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Incidental L2 Vocabulary Learning through Using Hypertext Glosses

By

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Submitted to the Department of English Language and Literature of the College of Languages and Translation in Partial Fulfillment of the Requirements for the Degree of Master in Linguistics

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Abstract

Current computer technologies can provide several resources for the English foreign language learners to improve lexical knowledge through glosses. As the learner is engaged in processing the text, s/he can easily access definitions of terms or get more information about the topic through hyperlinks. This study extends current knowledge by exploring the attitude of EFL learners when using hypertext glosses that can appear in different locations in the text (in margin, in a pop-up window, on bottom of screen, and at the end of the text). The effect of glosses on the incidental learning of vocabulary is also investigated. Data are collected from 41 English-majored university students in Saudi Arabia. The results indicated that hypertext glosses is one of the ways for L2 vocabulary learning. Among the 4 gloss formats, the marginal type is considered the most preferred type by participants. Findings of the research provided deep insights on the design for online reading.

Keywords: Hypertext, Glosses, Location of Glosses, Incidental vocabulary learning, Learner preference
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List of Abbreviations and Acronyms

L1:  First Language.
L2:  Second Language.
CALL:  Computer Assisted Language Learning.
EFL:  English as Foreign Language.
Chapter One

Introduction

One of the major goals of EFL learners is to acquire a sufficient amount of vocabulary to enhance the general comprehension of a particular language. Having as large a lexical knowledge as possible is a great achievement that second language learners could attain during their learning processes. Ellis (1994) claimed, “The bedrock of L2 is its vocabulary” (p. 11). Traditionally, lexical items were limited to printed materials that could be found in the dictionaries. In essence, printed dictionaries were exclusive tools that could provide a large number of words in textual mode. In today’s context, however, technology has increasingly become a facilitative resource in providing learners with more variety in terms of up-to-date words in different modes (textual, visual and auditory). Beyond the traditional text on paper, Computer Assisted Language Learning (CALL) provides learners with a hypertext system through which they can click on the hyperlinked term and be shown its description or meaning. This system is a technique that is mainly used in the field of language learning and teaching to enhance vocabulary learning and reading comprehension. While surfing the glossed hypermedia text, readers can enjoy interacting with different types of information that are presented digitally on the computer screen. Unlike traditional glosses, hypertext glosses can be linked to the defined word and can appear in different locations in the text (in the margin, in a pop-up window, on the bottom of screen, and at the end of the text). Hypertext glosses are one of the advantages of the computer-based text. In fact, the way the glossed word is presented in different locations may affect the readers’ understanding of the text, either positively or negatively.
Reading activities are a more important source of L2 vocabulary learning than are other language skills. The relationship between vocabulary learning and reading comprehension in Computer-Assisted Language Learning environments is considered beneficial to learners, as it facilitates individual word learning and provides vocabulary assistance when reading the text (Kim and Kamil, 2001). The use of hypertext glosses allows the reader, with the aid of an interactive browser programme, to move easily from one document to another. It presents information in node and link networks that form navigable paths that can be revisited. It contains a short definition or explanation of the glossed word presented in different forms of language input – text, sound, graphics, or video (Chapelle, 1998). Hypertexts provide the opportunity to jump from one part of a document to another. They facilitate the retrieval of the available information about an item in the order preferred by the reader. The “Hypertext Approach,” so named by Goodfellow and Laurillard (1994), permits the generation of links among vocabulary items and the multiplicity of senses, contexts and discourses in which they are employed. This can lead to better comprehension, while providing more learner independence.

This support of CALL has better benefits in language learning when it is guided by the theories and concepts of Second Language Learning and Teaching. Incidental learning is one of the L2 learning method that has been investigated in the field of language skills in general and of vocabulary in particular. Many researchers have provided theoretical and experimental arguments to support their claims regarding the superiority of incidental over intentional vocabulary learning (or vice versa). Some language learning researchers suggest that much of the information learned during the normal course of life is learned incidentally, in the absence of conscious awareness (Krashen, 1985; Rott et al., 1999; Zahar et al. 2001). Therefore, this study has mainly
focused on how vocabulary could be acquired incidentally through using the hypertext technique. In addition, it explores learners’ preferences regarding the different locations of glosses and the locations that may enhance the incidental learning of vocabulary while reading an electronic text.

1.1 Statement of the Problem:

Due to the rapid and desirable development in technology in recent decades, it is necessary to include such developments in the field of language learning as well. Reading and vocabulary are basics skills in any language and go hand-in-hand. They have been supported by several techniques to facilitate the learning process. Electronic text, for example, is a successful attempt that allows readers to read on their electronic devices at any time, regardless of whether they are online or offline. However, readers are sometimes faced with new terms of which they do not know their meaning. This generates the need to devise a system that helps to increase the readers’ comprehension of the text, as well as to increase their lexical competence. Instead of the traditional way of looking up meanings in dictionaries, this system is designed to hyperlink difficult words, allowing reader to click on the glossed word and find its description within seconds. Varol and Erçetin (2016) confirmed that “when readers encountered with unfamiliar words have access to their meaning immediately through glosses rather than being left alone on their own, they acquire a great amount of terms”. The description of the glossed words could be presented in different forms and locations. Each location is experienced differently by the reader and may affect the degree of their learning. In fact, although many studies have been conducted on vocabulary learning, comprehension, and reading in the hypertext environment, few have investigated learners’ preferences for the different
locations of glossed words and its effect on acquiring vocabulary incidentally. Therefore, the present study was designed to fill this gap.

1.2 Purpose of the Study:

The main purpose of this study is to find effective ways of learning foreign language vocabulary through using the hypertext system in order to help educators when designing the educational technical tools for EFL learners. Essentially, this study assumes that the use of hypermedia, which requires a single click on the glossed word to find the meaning thereof, would increase the amount of vocabulary more than would traditional texts, in which the glosses are listed at the end of the text.

The second purpose is to explore the effect of gloss presentation on vocabulary learning from the learners’ point of view. It investigates the relationship between the learner’s performance and the different locations of the hypertext glosses (In the margin, in a pop-up window, on bottom of screen, and the end of the text). The purpose of this investigation is to explore which presentation of the glosses is the preferred presentation for EFL learners.

1.3 Research Questions:

1- Does the use of hypertext glosses while reading increase the incidental learning of L2 vocabulary?

2- Do learners prefer hypertext glosses over traditional paper glosses?

3- Where do learners prefer the glosses to be located? (In the margin, on bottom of screen, in a pop-up window, or at the end of the text).

4- Which one of these locations increases the incidental vocabulary learning to the greatest degree?
1.4 Significance of the study:

Hypertext system is considered effective as the readers do two things simultaneously, namely improving their vocabulary knowledge and their reading comprehension. There is wide and significant empirical support that many learners acquire a significant amount of second language vocabulary incidentally while reading for meaning (Cho & Krashen, 1994). However, little of the research has shown the advantages of hypertext glosses over traditional glosses and up to now, far too little attention has been paid to the incidental learning of vocabulary through using hypertext glosses. In support of hypertext or hypermedia, Dillon and Jobst (2005) reviewed a number of reviews of the literature on hypermedia and learning, the ability of hypermedia to make information available in a large number of formats, to provide individual control, to engage the learner and present various learning styles and needs to make it the harbinger of a new learning process. Research also indicates that learners react positively to the use of glosses in language learning (Poel & Swanepoel, 2003). Nagata (1999) summarized the four functions of glosses on vocabulary learning: (1) Marginal glosses are easier to use than a dictionary; (2) They draw learner’s attention to target words, supporting the notion of “consciousness-raising” and “input enhancement”; (3) They help to connect words to meanings immediately, contributing to the “meaningform connection” approach; (4) They encourage learners to perform lexical processing, which may contribute to the retention of the words. Thus, understanding the link between incidental vocabulary learning and hypertext presentation will help to design glosses in a way that supports second language learners.
1.5 Structure of the study:

The overall structure of this study took the form of five chapters, including the introduction in which the researcher introduced the paper and stated the problems that had motivated the present research. The chapter presented the purpose of the study and the significance thereof. The researcher then presented the research questions on which the study focuses. Finally, the chapter provided a description of the structure of the whole study and concluded with a definition of important terms.

Chapter Two begun by laying out the theoretical dimensions of the research, and examined how vocabulary learning and learning was discussed in previous studies. It then presented the relationship between technology and the field of language learning, followed by a discussion of vocabulary learning via reading before discussing incidental language learning in general and vocabulary in particular. Finally, it described the effect of the hypertext system on the incidental learning of L2 vocabulary.

