance of the words in the text was on ordinal level of measurement (Bard, Robertson and Sorace, 1996). Based on this understanding, the following table summarizes the procedure used to collect and record research data from the student based on the three variables and their corresponding level of measurement.

Table 6: Sample of data entry based on three variables

Word no.	Pre-reading	Post-reading	Group
1.	16	19	1
2.	13	16	2
3.	19	20	3
4.	26	24	4
5.	--	--	--

* Pre-reading and Post-reading scores are based on the number of correct answer for each question out of 36 students

7. Results

Table 6: Sample of data entry based on four variables

Word	PreReading Scores	Post Reading Scores	Group	Observed differences
Amendment	5	8	3	3
Orientated	5	8	4	3
Guests	6	14	3	8
Assassination	8	23	1	15
Declared	8	16	3	8
Customer	9	12	3	3
Reception	9	8	4	-1
Exception	9	12	4	3
Improve	10	29	1	19
Method	11	20	1	9
Viable	11	13	4	2
Surrounded	12	17	1	5
Maximize	12	18	2	6
Bride	12	14	4	2
Ceremony	12	15	4	3
Concentrated	10	16	2	6
Recently	13	8	4	-5
Advantages	14	27	1	13
Certainly	15	21	2	6
Mountains	19	22	2	3
Wonderful	14	15	4	1
Delicacies	8	13	4	5
Grew Up	12	25	1	13
Abroad	15	17	2	2
Realized	15	19	2	4
Traditional	15	19	2	4
Groom	9	26	1	17
Sponsored	11	24	1	13
Slave	13	29	1	16
Home-Made	14	19	2	5
Couple	16	22	2	6
Wedding	16	15	3	-1
Difficult	18	17	3	-1
Screaming	14	18	3	4
Slower	19	21	3	2
Obvious	21	23	3	2

* Pre-reading and Post-reading scores are based on the number of correct answers for each question out of 36 students.

* **Scale:** 1-represents words with a frequency of 4; 2-represents words with a frequency of 3; 3-represents words with a frequency of 2; 4-represents words with a frequency of 1

Based on the results obtained from the SPSS outputs, at least five students understood the correct meaning for each of the 36 words before they were subjected to the reading test. However, the maximum number that got the right meaning for each of the selected vocabulary items was 21 students, even before they had read the text. On average, about 12 out of 36 students discerned the correct meaning for each of the selected words before they encountered them in the reading test. On the other hand, at least eight students got the right meaning for each of the 36 words after they were subjected to the reading test. However, the maximum number that got the right meaning for each of the selected vocabulary items was 29 students after they were subjected to the reading test. On average, about 18 out of 36 students got the right meaning for each of the selected words after the reading test. These results are tabulated below.

Table 7: Descriptive Statistics for paired sample t-test for Pre- and Post-test reading scores

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-reading scores	36	5.00	21.00	12.1081	3.89290
Post-reading	36	8.00	29.00	17.7297	5.75736
Valid N (listwise)	36				

Based on the results tabulated in Table 7 (above), it is clear that students' scores on vocabulary acquisition increased after being subjected to the reading test. For instance, the minimum number of students who got the right meaning across all the 36 words increased from five to eight students. Likewise, the maximum number of students who got the right meaning across all the 36 words increased from 19 to 21 students. Additionally, the average performance increased from 12 to 18 students for each of the 36 words. However, before drawing the conclusion that student learning of vocabulary incidentally improves after reading English passages, hypothesis testing was used to determine whether the observed differences between pre-reading and post-reading was statistically significant at a 95% confidence level. Both the null and alternative hypotheses were formulated as follows:

7.1 Null Hypothesis:

Student learning of vocabulary incidentally is the same both before and after the reading test.

7.2 Alternate Hypothesis:

Student learning of vocabulary incidentally is different after the reading test.

In order to test the above hypotheses, a paired sample t-test was used for the analysis. This statistical test was ideal in comparing mean differences of scores for the 36 students before and after they were subjected to the reading test. The following results were obtained (Table 8, below).

Table 8: Paired Samples Test result output for Pre- and Post-reading scores

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Pre-reading scores/ Post-reading	-5.62162	5.45869	.89740	-7.44164	-3.80160	-6.264	36	.000

Based on the results output in Table 8 (above), the observed mean difference of 5.62 for vocabulary learning between pre- and post-reading of the English texts was statistically significant, above a 95% confidence level. As such, the null hypothesis was rejected because the probability value was less than 0.05 ($p=0.000$), which is the threshold for accepting or rejecting a null hypothesis. Because of this finding, the alternate hypothesis was accepted: meaning that student learning of vocabulary incidentally is different after the reading test. A conclusion was reached that, to some

extent, students learn vocabulary incidentally as they are studying English in a foreign language context.

A further analysis was conducted to find out whether the number of times a word appeared in the reading text affected how students learn vocabulary incidentally. To do this, the mean differences between pre-and post-reading scores were compared across words that appeared in the text once, twice, three times and four times. The results obtained were plotted in a graph, shown in Figure 1 (below).