The third chapter concerned the methodology used for this study. It included details about the research questions, participants, research instruments and procedure, and data analysis. Chapter Four analyzed the results of the survey and answered each of the research questions supported with resulting tables. The fifth chapter presented the findings of the research, noted on the limitation of the study, and recommendation for further research on CALL and vocabulary learning.

1.6 Definition of Important Terms:

1.6.1 Incidental Learning.

Throughout this paper, the concept of incidental learning referred to a covert or not explicitly specified process expected to occur as a by-product of an overt one (Souleyman, 2009). Incidental learning was defined by Ellis, (1994) as “the learning of
the knowledge about underlying structure of a complex stimulus environment by a process which takes place naturally, simply, and without conscious operations” (p. 1).

1.6.2 CALL

Computer-Assisted Language Learning (CALL) is an increasingly important area in applied linguistics. It refers to the use of computers as a tool for engaging in language teaching and learning. It is an alternative to the traditional paper text and has been hailed as being highly advantageous by many researchers (Chapelle 1998; Kim & Kamil, 2001; Warschauer, 1998). In CALL, the computer serves to convey and receive information and is a basis for producing and practicing the target language at one’s own pace and command of the language.

1.6.3 Hypertext

Hypertext can be labelled “hypertext” or “hypermedia” depending on the nature of the information it presents in the hyperlink. Both terms refer to a system of linked information, but this study will use the term “hypertext” to refer to any document regardless of the kind of media which contain it. According to McKnight, et al (1991) “hypertext consists of nodes (or ‘chunks’) of information and links between them”(p.2). Hypertext is associated with Web pages that allow the reader to move easily from one document to another. It also offers the possibility for learners to access information in any orders they prefer, with the possibility of reviewing the information as many times as desired while avoiding any irrelevant paths. (Souleyman, 2009).

1.6.4 Glosses

Nation (1983) defined glosses as short definitions. Segler (2001) referred to them as translations or brief explanations of difficult or technical texts (e.g. unusual words) and
classified glosses into textual glosses, pictorial (visual) and aural glosses. Roby (1999: 96) stated that “glosses are many kinds of attempts to supply what is perceived to be deficient in a reader’s procedural or declarative knowledge”. Lomicka (1998: 41) gave the definition more concretely “typically located in margin or bottom of screen, glosses are most often supplied for ‘unfamiliar’ words, which may help to limit continual dictionary consultation that may hinder and interrupt the L2 reading comprehension process”.
Chapter Two

Literature Review

This chapter reviews both empirical and descriptive studies related to the present paper. Due to the size of previous studies, it is limited to the studies that have direct effect on the current issue. Each of the studies touches on a particular dimension and bring a unique contribution to the issue under investigation. The chapter sheds light on the relation between hypertext system and vocabulary learning before introducing the relationship between the locations of glosses and learners’ preferences.

2.1 Theoretical Background of The Study

This study focuses on theories associated with hypertext glosses and their different locations and their impact on incidental mode of vocabulary learning. The most relevant to the present study and reviewed here are Vocabulary Learning Theory (Coady et al., 1985, 1993; Nation, 1990) and the Hypertext Theory (Goodfellow & Laurillard, 1994).

Coady et al.’s (1985) theory of vocabulary learning pays special attention to the category of words whose forms and often meaning are unknown to the learner and insists on the use of practical learning action as a solution to the limitations that constrain the second language learner’s vocabulary knowledge. According to Coady’s (1993) theory, vocabulary learners require good vocabulary knowledge to successfully derive word meaning. Because a limited knowledge can lead to faculty guessing.

According to Nation (1990), word choice should be based on the correct understanding of the principle behind it, the theoretical and experimental explanation, and the way of dealing with it. Nation also supports the view that foreign and second
language learners at lower levels need to develop vocabulary for different purpose, and those at higher level need to improve theirs in order to advance toward the native speakers’ level of competence and performance.

The second theory that supports the present study is the Hypertext Theory attributed to Goodfellow and Laurillard (1994), which allows generating links between vocabulary items and the discourses in which they are employed. In a hypertext document, information is stored as a network of nodes connected by hyperlinks. Hypertexts provide the opportunity to move from one part to another in a document and facilitate the possibility of revising the information as frequently as required and in any forms offered. The hyperlinked information can be accessed rapidly, which minimize the load of searching for such information from other documents including text, graphics, and sounds before returning to the reading material as is done with paper texts.

2.2 Vocabulary Learning through Reading

As stated in the first chapter, reading is the most significant source of second language lexical development (Krashen, 1989). Researchers of vocabulary learning have empirically proven that learners acquire much of L2 vocabulary incidentally while reading for meaning (Dupuy and Krashen, 1993; Zahar et al., 2001) and most people enlarge their vocabularies through reading by focusing on the meaning of words. Reading is strongly related to vocabulary knowledge (Laufer, 1997) and has a substantial influence on linguistics and cognitive development. Moreover, reading materials can be selected for groups of learners based on their reading level, interests, and academic needs. In order to aid vocabulary learning, input is provided in visual (pictorial) and verbal forms (written, spoken) and the interaction between reading and vocabulary learning is
discussed in many studies (Dupuy and Krashen, 1993; Laufer, 1997; Hunt and Beglar, 2005).

### 2.2.1 Incidental Vocabulary Learning

Incidental learning refers to the process of learning something without the intention of doing so. It is also the learning of one thing while intending to learn another (Richards & Schmidt, 2002). In terms of language learning, incidental learning is considered an effective way of learning vocabulary from context (Day, Omura, & Hiramatsu, 1991; Jenkins, Stein, & Wysocki, 1984; Nagy, Herman, & Anderson, 1985; Saragi, Nation, & Meister, 1978).

In support of the incidental learning of language, Wode (1999) states, “A language is learned not for its own sake but rather as a by-product of a given individual’s socialization process. For example, children acquire the language(s) of their environment as part of learning to understand the world around them. Moreover, the socialization process is never finished because people need to adapt continuously to changes in their environment, even as adults. Such adaptation includes the learning and development of whatever language(s) the individual may be challenged to learn, regardless of whether or not the language is an L1, L2, or relearning, or whether a language is acquired in a natural setting or in a classroom in which the language is the instructional process. In this sense the learning of a language is incidental with respect to the situation in which it occurs because the language is not the main object of the activity or process.” (p. 244).

Studies on incidental vocabulary learning in a foreign language usually involve subjects in extensive reading. One goal of extensive reading is to read for pleasure, which will hopefully reflect on the general language improvement and work as a boost in
reading motivation (Krashen, 1994). The language-learning process from extensive reading is generally incidental, with few specific learning demands from the teacher (Widdowson, 1979). Some researchers propose that extensive reading is essentially for the purpose of reinforcing partially known words, so that the reader may progress to known words, rather than focus on building new vocabulary (Nation & Wang, 1999; Waring & Takaki, 2003). Nevertheless, this does not exclude the learning of new vocabulary completely.

According to Hulstijn (2003), “Much of the burden of intentional learning can be taken off the shoulders of the language learner by processes of incidental learning, involving the picking up of words and structures, simply by engaging in a variety of communicative activities” (p. 358) in particular reading and listening activities during which the learner’s attention is focused on meaning rather than on the actual form of the language. Hulstijn defines incidental learning as a passive process, where people are exposed to information, and acquire knowledge of that information simply through that exposure. Some psychologists suggest that much of the information learned during the normal way of life is learned incidentally, in the absence of conscious awareness. This refers to activities that people can do but cannot explain how (Souleyman, 2009). Hence, it is recommended that foreign language learners take the advantage of the incidental nature of vocabulary learning in order to increase or improve their vocabulary knowledge.

2.3 Hypertext in Vocabulary Learning

As a means of enhancing vocabulary learning, there had been a proposal for the use of technology in teaching and learning vocabulary through the use of software and
hypertext, as well as the World Wide Web among other aspects. This use of computers and other technological devices provides the opportunity to second language learners in aiding their teaching and learning processes. According to Levy’s (1997) theory, the use of computers is not in itself the purpose of instruction but is primarily a tool for facilitating learning while being receptive to innovation. CALL is the most up-to-date and established acronym in describing the use of computers in aiding language learning. CALL has made great progress from its structural/behaviouristic beginnings (1970s-1980s), then to communicative shift (1980s-1990s) and into today’s integrative level (21st century) (Warschauer, 2000). Today’s CALL programs function as vital tools for learning and teaching and are adapted to learners’ needs. CALL facilitates the presentation of input and output in the many different forms they can take. Along the development path, CALL has used various kinds of software and hypertext to interconnect nodes of learning materials as well as bringing to the user the required additional information.

In line with his support for the use of technology for vocabulary learning, Nation (2001) notes the following:

“Computer-Assisted Vocabulary Learning (CAVL) can help fill many of the requirements for rich instruction, (...) [and] it is also worth considering the flexibility of computer programs in adapting to student needs, to environmental constraints, and in modifying the learning principles” (p. 108).

Computers can aid in addressing the various learning styles by presenting information in different forms, giving the learner control over the learning process by
individualizing instruction and adapting it and presenting the material to the learner via use of different types of media.

2.3.1 Hypertext Glosses

In general, researchers agree that the use of vocabulary glosses in L2 reading materials is a common practice and glosses facilitate reading comprehension and vocabulary learning in both printed and electronic materials. Glosses are mainly the enhancements that are used to present additional information on specific parts of text to facilitate understanding of unknown information. According to Nation (2001), glossing allows texts to be used that otherwise may be too difficult for learners to read. These enhancements provide exact meanings of words that might not be used correctly and permit minimal interruption of the reading process. Beyond the traditional text enhancement on paper, the CALL environment provides multimodality enhancements which are hypertext via the computer or the net. In the hypertext environment, glosses give immediate access to textual, and sometimes visual information and images attached to a word, enable readers to confirm or reject hypotheses made about the meaning of a word, and provide opportunities for readers to interact with the text.

A gloss contains several types of information such as synonyms, encyclopedic, grammatical notes, comments (Hullen, 1989), translations, cultural, historical and geographical references, and guiding questions (Lomicka, 1998). Researchers study glosses under different categories. For example, Roby (1999) categorized annotations into the following subdivisions: gloss authorship, gloss presentation, gloss function, gloss focus, gloss language, and gloss form. Jacobs, Dufon, and Hong (1994) list the following four reasons for the extensive presence of vocabulary glosses in reading texts: increasing vocabulary learning, enhancing comprehension, catering to students’ preferences, and
providing greater use of authentic texts. Glosses also remain a common and acceptable aid for EFL language textbooks (Davis, 1989).

Hypertext glosses have several advantages over traditional glosses. Glosses in computer-based texts can be approached both globally and linearly (Martinez-Lage, 1997), while glosses in paper-based texts can only be approached linearly. Occasionally, more than one type of multimedia gloss may be used together in computer-assisted annotations. Jones and Plass (2002), for example, used a combination of both written and pictorial annotations, and Al-Seghayer (2001, p. 202) developed “printed text definition coupled with video clips, and printed text definition coupled with still pictures” for promoting vocabulary learning. Unlike traditional glosses, hypertext glosses in a digitized electronic text can be linked to the defined word and can appear at any location on the screen when the target word is clicked.

Other studies which compare computer-based glosses to paper glosses have discovered an important effect for the use of multimedia in learning. Roby (1991) reveals that students who used a computer dictionary looked up significantly more words than those who used a paper dictionary. Moreover, the learners in the computer condition were also more satisfied with the semantic support presented to them than those in the paper condition. Aust, Kelley, and Roby (1993) also report that students looked up notably more words in electronic conditions than in conventional conditions and that students consulted glosses in electronic conditions more frequently than students in traditional conditions.

On the other hand, other studies have demonstrated that glosses do not have an effect on vocabulary learning. Jacobs, et al. (1994, p. 26) state, “Although those learners
with glosses outperformed their peers who did not have annotations on a vocabularyinstrument administered shortly after reading the text, that difference disappeared when the vocabulary instrument was reapplied four weeks later”. Black, et al. (1992) prove these findings and indicate that readers do not benefit from computer-based information for long-term retention. Indeed, Johnson (1982) affirms that glossing interrupts the global reading of texts.

### 2.3.2 The Effects of Glosses on Incidental Vocabulary Learning

Several studies confirmed that a gloss is more helpful than no gloss for incidental vocabulary learning. Hulstijn, et al. (1996) examined the effectiveness of glosses on incidental vocabulary learning. They studied the influence of dictionary use, marginal glosses, and the reoccurrence of unknown words on incidental vocabulary learning. Dutch students who learned French as L2 read a short text that had been slightly adapted under one of three conditions: marginal glosses (L1), bilingual dictionary use, and text-only (no glosses and no use of dictionary). They determined that marginal glosses (L1) were more beneficial than bilingual dictionary use or a text-only condition.

Recently, researchers have developed an interest in which gloss type is more effective, and whether there are any differences between the different glosses, for example, between single glosses and multiple-choice glosses (Duan & Yan, 2004). They examined the effects of multiple-choice glosses, single glosses and no glosses. The findings indicated that both multiple-choice glosses and single glosses significantly promoted incidental vocabulary learning, while multiple-choice glosses were better than single glosses in incidental vocabulary learning.

Studies have also examined the influence of other gloss types on incidental L2 vocabulary learning (Miyasako, 2002; Kost, et al., 1999). Kost, Foss, and Lenzini (1999)
compared the three gloss types: (1) text-only (L1) gloss; (2) picture-only gloss; and (3) text (L1)-plus-picture. The participants were 56 students at an American university who were studying German as a second language. They read a 272-word printed text containing 20 glossed words under three treatment groups with different gloss types. The subjects took two vocabulary tests on 14 target words. The first test was taken immediately after reading and the second two weeks later. The tests contained multiple-choice of definitions and supply definitions. The findings indicated that the text and picture glosses were better than the picture only or text only glosses. In addition to the above-mentioned studies, there are a few cases that have examined the effects of glossing with computerized materials.

2.3.3 Hypertext Gloss Examples

Aust, Kelley & Roby (1993) initially conducted a research study of the use of hyper-reference and conventional dictionaries in Spanish, using a technology-embedded electronic book with hyper-reference as shown below in Figure 1:
When L2 learners click on the unknown vocabulary that they encounter while reading, the meaning comes out with a separate window at the right side so that the learners can differentiate between the text they are reading and the word they want to look at. In this example, researchers tried to create an electronic but paper-looking book with glosses, focusing more on text glosses that are similar to paper ones. In the latest version (2007), the type of hypertext glosses are enhanced with visual and audio input. For example, as shown in Figure 2, L2 learners can listen to the pronunciation of unknown words with illustrations. Yoshii (2006) made a similar gloss that Aust, Kelley & Roby, 1993 used, trying to show how active verbs can be integrated with a pictorial gloss in Figure 2.
As some other examples of hypertext glosses, hypertext glosses can be located at the bottom of the reading passage similar to traditional paper glosses so that L2 readers can be less confused to use the glosses. Son (1998) represented well in his hypertext gloss-based reading interface in Figure 4.
Figure 4
Screen Shot of Hypertext-based Courseware

There are many people who suffer damage from various unexpected incidents or accidents in our surroundings. Among the commonly occurring incidents or accidents, floods, drought, earthquakes, strong wind and volcanic eruption, etc. are natural disasters which cause huge damage. Besides these natural disasters, many people are injured or die because of fire, traffic accidents or disease. Because we do not know when these things will happen, everybody should always prepare for them in order to cope with sudden damage.

Son (1998)

As technology evolves faster than ever, hypertext glosses are sophisticated with more technology features. Ariew and Ercetin (2004) created more learner-centered interface of hypertext glosses, giving separate but select annotations with multimedia to L2 readers in Figure 5. Regarding the levels of L2 readers, hypertext glosses can be used to help their reading or reduce their cognitive load while reading.
Hypertext glosses can be easily integrated into authentic materials ideal for L2 readers on the Web or Internet, which empowers extensive readers to acquire more information outside the classroom. It is more common to encounter hyperlinked reading materials on the Web or Internet. When L2 readers encounter difficult or unknown words in their computerized reading, they can be immediately assisted with multimedia-based hypertext or hypermedia glosses with authentic pictorial and audio input as shown in Figure 11.
Ciobanu, Hartley & Sharoff (2006)

2.4 Critical Review of Previous Related Studies

There is a disagreement regarding the effectiveness of using different types of glosses on foreign and second language learning. On the one hand, many studies found that hypertext glosses were useful for several aspects of language learning (e.g., see Davis, 1989; Hulstijn, Hollander, & Greidanus, 1996; Martinez-Lage, 1997; Roby, 1999; Bell & LeBlanc, 2000; Melissa, 2004; Pelletreau, 2006; SbuSeileek, 2008). Several studies also determined that the computer was valuable for facilitating reading comprehension. For instance, Blohm (1982) reports that students who used computer-based annotations recalled reading texts significantly better than those who had no access to glosses. Lomicka (1998) also draws the conclusion that computer-based reading with access to glosses may promote a deeper level of text comprehension than no glossing.
Gloss presentation—how and where the information is displayed—is most significant for the EFL reader because it influences the cognitive aspects of text processing such as comprehension and reading speed. Roby (1999) suggests using boldface type to indicate that certain words have been glossed. Martinez-Lage (1997) reports that highlighted words allow students to read without interrupting the process of reading and immediately provide readers with their meaning.