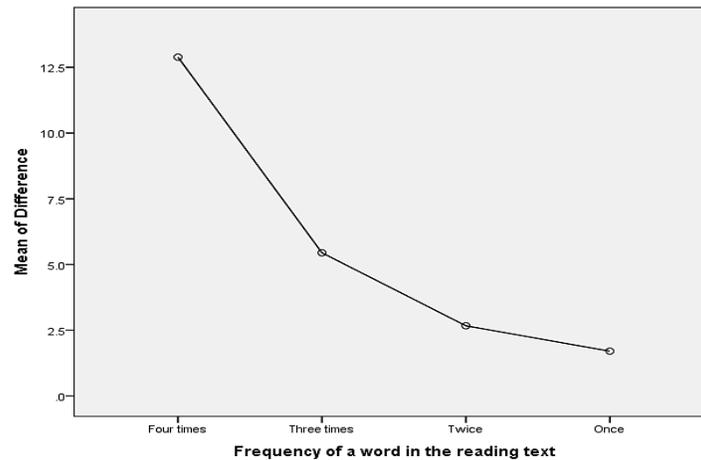


Figure (1): Trend line of mean differences across frequency of words in the reading text

Based on the data shown in Figure 1, the results suggest that for words that appeared in the text once, the students' incidental learning of vocabulary improved by approximately 1.5. On the other hand, the improvements for words appearing in the reading text twice, three times and four times were approximately 2.5, 5.0, and 12.5 respectively. This trend reveals that more frequently occurring words can be learned more effectively with incidental learning. However, before this conclusion could be drawn, hypothesis testing was used to determine whether the observed differences in post-reading improvement was statistically significant at a 95% confidence level, or if the results were due instead to chance caused by the research sample used. The null and alternate hypotheses were formulated as follows:

7.3 Null Hypothesis:

Students' incidental learning of vocabulary is the same for words appearing once, twice, three times and four times in the reading text.

7.4 Alternate Hypothesis:

Students' incidental learning of vocabulary is not the same for words appearing once, twice, three times and four times in the reading text.

In order to test the above hypotheses, ANOVA was used for analysis. The following results were obtained (Table 9, below).

Table 9: ANOVA analysis for differences in words frequency in the reading text

Differences					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	746.214	3	248.738	25.141	.000
Within Groups	326.489	33	9.894		
Total	1072.703	36			

Based on the results output shown in Table 9, the observed mean difference between words appearing once, twice, three times, and four times in the reading text was statistically significant, above a 95% confidence level. As such, the null hypothesis was rejected because the probability value was less than 0.05 ($p=0.000$). A conclusion was reached that more frequently -occurring words can be learned more effectively with incidental learning.

8. Discussions

Based on the results in the previous section, it was observed that to some extent students learn vocabulary incidentally as they are reading in English in a foreign language. An average improvement of about 5.6 was found from the pre- to post- reading scores, which can be integrated to mean that about 6 additional students got the correct meaning of a word after encountering it in the reading text. This is shown in the Table 10 (below).

Table 10: Vocabulary acquisition from Pre- to Post- reading

	N	Mean	Std. Deviation
Difference between Post and Pre-reading scores	36	5.6389	5.53510
Valid N (listwise)	36		

Of the 36 students who participated, these 6 additional students, when expressed as a percentage, can be interpreted to mean that incidental vocabulary acquisition of the entire classroom of learners improved by 16.7%. This finding helps bridge a research gap that previous studies have not filled. For instance, Pigada and Schmitt's 2006 study noted that incidental learning results in only a small amount of vocabulary acquisition for a single learner. A further study by Horst, Cobb and Meara (1998) noted that the rate of vocabulary acquisition in a second language through reading is one word in every 12 correctly identified (8.3% improvement). Both of these studies focused on acquisition for a single learner. For the present study, a 16.7% improvement represents the whole class.

As the 36 students used in the research sample were not requested to use the words in written or spoken form, but instead were asked to define the words in their first language, which is Arabic, it can be said that the findings of this study only apply to receptive knowledge of the words. Hence, it can be said that reading of this kind results in a 30% improvement on three key aspects of receptive word knowledge: recognition of word-form, recognition of form -meaning, and recall of form -meaning.

According to Nagy, Herman and Anderson (1985), in order for an item of vocabulary to be acquired, learners need to be exposed to it between 10 and 12 times. Contrary to this postulation, the findings of the present study indicated that it is also possible for learners to acquire a vocabulary item the first time they are exposed to it. However, the research findings also revealed that the higher the exposure, the better the vocabulary

acquisition. Although the present study did not take into consideration factors like word length, the findings were consistent with the 1998 study by Horst, Cobb and Meara, which showed a strong correlation between learning gains and the frequency with which each word was repeated in the given text.

9. Conclusion

From this study, it can be concluded that students learn vocabulary incidentally as they are studying English in a foreign language context. This incidental learning constitutes about 30% of vocabulary acquisition. Although this is a small percentage, it shows that ESL teachers should not only rely on incidental learning, but should also employ other strategies, such as teaching grammar. Therefore, incidental learning should not be used in isolation of other teaching strategies. Based on research findings that a strong correlation exists between learning gains and the frequency with which each word was repeated in the given text, ESL teachers in Saudi Arabia should encourage learners to read widely from passages, stories, and newspapers, among other written materials written in English. The more varied the texts, the more likely the student is to encounter the words over and over again, instead of having to read the same text several times, which could prove monotonous.

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