Other searches outlined the use of the invisible hypermedia annotations. Davis (1989) concludes that invisible glosses allow users to consult meanings whenever they desire. Al-Seghayer (2001) also observes that computer-based glosses do not disrupt the reading process since the glosses are invisible until users click on the glossed word.

Interestingly, several studies investigated students’ clicking behaviour. For instance, (De Ridder, 1999, 2000) states that the clicking behaviour does not influence text comprehension negatively, nor does it slow down the reading process. In contrast, some studies have reported that more intensive clicking on hyperlinks may hinder reading comprehension. De Ridder (2002) stresses that the constant disruption of the reading process in the marked condition may prevent learners from developing a coherent comprehension of the text.

Many studies have also stressed the need for conducting more studies on hypertext glosses’ presentation. De Ridder (2002) states that the matter of how glosses are presented is still under investigation and that the technique of gloss presentation may affect the cognitive aspects of text processing. Stark (1990) reports that pop-up windows should not obscure any portion of the text in which a glossed word is located so that users can view the gloss and the glossed word’s context simultaneously. Roby (1999) suggests
carrying out research based on dedicating a part of the screen as a gloss space because cluttered screens hinder rather than support readers. He proposes that all glosses could appear in a box at the lower right corner of the screen. In addition, Frenckner (1990) confirms the importance of conducting studies which focus on the way of gloss presentation such as typefaces and margins because the method of presentation affects comprehension and reading speed.

Jacobs et al. (1994) examined students’ opinions about the presentation of glosses in different locations in the text: at the bottom of the page, in the margins, or at the end of the text. Participants expressed a preference for glosses in the margin. Yet, to date there is little evidence studies focusing, as their main purpose, on comparing the efficacy that different locations of hypertext glosses have on vocabulary learning. Therefore, the present study was designed to fill this gap.

2.5 Implications of the Literature Review for the Current Study

Studies on the glosses of hypertext can be divided into three categories. The first involves the presentation format (or location) of hypertext glosses, particularly textual glosses that are generally used to offer clear definitions. The interest of the research in this category focuses on how to present verbal glosses that improve learning results (AbuSeileek, 2008, 2011; Cheng & Good, 2009; Yao, 2006; Yeung, 1999; Yeung, Jin, & Sweller, 1997). The second category centres on the learning effectiveness of different types of multimedia modes, for example, text, graphics, videos, and audio (Akbulut, 2008; Al-Seghayer, 2001; Ariew & Ercetin, 2004; Plass, Chun, Mayer, & Leutner, 2003; Yanguas, 2009). The final category contains research that investigates the effect of information presented in glosses, i.e., contextual or textual. Contextual glosses present
background information about the topic, whereas textual annotations present information about the text, such as definitions or pronunciation of words (Ariew & Ercetin, 2004; Ercetin, 2003; Sakar & Ercetin, 2005). The current study follows the first trend of gloss research in that its focus is on the presentation format of textual annotations.

This study was motivated by the results of many studies which revealed that learners demonstrated a strong preference for textual, definitional glosses over other types of glosses because most participants considered the definitions essential for comprehension (Davis & Lyman-Hager, 1997; Ercetin, 2003; Ko, 2005; Lomicka, 1998). Besides, AbuSeileek (2008) urged the need for more research comparing the effects of different formats of hypertext annotations on L2 learning. In conclusion, the previous studies provided the researcher with a deep insight on the field of the study. Moreover, it helped the researcher in preparing the research instrument and procedure.
Chapter Three

Research Method and Procedure

In chapter three, an attempt is made to describe the method and the procedure of the present study. The chapter is divided into three sections. The first section describes the research methods, the research questions outlined in Chapter One, as well as states the population and sample of the study. In the second section, the rationale for using the chosen research instrument is explained, the design of the instrument and its validity and reliability are illustrated. The third section displays the procedure followed in the present study.

3.1 The Research Method

This study aims to explore the effect of gloss presentation on the incidental vocabulary learning from the learners’ points of view. It is hence a descriptive research. The researcher relied on a quantitative approach using a survey methodology built on the use of closed questions. The results from a closed question questionnaire can give more solid and objective core data by excluding the researcher’s biases. This objectivity enables the findings to be applied in similar contexts with similar participants, and gives the present study a reasonable level of reliability. The research carried out statistical analysis of the data using mean values and standard deviation to explore the effect of gloss presentation on the incidental vocabulary from the perspectives of EFL learners.

3.1.1 Research questions

In order to answer the main research question, ‘Where do EFL learners prefer the glosses to be located?’, three other research questions emerged and, to answer these questions, a single questionnaire of mainly closed question design was employed for the
sample. The aim was to investigate the learner’s preferences towards gloss presentation and its effect on the incidental vocabulary learning through four dimensions: (a) background, (b) the use of hypertext glosses while reading, (c) Hypertext gloss versus paper gloss and (d) preferred gloss location. These four dimensions were addressed in order to find effective ways of learning vocabulary through using the hypertext system.

### 3.1.2 Population and sample

Forty-one undergraduate students participated in this study. They were Saudi students enrolled in the BA English program, exactly in the sixth semester in the Department of English Language at Majmaah University in Saudi Arabia. All participants were non-native English language speakers whose native language is Arabic. In other words, the students in the study had limited English proficiency. All students had used a computer prior to the study with an average of four years of experience. All of the students were females and none of them had previously studied abroad. Although the level of proficiency was not an issue, the participants had similar educational experience and linguistic level.

### 3.2 The Research Instrument

The study employed survey methodology to gather data by means of questionnaires. Many applied linguists view questionnaires as one of the most common instruments in exploring learners’ preferences. The questionnaire is a well established instrument within social science research for acquiring information on participant social characteristics, standards of behaviour or attitudes and their beliefs and reasons for action with respect to the topic under investigation (Bulmer, 2004). Richards (2001) believed that questionnaires offer many advantages, including that they can be administered to a
large number of participants and can be used to find information on many different types of topics.

3.2.1 Rationale for the use of the questionnaire.

The nature of the research as analyzing the attitudes and preferences of the participants made quantitative data more suitable than qualitative. Moreover, the questionnaire allows a large sample of the given population to be contacted at short time, which provide a huge variety of responses. Hence, taking an almost wholly quantitative approach by way of administering an online closed question questionnaire suited the type of participants in the study.

The researcher collected data through self-administered online questionnaires. Participants were given enough time to answer the questions on the same day for each group. They could fill in the questionnaires at their convenience and were not under pressure from time constraints or the researcher’s presence.

3.2.2 Designing the questionnaire.

Questionnaires have long been seen as useful methods to research a wide range of topics. In the present study, the questionnaire was designed to answer the four research questions (Appendix B). One question may be interpreted in more than one statement or question. The order of the questions follows the research questions sequence as it moved from general to specific. In the first section, options were available for each question and the research tried to ensure that all the potential answers were included. To avoid more than one response, the researcher turn off this option, so only one answer for the same question is accepted. Since the second section focus on learners’ opinions, a scale with a range of responses was used (always - sometimes - never). The third and the fourth
sections involve the agreement and disagreement of the participants towards the given statements that were succinct and clear. The fourth section ended with one open question (Which one of these locations increases the incidental vocabulary learning to the greatest degree and why?) where respondents choose from the given locations and then state the reason for this choice. The perceptions of the students gathered through the questionnaires were compared by the researcher to identify any differences. Towards the end of the questionnaire, the researcher thanked all participants.

3.2.3 Validity and reliability of the questionnaire.

To achieve content validity of the questionnaire, the researcher contacted three CALL professors at Al-Imam Mohammad Ibn Saud Islamic University to assess the dimensions of the hypertext gloss. Two responses were received and minor modifications were made upon these recommendations: section one, deletion of ‘age and gender’; section three, personalize the third statement ‘I instead of readers’.

The questionnaire was sent to three foreign language education professionals to check on ambiguity of terms, sequencing of items in relation to the dimensions to which they belong. The educational professionals were also asked to check the suitability of the dimensions for the purpose of the study. One response was received with no modification. (Appendix A).

The validity of the internal consistency of the questionnaire was calculated by using the Pearson Correlation Coefficient between the degree of each item and the total degree of the dimension to which this item belongs. Table 1 shows the results of the incidental vocabulary learning through reading, Table 2 shows the result of the usefulness
of hypertext glosses over paper glosses, and Table 3 shows the results of the preferred gloss location.

Table 1

Pearson Correlation of ‘Incidental vocabulary learning through reading’ Items and the Degree of the Dimension to Which They Belong

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>r</td>
</tr>
<tr>
<td>1.</td>
<td>I enjoy reading electronic text because they improve my lexical competence.</td>
<td>.490** P-value .001</td>
</tr>
<tr>
<td>2.</td>
<td>While reading, I come cross new words that I look for their meaning.</td>
<td>.620** P-value .000</td>
</tr>
<tr>
<td>3.</td>
<td>While reading, I use the hyperlinked words to understand the meaning.</td>
<td>.762** P-value .000</td>
</tr>
<tr>
<td>4.</td>
<td>After reading, I remember some words that were unfamiliar to me.</td>
<td>.559** P-value .000</td>
</tr>
<tr>
<td>5.</td>
<td>Using hypertext glosses has an impact on the incidental learning of vocabulary.</td>
<td>.586** P-value .000</td>
</tr>
</tbody>
</table>

Table 1 shows that the Pearson Correlation value between the degree of each item of the ‘incidental vocabulary learning through reading’ dimension and the total degree of the dimension is statistically significant at the level of less than 0.05, indicating the consistency of individual items of the dimension and their suitability for application to the study sample.
Table 2

Pearson Correlation of ‘Usefulness of hypertext glosses over paper glosses’ Items and the Degree of the Dimension to Which They Belong

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypertext glosses are sufficient replacement for printed information.</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.421**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.005</td>
</tr>
<tr>
<td>2</td>
<td>I acquire new words when using hypertext glosses more than paper gloss.</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.451**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.004</td>
</tr>
<tr>
<td>3</td>
<td>Gloss can help readers to read without interruption, as looking for</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td>the meaning in another document.</td>
<td>.431**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.005</td>
</tr>
<tr>
<td>4</td>
<td>Glosses provide immediate access to the desired meaning of unknown</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td>words.</td>
<td>.600**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td>5</td>
<td>Hypertext gloss help to avoid wrong guessing of meaning.</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.523**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td>6</td>
<td>Using hypertext gloss helped me access additional information that</td>
<td>r</td>
</tr>
<tr>
<td></td>
<td>paper gloss.</td>
<td>.636**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 2 shows that the Pearson Correlation value between the degree of each item of the ‘usefulness of hypertext glosses over paper glosses’ dimension and the total degree of the dimension is statistically significant at the level of less than 0.05, indicating the consistency of individual items of the dimension and their suitability for application to the study sample.
Table 3

*Pearson Correlation of ‘Preferred gloss location’ Items and the Degree of the Dimension to Which They Belong*

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Pearson Correlation</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I don't interact with hypertext glosses in the same fashion.</td>
<td>r 0.346*</td>
<td>0.027</td>
</tr>
<tr>
<td>2</td>
<td>The different locations of Glosses may affect the degree of learning.</td>
<td>r 0.467**</td>
<td>0.002</td>
</tr>
<tr>
<td>3</td>
<td>I remember spatial location of information within a text after reading it.</td>
<td>r 0.451*</td>
<td>0.005</td>
</tr>
<tr>
<td>4</td>
<td>Gloss locations may affect my performance in acquiring vocabulary.</td>
<td>r 0.318*</td>
<td>0.043</td>
</tr>
<tr>
<td>5</td>
<td>I prefer hypertext glosses to be mentioned at the end of the text.</td>
<td>r 0.647**</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>I prefer glosses that are as close as possible to glossed words.</td>
<td>r 0.639**</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 2 shows that the Pearson Correlation value between the degree of each item of the ‘preferred gloss locations’ dimension and the total degree of the dimension is statistically significant at the level of less than 0.05, indicating the consistency of individual items of the dimension and their suitability for application to the study sample.

The reliability of the questionnaire was demonstrated by using Cronbach’s alpha; (see Table 4).
Table 4

Reliability of the Questionnaire Using Cronbach’s alpha

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental Vocabulary Learning through reading</td>
<td>.65</td>
<td>5</td>
</tr>
<tr>
<td>usefulness of the Hypertext glosses over paper gloss</td>
<td>.67</td>
<td>6</td>
</tr>
<tr>
<td>usefulness of the Hypertext glosses over paper gloss</td>
<td>.73</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 4 shows that applying Cronbach’s alpha to all dimensions of the questionnaire was acceptable statistically; studies indicate that Cronbach’s alpha is considered acceptable statistically if it has a value of more than 0.60 (Gliem & Gliem, 2003). The results reflect the reliability of the questionnaire for application to the study sample.

3.3 The Research Procedure

3.3.1 Research process.

On March 29th 2017, the researcher obtained the college letter with the student’s affiliation and purpose of study (Appendix B1). On March 30th 2017, the researcher requested permission to conduct the study from the Dean of the Higher education at Majmaah University, where the researcher studied her BA (Appendix B2). Approval needed to come from the English Language Department as the participants of the study were students who studied in the sixth level. On April 9th 2017, the Head of Research Centre requested approval from the Head of English Department in the College of Education to allow the researcher to administer and collect questionnaires in their departments (Appendix B3). Then the approval of the English Department was received (Appendix B4) and after that the researcher contacted the Head of English Department on April 11th 2017, in order to schedule the day for collecting data.
3.3.2 Data collection

The administration and collection of questionnaires was carried out between April 13th and 17th 2017. The researcher self-administered the research tool in order to ensure that participants understand the concept and the purpose of the study. Online questionnaires were displayed on the screen for each respondent. The attended students used the computers available at the phonetics laboratory to fill the questionnaire during the given time. Due to the small number of students in each group, the researcher decided to apply the study on two sets instead of one. About 41 online questionnaires were submitted from the two sets who were treated in the same way.

3.3.3 Data analysis.

Descriptive and inferential statistical techniques were used in the study. A statistical package (SPSS version 24) was used to generate frequencies and percentages to describe the sample of the study. The individual questionnaire items in each dimension were coded in a Microsoft Excel document and SPSS was used to calculate the mean values and the standard deviation of the individual questionnaire items in each dimension and in the dimensions as a whole. Mann-Whitney U test was used to make a comparison differences between using hypertext glosses while reading or not in relation to incidental vocabulary learning through reading and usefulness of the Hypertext glosses over paper gloss. The open-ended question in the second section of the fourth dimension, which sought to explore the most useful gloss location for EFL learner, was analyzed by finding the frequency of occurrence of unified themes. The questionnaire’s validity was measured using Pearson’s Correlation Coefficient and the questionnaire’s reliability was tested using Cronbach’s alpha.
3.4 Conclusion

A single closed questionnaire with four dimensions was chosen as the research instrument to best suit the participants who are students at Majmaah University. The reliability of the questionnaire was statistically tested. Questionnaires were completed by the two sets of participants and statistical techniques were used to analyze the data received back from respondents.
Chapter Four

Analysis and Results

This chapter presents analysis and results of the data obtained from respondents through survey with regard to explore the different locations of hypertext glosses which may help in designing language learning materials. The questionnaire used in the study included four main dimensions. These dimensions are intended to collect data in relation to answer key research questions. Among these four key dimensions, first dimension is focused on respondents’ knowledge in computer and hypertext glosses. The second dimension is focused on respondents’ estimation of incidental vocabulary learning through reading. The third dimension is focused on respondents’ perception of the usefulness of the hypertext glosses over paper gloss. The last dimension is related to find the preferred gloss location. Respondents were asked to rate the items on these four major dimensions. The following section provides descriptive statistics and results of the study.

4.1 Descriptive Statistics

4.1.1 Respondents’ knowledge of computer and hypertext glosses

Results regarding respondents’ knowledge of computer and hypertext glosses are presented in Table 5. Respondents were asked to indicate number of years since they use computer for the sake of language learning. Results indicated that 46.3% of the participants were using computer from 3 to 4 years for the sake of language learning. A large number of respondents (41.5%) indicated the use of computer for more than 5 years. Only 12 percent indicated less than 2 years of computer usage for the sake of language learning.
Respondents were also asked to point out whether they use the hypertext glosses while reading. Result suggested that a large percentage of 73.2% were using the hypertext glosses while reading. Only 26.8% of the sample respondents indicated that they did not use it.

**Table 5**

*Descriptive statistics of respondents’ knowledge in computer and hypertext glosses*

<table>
<thead>
<tr>
<th>Items</th>
<th>Options</th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. For how many years did you use the computer for the sake of language learning?</td>
<td>Less than 2 years</td>
<td>5</td>
<td>12.2%</td>
</tr>
<tr>
<td></td>
<td>3 to 4 years</td>
<td>19</td>
<td>46.3%</td>
</tr>
<tr>
<td></td>
<td>over 5 years</td>
<td>17</td>
<td>41.5%</td>
</tr>
<tr>
<td>2. Did you use the hypertext glosses while reading?</td>
<td>Yes</td>
<td>30</td>
<td>73.2%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11</td>
<td>26.8%</td>
</tr>
</tbody>
</table>

**4.1.2 Learner’s Estimation of Incidental Vocabulary Learning through Reading**

Table 6 presents descriptive statistics including mean values and standard deviation about the learner’s estimation of incidental vocabulary learning through reading. Results showed that the mean value for incidental vocabulary learning through reading was 2.29 with standard deviation of 0.34. The findings suggested that in terms of enjoying reading electronic text for the reason of improving their lexical competence, a large number of participants (48.8%) indicated as sometime, while 36.6% of the participants indicated that they always enjoy reading text as it improve their lexical competence. A small percentage of participants (14.4%) indicated it never improve their lexical competence.
In terms of coming across new words while reading, the findings suggested that a large number of participants (63.4%) indicated that they sometime come across new words while reading, while 31.75% indicated as always they come across new words. A small percentage of 4.9% participants mentioned they never come across new words while reading. A reasonable percentage of 31.7% indicated as always come with new word while reading.

Regarding use of hyperlinked words while reading, most of participants pointed as sometimes used the hyperlinked words to understand the meaning while reading, followed by 39.0% of the participants who pointed as always using hyperlinked words to understand the meaning. Only 4.9% of the participants did not use the hyperlinked words to understand the meaning. With regards to remembering some words after reading, a high percentage of 70.7% indicated as sometimes remembered some words that were unfamiliar to them, while 26.8% of participants mentioned as always remembered some words. Only 2.4% of participants indicated they did not remember some words that were unfamiliar to them.

In terms of using hypertext glosses has an impact on the incidental learning of vocabulary, 58.5% of participants answered as sometimes using hypertext glosses has an impact on the incidental learning of vocabulary. A large number of participants (39.0%) indicated as always using hypertext glosses has an impact on the incidental learning of vocabulary compared with only 2.4% participants who opted that using hypertext glosses has never an impact on the incidental learning of vocabulary.

Overall, the findings indicated that the mean and standard deviation for overall dimension of incidental vocabulary learning through reading was 2.29±0.34. Where
result for item of ‘Using hypertext, glosses has an impact on the incidental learning of vocabulary’ was 2.37±0.536 with highest mean value. While item related to ‘I enjoy reading electronic text because they improve my lexical competence’ has lowest mean result with 2.22±0.690.

Table 6

**Mean and Standard Deviation of the incidental vocabulary learning through reading**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Items</th>
<th>Never (1)</th>
<th>Sometimes (2)</th>
<th>Always (3)</th>
<th>Mean</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>I enjoy reading electronic text because they improve my lexical competence.</td>
<td>6</td>
<td>14.6%</td>
<td>20</td>
<td>48.8%</td>
<td>15</td>
<td>36.6%</td>
</tr>
<tr>
<td>2</td>
<td>While reading, I come cross new words that I look for their meaning.</td>
<td>2</td>
<td>4.9%</td>
<td>26</td>
<td>63.4%</td>
<td>13</td>
<td>31.7%</td>
</tr>
<tr>
<td>3</td>
<td>While reading, I use the hyperlinked words to understand the meaning.</td>
<td>2</td>
<td>4.9%</td>
<td>23</td>
<td>56.1%</td>
<td>16</td>
<td>39.0%</td>
</tr>
<tr>
<td>4</td>
<td>After reading, I remember some words that were unfamiliar to me.</td>
<td>1</td>
<td>2.4%</td>
<td>29</td>
<td>70.7%</td>
<td>11</td>
<td>26.8%</td>
</tr>
<tr>
<td>5</td>
<td>Using hypertext glosses has an impact on the incidental learning of vocabulary.</td>
<td>1</td>
<td>2.4%</td>
<td>24</td>
<td>58.5%</td>
<td>16</td>
<td>39.0%</td>
</tr>
</tbody>
</table>

**Incidental Vocabulary Learning through reading.** 2.29 0.34

4.1.3 Respondents’ Perception of the Usefulness of the Hypertext Glosses over Paper Glosses

The perceptions of respondents regarding the usefulness of the Hypertext glosses over paper glosses are presented in Table 7. The mean values and standard deviation of the learners’ responses were calculated for the individual items of this dimension and the
total mean and standard deviation for the usefulness of the Hypertext glosses over paper glosses.

Results in Table 7 showed that 75.6% of the participants indicated agreement that hypertext glosses are sufficient replacement for printed information as compared to only 24.4% who indicated disagreement that hypertext glosses are sufficient replacement for printed information. A high percentage of participants (78.0%) indicated agreement to the statement that they acquire new words when using hypertext glosses more than paper gloss. A relatively small percentage of 22.0% of participants showed disagreement with the view to acquire new words when using hypertext glosses more than paper gloss. Most of participants (87.80%) showed agreement that Gloss can help readers to read without interruptions, as looking for the meaning in another document. A small number of participants i.e. 12.2% participants were in disagreement with the statement.

In terms of the item that glosses provide immediate access to the desired meaning of unknown words, a large number of respondents with 82.9% suggested agreement with view as compared to only 17.1% who indicated disagreement that glosses provide immediate access to the desired meaning of unknown words.

Regarding the item that hypertext gloss help to avoid wrong guessing of meaning, a large percentage of respondents (78.0%) showed agreement that hypertext gloss help to avoid wrong guessing of meaning, while only 22.0% of the participants indicated disagreement with the statement. This result suggest that in contrast to disagreement, most of participants agreed that using hypertext gloss helped them to access additional information than paper gloss.
Overall, the descriptive statistics including mean and standard deviation showed in Table 7 for usefulness of the Hypertext glosses over paper gloss dimension was 1.199±0.175. The item related to ‘Hypertext glosses are sufficient replacement for printed information’ has the highest mean score with 1.24±0.435. The three items related to ‘acquire new words when using hypertext glosses more than paper gloss; Hypertext gloss help to avoid wrong guessing of meaning; and Using hypertext gloss helped access additional information that paper gloss’ has the second ranks with same mean score of 1.22±0.419. The mean score for the third ranking results obtained for item ‘Gloss can help readers to read without interruption, as looking for the meaning in another document’ was 1.17±0.38. Finally, the least mean score for item related to ‘Gloss can help readers to read without interruption, as looking for the meaning in another document’ was 1.12±0.331.

Table 7

Mean and Standard Deviation of the usefulness of the hypertext glosses over paper glosses.

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Agree (2)</th>
<th>Disagree (1)</th>
<th>Mean</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Freq</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Hypertext glosses are sufficient replacement for printed information.</td>
<td>31</td>
<td>75.6%</td>
<td>10</td>
<td>24.4%</td>
<td>1.24</td>
</tr>
<tr>
<td>2</td>
<td>I acquire new words when using hypertext glosses more than paper gloss.</td>
<td>32</td>
<td>78.0%</td>
<td>9</td>
<td>22.0%</td>
<td>1.22</td>
</tr>
<tr>
<td>3</td>
<td>Gloss can help readers to read without interruption, as looking for the meaning in another document.</td>
<td>36</td>
<td>87.8%</td>
<td>5</td>
<td>12.2%</td>
<td>1.12</td>
</tr>
<tr>
<td>4</td>
<td>Glosses provide immediate access to the desired meaning of unknown words.</td>
<td>34</td>
<td>82.9%</td>
<td>7</td>
<td>17.1%</td>
<td>1.17</td>
</tr>
<tr>
<td>5</td>
<td>Hypertext gloss help to avoid wrong guessing of meaning.</td>
<td>32</td>
<td>78.0%</td>
<td>9</td>
<td>22.0%</td>
<td>1.22</td>
</tr>
</tbody>
</table>
Using hypertext gloss helped me access additional information that paper gloss.

<table>
<thead>
<tr>
<th>6</th>
<th>Using hypertext gloss helped me access additional information that paper gloss.</th>
<th>78.0%</th>
<th>9</th>
<th>22.0%</th>
<th>1.22</th>
<th>.419</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Usefulness of the Hypertext glosses over paper gloss.</td>
<td>1.199</td>
<td>0.175</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.1.4 Respondents’ Preferences of Gloses Locations

The perceptions of respondents regarding the preferences of glosses locations are presented in Table 8. The mean values and standard deviation of the learners’ responses were calculated for the individual items of this dimension and the total mean and standard deviation for the preferences of glosses locations.

In terms of the item related to interaction with hypertext glosses in the same fashion, results showed in Table 8 suggested that 51.2% of the participants showed disagreement with the statement that they don't interact with hypertext glosses in the same fashion. On the other hand, 48.8% of the participants indicated agreement with the statement suggesting that they do not interact with hypertext glosses in the same fashion.

Regarding the item that the different locations of Gloses may affect the degree of learning, a large number of respondents (63.4%) showed agreement that the different locations of Glosses may affect the degree of learning as compared to only 36.6% who showed disagreement. In terms of remembering spatial location of information within a text after reading it, a high percentage of 70.7% participants showed agreement as compared to 29.3% participants who showed disagreement that I remember spatial location of information within a text after reading it. Most of participants (51.2%) were in agreement that gloss locations may affect their performance in acquiring vocabulary. About 48.8% of participants showed disagreement with the statement. Results also suggested that 56.1% of participants showed agreement that they prefer glosses that are
as close as possible to glossed words. Among the respondents, about 43.9% participants showed disagreement.

In terms of the mean values and standard deviation scores showed in Table 8, the highest mean score was for item related to ‘I don't interact with hypertext glosses in the same fashion’ with 1.51±0.506. Item related to ‘Gloss locations may affect performance in acquiring vocabulary, and prefer hypertext glosses to be mentioned at the end of the text’ has second highest mean rank with 1.49±0.506 for each. Item of ‘prefer glosses that are as close as possible to glossed words’ has third highest mean score results with 1.44±0.502. The different locations of Glosses may affect the degree of learning showed fourth highest mean score with 1.37±0.488. Lastly, results showed the lowest mean score for item of ‘remember spatial location of information within a text after reading it’ with 1.29±0.461.

Table 8

Mean and Standard Deviation of preference of glosses locations.

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Agree (2)</th>
<th>Disagree (1)</th>
<th>Mean</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I don't interact with hypertext glosses in the same fashion.</td>
<td>20 48.8%</td>
<td>21 51.2%</td>
<td>1.51</td>
<td>0.506</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The different locations of Glosses may affect the degree of learning.</td>
<td>26 63.4%</td>
<td>15 36.6%</td>
<td>1.37</td>
<td>0.488</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I remember spatial location of information within a text after reading it.</td>
<td>29 70.7%</td>
<td>12 29.3%</td>
<td>1.29</td>
<td>0.461</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Gloss locations may affect my performance in acquiring vocabulary.</td>
<td>21 51.2%</td>
<td>20 48.8%</td>
<td>1.49</td>
<td>0.506</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>I prefer hypertext glosses to be mentioned at the end of the text.</td>
<td>21 51.2%</td>
<td>20 48.8%</td>
<td>1.49</td>
<td>0.506</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>I prefer glosses that are as close as possible to glossed words.</td>
<td>23 56.1%</td>
<td>18 43.9%</td>
<td>1.44</td>
<td>0.502</td>
<td>3</td>
</tr>
</tbody>
</table>

Preferred gloss location | 1.43 | 0.241
4.1.5 Participants’ Responses for Which Gloss Location May Increase Vocabulary Learning to the Greatest Degree.

Results regarding participants’ perspective about location increases the incidental vocabulary learning to the greatest degree is presented in Table 9. Respondents were asked to indicate as which one of the locations including marginal; bottom of screen, in a pop-up window, and at the end of the text location increases the incidental vocabulary learning to the greatest degree.

Results suggested that 31.7% of the participants indicated marginal gloss location. In response to the reasons for the ‘marginal gloss’ location, the participants provided a reason that it is relatively easy and simple to access. This result suggest that seeing the meaning of the word exactly on the left or on the right side will be easier than listing the meaning of the words at the end of the text or at the top of it. The other reason indicated was that as compared to other locations, it is much clearer to the reader. About 17.1 percent respondents considered ‘bottom of the screen’ location as appropriate. In terms of the reasons for ‘bottom of the screen’, participants suggested that it is being clear and don’t make them confused.

A percentage of 22% participants suggested a location ‘in a pop-up window’. In response to the reasons, participants indicated that ‘In a pop-up window’ it is easy to understand specific words, and it can help them remember the meaning since it is stated in a box. A percentage of 29.3% indicated ‘at the end of the text’ as a location that increases the incidental vocabulary learning to the greatest degree. Following the reason that it is easy and similar to the usual way they are used to.
Table 9

Participants’ responses for which gloss location may increase vocabulary learning to the greatest degree.

<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From your perspective, which one of these locations increases the incidental vocabulary learning to the greatest degree? And state why?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marginal gloss</td>
<td>13</td>
<td>31.7%</td>
</tr>
<tr>
<td></td>
<td>Bottom of screen</td>
<td>7</td>
<td>17.1%</td>
</tr>
<tr>
<td></td>
<td>In a pop-up window</td>
<td>9</td>
<td>22.0%</td>
</tr>
<tr>
<td></td>
<td>At the end of the text</td>
<td>12</td>
<td>29.3%</td>
</tr>
</tbody>
</table>

4.2.1 Mann-Whitney U test:

The data obtained from respondents was also analyzed using a non-parametric test of Mann-Whitney U test. It was used for the differences between the use of hypertext glosses while reading with incidental vocabulary learning through reading and usefulness of the hypertext glosses over paper gloss. Mann-Whitney U test is considered as an alternative non-parametric test to the t-test for independent samples. Moreover, the Mann-Whitney U test converts the scores on the continuous variable to ranks across the two groups.

Using Mann-Whitney U test, it was examined whether respondents differ in terms of their scores between the use of hypertext glosses while reading with incidental vocabulary learning through reading and usefulness of the hypertext glosses over paper gloss. Table 10 provide measures of the Mann-Whitney U test results for the use of hypertext glosses while reading with incidental vocabulary learning through reading and usefulness of the hypertext glosses over paper gloss. As shown in table 10, the Z value is 156.5 with a significance level of $p = 0.797$ for the use of hypertext glosses while reading
score, thus, the result is insignificant. These results indicated that the differences between 
the use of hypertext glosses while reading with incidental vocabulary learning through 
reading and usefulness of the hypertext glosses over paper gloss was not significant.

**Table 10**

*Mann-Whitney U test*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Did you use the hypertext glosses while reading?</th>
<th>N</th>
<th>Mean Rank</th>
<th>Mann-Whitney U</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental Vocabulary Learning through reading.</td>
<td>Yes</td>
<td>30</td>
<td>21.28</td>
<td>156.500</td>
<td>0.797</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11</td>
<td>20.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usefulness of the Hypertext glosses over paper gloss.</td>
<td>Yes</td>
<td>30</td>
<td>19.43</td>
<td>118.000</td>
<td>0.149</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11</td>
<td>25.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.2.2 Kruskal Wallis Test:**

The data obtained from the respondents was also analyzed using Kruskal Wallis 
test. It was used to analyze the differences between groups in terms of the 'locations 
increase the incidental vocabulary learning to the greatest degree” in relation to incidental 
vocabulary learning through reading and usefulness of the Hypertext glosses over paper 
gloss. Table 11 presents the results of Kruskal Wallis test. Results indicated that the p 
values for incidental vocabulary learning through reading and usefulness of the hypertext 
glosses over paper gloss were 0.951 and 0.062 respectively suggesting that there were no 
significance differences between preferred location that increase the incidental 
vocabulary learning to the greatest degree in related to Incidental Vocabulary Learning 
through reading and usefulness of the Hypertext glosses over paper gloss.

**Table 11**

*Kruskal Wallis Test*
Generally, the results of the study showed that hypertext glosses may increase the incidental vocabulary acquisition while reading. Moreover, it illustrated the participants’ tendency for the hypertext glosses more than traditional glosses. Among the four formats, marginal format was the most preferable type with the percent of 31% and bottom of screen format is considered the least preferred type with the percent of 17%. The following discussion will show the detailed result of each dimension.

### 4.3 Discussion

In this study, annotation has been recognized as one of the most effective instruments for facilitating vocabulary learning of L2 learners. This study explore the effects of gloss formats in terms of in margin, bottom of screen, pop-up window, and at the end of the text on vocabulary learning of Saudi English learners with different advanced levels of L2 proficiency. The results of the study indicated that texts with annotated words in the margin were the most highly preferred, followed by texts with annotated words at the end, in pop-up window, and finally on the bottom of the screen.

Keeping in view the findings of this study, it can be asserted that learners preferred to have access to hypertext glosses while reading. They seemed to have a
positive perception toward using hypertext glosses and showed agreement that it may improve their lexical competence. These findings are consistent with those of Cheng and Good (2009) study, which suggested that access to glosses, regardless of the type, enhance vocabulary learning.

Among the other findings, this study showed that 75.6% of participants were in agreement that hypertext glosses are sufficient replacement for paper glosses. With regard to the ‘incidental vocabulary learning through reading’ dimension of the questionnaire, most of the participants indicated that they enjoyed reading from electronic text in which they come across new words. Half of the participants believed that hypertext glosses has a direct impact on the incidental learning of vocabulary. Additionally, 90% of the participants remembered the meaning of unfamiliar words. These findings are consistent with those of Davis, Burnett, and Chennault (1993) study, which concluded that students who have access to hypermedia-annotated words retained vocabulary better than those who used traditional paper gloss.

In terms of the third dimension ‘the usefulness of hypertext glosses over paper glosses’, participants showed agreement in views that hypertext glosses are sufficient replacement for printed information. Most of the participants indicated agreement to the view that Gloss can help readers to read without interruptions looking manually for the meaning in another document. Participants also showed agreement that glosses provide immediate access to the desired meaning of unknown words.

The last dimension focused on the main concern of the research which is ‘which one of the gloss formats increase the incidental vocabulary learning to the greatest degree. The majority of the participants agreed that marginal type helped to acquire
vocabulary incidentally to the greatest degree. This results can be explained in the way that the glosses which located closer to the hyperlinked terms are the most preferred one for EFL learners.

4.4 Summary of Chapter Four

This chapter dealt with data analysis to answer the research questions regarding the participants’ preference of hypertext glosses presentation. Results obtained from data analysis of respondents’ estimation of incidental vocabulary learning through reading; respondents’ perception of the usefulness of the hypertext glosses over paper gloss; and preferred gloss location provided addressed key research questions respectively.
Chapter Five

Findings and Recommendations

This chapter provides discussion about the main findings about the different locations of hypertext glosses which may help in designing language learning materials. It also discusses the results and makes recommendations for developing gloss presentation based on learners’ preferences to address the primary question of ‘Where do EFL learners prefer the glosses to be located?’

5.1 Findings Regarding the Research Questions

The first question was about ‘Does the use of hypertext glosses while reading increase the incidental learning of L2 vocabulary?’. Data obtained from participants was analyzed to explore the relationship between hypertext glosses and vocabulary learning while reading and findings. The findings suggested that 95.1% participants showed agreement in perceptions that they used the hyperlinked words to understand the meaning. Majority of the participants also indicated agreement that hypertext glosses has an impact on the incidental learning of vocabulary.

The second question was about ‘Do learners prefer hypertext glosses over traditional paper glosses?’. Respondents were asked about learners’ preference for reading passages with hypertext glosses versus paper glosses. Analysis of the participants’ responses on the questionnaire indicated that 78 % of the learners preferred hypertext glosses over traditional list of words at the end of the text.

The third and fourth questions were regarding learners’ preferences of the location of the glosses including ‘In the margin’; on bottom of screen, in a pop-up
window, or at the end of the text. The results showed that majority of the participants preferred the gloss to be located in the margin. The findings suggested that among the four locations, participants indicated ‘the bottom of screen’ as the least preferred location.

5.2 Limitations and suggestions for further research

There are several limitations to the study. The results of the current study should be interpreted cautiously. Firstly, the results are based on a small number of participants over a limited period of time. Furthermore, this study did not integrate visual and an audio gloss into the design due to which the focus is on the textual type since it is the basic. Thus, further research is needed to address issues regarding gloss presentation in different locations in the text under different conditions such as textual, visual, and audio. Secondly, in future studies participants should work over a long period of time. Thirdly, the participants of this study included only advance level students majoring in English Language Teaching. Hence the results cannot be generalized to other proficiency level. Future research can include other factors, such as the nature of reading material, and different forms of comprehension and vocabulary tasks.

5.3 Conclusion

The findings of the present study provided valuable insights to better understand the most suitable ways in the presentation of the hypertext annotation in different locations in a text. The technique of the hypertext annotation made the process of providing information while reading a text more accessible and helped readers compensate for their lack of information. However, instructors should be cautious with the format design because inappropriate format could lead to negative effect on learners
performance. Moreover, instructors may provide an orientation on how to use glosses before the reading activities to help learners take the most advantage of the aiding tool. Ultimately, the findings revealed that there was a main preference for texts with hypermedia glosses over a traditional list of words at the end of the text.
References


Chapelle, C (1998). Multimedia CALL: Lessons to be learned from research on SLA. Language Learning and Technology, 2 (1), 22-34.


Poel, K., & Swanepoel, P. (2003). Theoretical and methodological pluralism in designing effective lexical support for CALL. Computer Assisted Language Learning, 16(2/3), 173-211.


Appendix A

Validation Committee

1- Dr. Ali Al-Rajhi Asst- Prof- PhD from Indian University of Pennsylvania (USA). Currently working at Al-Imam Mohammed Ibn Saud University.

2- Dr. Hassan Al-Hazemi- Prof- PhD from Swansea University (UK). Currently working at Al-Imam Mohammed Ibn Saud University.

3- Dr. Muhammad Abdellatif - Asst. Prof- PhD from Essex University (UK). Currently working at Al-Imam Mohammed Ibn Saud University.
Appendix B

The Questionnaire
**Questionnaire**

**Incidental L2 Vocabulary Learning through Using Hypertext Gloses**

Dear Participant,

I am conducting a study whose aim is to explore the effect of hypertext glosses and their locations on the incidental vocabulary learning in partial fulfillment of the MA degree in Linguistics at Imam Mohammad Ibn Saud Islamic University. I should be grateful if you would kindly complete the questionnaire via the link sent to your computers. **Please make sure after filling the online copy to press “submit” button.** Please note that any bit of information provided will be used only for research purposes and will be kept confidential. Your co-operation, time and effort are very much appreciated.

Your co-operation, time and effort are very much appreciated.

The researcher,

Eman Almutairi

E-MAIL: ealybsi@gmail.com
Section 1: Answer the following questions:

A. For how many years did you use the computer for the sake of language learning?
   1. 2 years
   2. 3 - 4 years
   3. Over 5 years

B. Did you use the hypertext glosses while reading?
   1. Yes
   2. No

Section 2: Incidental Vocabulary Learning through reading.

Please indicate your opinion (always, sometimes or never) regards the following statements:

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I enjoy reading electronic text because they improve my lexical competence.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>While reading, I come across new words that I look for their meaning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>While reading, I use the hyperlinked words to understand the meaning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>After reading, I remember some words that were unfamiliar to me.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Using hypertext glosses has an impact on the incidental learning of vocabulary.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 3: The usefulness of the Hypertext glosses over paper gloss.

Please agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypertext glosses are sufficient replacement for printed information.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I acquire new words when using hypertext glosses more than paper gloss.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**VOCABULARY LEARNING THROUGH HYPERTEXT GLOSSES.**

3 Gloss can help readers to read without interruption, as looking for the meaning in another document.

4 Glosses provide immediate access to the desired meaning of unknown words.

5 Hypertext gloss help to avoid wrong guessing of meaning.

6 Using hypertext gloss helped me access additional information that paper gloss.

---

**Section 4: Preferred gloss location.**

Please agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>No</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I don't interact with hypertext glosses in the same fashion.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The different locations of Glosses may affect the degree of learning.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I remember spatial location of information within a text after reading it.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Gloss locations may affect my performance in acquiring vocabulary.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I prefer glosses that are as close as possible to glossed words.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Section 5:**

A. From your perspective, Which one of these locations increases the incidental vocabulary learning to the greatest degree? Select ONE

1. marginal gloss
2. bottom of screen
3. In a pop-up window
4. At the end of the text

B. Please state why you selected this location?

………………………………………………………………………………………

THANK YOU FOR YOUR TIME AND CO-OPERATION
Appendix B

Data Collection Site
Appendix B1
The College Letter with the Student’s Affiliation and Purpose of the Study
Appendix B2

The permission from the Dean of the Higher education at Majmaah University
Appendix B3

Research Center Addressing English Department
Appendix B4
Academic Affairs Addressing the Permission of the College of Education